PROCEEDING

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"Navigating the Human-AI Collaboration in Education: Challenges and Opportunities"

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WELCOME MESSAGE FROM THE ORGANIZING COMMITTEE

Assalamu'alaikum warrahmatulah wabarakatuh

I would first like to express my gratitude for the blessings and guidance that have brought us together for this conference.

It is my pleasure to welcome you to the 13th International Conference on Educational Research and Innovation (ICERI) at Universitas Negeri Yogyakarta. This year's theme is "Navigating Human-AI Collaboration in Education: Challenges and Opportunities," with a special focus on Artificial Intelligence in education.

We would like to welcome and recognize our esteemed keynote and invited speakers: Dr. Fauzan Adziman, M.Eng., Director General of Research and Development, the Ministry of Higher Education, Science, and Technology, Indonesia; Prof. Oh Jin Park, Ph.D., CEO, 3PLINK, Korea; Prof. Nur Hidayanto Pancoro Setyo Putro, Ph.D., Vice-Rector for Academic Affairs, Universitas Negeri Yogyakarta, Indonesia; Assoc. Prof. Chailerd Pichitpornchai, Ph.D., Director of International Institute for Learning, Mahidol University, Thailand; and Assoc. Prof. Kuan-Ting Lai, AIoT Laboratorium, National Taipei University and Technology**.** Thank you to all our speakers for sharing your valuable time and wisdom at this conference.

This conference is a forum for participants to share and discuss the latest advancements and issues in Education. We have received more than 1000 abstracts. We hope you find the keynote presentations, plenary panels, and paper presentations interesting and illuminating. We encourage you to participate in the discussion, take advantage of the many benefits the Conference offers, and connect with new friends.

We are very honored to welcome you to Yogyakarta. The city is the capital and administrative center of the Special Region of Yogyakarta, Indonesia. Yogyakarta is a large urban area that preserves Javanese culture and traditions. It is home to the Sultan's palace, several universities, and the famous World Heritage Site of Borobudur. I hope you have a memorable experience exploring the city, the palace, and this World Heritage Site.

Thank you to all Committee members for making this conference possible. I warmly welcome you to Yogyakarta, and wish you an inspiring conference experience.

Wassalamu'alaikum warrahmatulah wabarakatuh

Prof. Dr. Yudik Prasetyo, S.Or., M.Kes.
Director of the Directorate for Research and Community Service
Universitas Negeri Yogyakarta

RECTOR' SPEECH

Assalaamu'alaikum Warahmatullaahi Wabarakaatuh

I gratefully welcome all participants to the 2025 International Conference on Educational Research and Innovation (ICERI). This conference is a crucial opportunity for the academic community, education practitioners, and policymakers from various countries to discuss and collaborate in responding to global dynamics in education, particularly in the era of collaboration between humans and artificial intelligence.

The development of digital technology, particularly artificial intelligence, has brought about major changes in the way we learn, teach, and conduct research. However, this progress also demands that we ensure that technology remains aligned with humanitarian values, ethics, and social justice. This is where human AI collaboration becomes crucial, not to replace humans, but to strengthen their capacity to create more adaptive, inclusive, and meaningful learning.

Universitas Negeri Yogyakarta is strongly committed to being an active part of this transformation. Through strategic policies in developing a smart campus, improving digital literacy among its academic community, and strengthening interdisciplinary research in the field of artificial intelligence in education, UNY continues to encourage innovation oriented towards human well-being and the sustainability of education. We believe that research and learning that utilize technology wisely will expand access, improve quality, and foster national competitiveness on the global stage.

ICERI 2025 is a concrete manifestation of this collaborative spirit. Through this forum, we hope to forge a cross-national knowledge network capable of generating strategic ideas for the future of ethical and equitable AI-based education. May the discussions during this conference inspire and provide new direction for the development of more humane educational policies, research, and practices.

Finally, I would like to express my appreciation to all the committee members, speakers, and participants for their dedication and participation. Let us continue to move together toward a future of intelligent, ethical, and humanity-oriented education.

Have a great conference.

Wassalaamu'alaikum Warahmatullaahi Wabarakaatuh

Prof. Dr. Sumaryanto, M.Kes., AIFO
Rector of Universitas Negeri Yogyakarta

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Enhancing Counselors' Capacity Through Training On Self-Instruction–Based Cognitive Behavioral Therapy Workbook Media

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Abstract: This community service program was conducted on June 10, 2025, targeting guidance and counseling teachers in Bandung City. The activity took place at SMA Negeri 11 Bandung in collaboration with the Guidance and Counseling Teachers Association (MGBK) of Bandung City. The program aimed to address the limited knowledge of school counselors regarding the application of Cognitive Behavioral Therapy (CBT) in counseling services, despite its proven effectiveness in addressing students' psychological issues.

The program focused on introducing and training the use of a CBT Workbook as a practical guide for school counselors in delivering CBT-based counseling services. The activities included material presentations, interactive discussions, and hands-on practice through case simulations. The results indicated that participants demonstrated improved understanding of CBT concepts and increased confidence in utilizing the workbook to support counseling practices. Overall, this program contributed positively to enhancing counselors' professional capacity and promoting more effective school counseling services.

Keywords: Community service, Guidance and Counseling Teacher, Cognitive Behavioral Therapy (CBT), Workbook.

INTRODUCTION

Counseling services constitute a professional process involving a reciprocal relationship between a trained counselor and individuals who require guidance and assistance (Noriah Mohd. Ishak, Zuria Mahmud, & Salleh Amat, 2005). Counseling is not merely a technical interaction, but also a meaningful encounter that contributes to personal and professional growth for both counselors and counselees (Brammer; Hansen, Ressberg, & Cremer, as cited in Sofyan Willis, 2013). In practice, counselors are required to master fundamental counseling communication skills, including the initial stage (rapport building, empathy, and reflection), problem exploration (open-ended questioning, clarification, minimal encouragement, and focusing), as well as the termination stage (summarizing, task assignment, and follow-up) (Ramdana, 2011).

The quality of counseling skills is strongly influenced by counselors' attitudes and professional experience. Hackney (2011) emphasizes the importance of pre-practicum experiences in developing professional consultation models that rely on accumulated experiential learning. This assertion is supported by the findings of Little et al. (2005), which indicate that counselors' experience plays a crucial role in establishing effective counseling relationships.

In the context of adolescent development, counseling challenges become increasingly complex due to the transitional phase from childhood to adulthood. The process of identity formation often gives rise to cognitive distortions, characterized by negative thinking patterns that adversely affect both academic and non-academic functioning (Rizkiawati & Asiah, 2016; Hakim, 2022). These conditions underscore the urgent need for counseling services that are capable of addressing adolescents' psychological issues through structured, systematic, and evidence-based approaches.

One approach that is particularly relevant in this context is Cognitive Behavioral Therapy (CBT). CBT emphasizes the reciprocal relationship between thoughts, emotions, and behaviors. Through cognitive restructuring, CBT assists counselees in identifying and modifying dysfunctional negative thoughts into more

adaptive and realistic ones. One of the techniques applied within CBT is self-instruction, a cognitive strategy that involves self-talk or self-verbalization to help individuals regulate their thinking patterns. Through this technique, counselees are guided to replace negative self-statements with positive and constructive ones, thereby enabling better behavioral control and goal-oriented actions.

Based on these identified needs, the community service team designed a training and mentoring program focused on the implementation of CBT using self-instruction techniques in school counseling services. This program was conducted as part of the *Lecturers' Off-Campus Engagement Program* (*Program Dosen Berkegiatan di Luar Kampus*), targeting counselors from the Educational Guidance and Counseling Service Unit (*Unit Layanan Bimbingan dan Konseling Pendidikan – ULBKP*) at Universitas Negeri Yogyakarta, as well as school counselors in Bandung City.

Through this training program, participants received both theoretical insights and practical skills in utilizing a specially developed CBT Workbook as a structured counseling guide. In addition to enhancing the professional capacity of school counselors and guidance teachers, this community service activity also contributes to the achievement of Universitas Negeri Yogyakarta's Key Performance Indicators (IKU), particularly IKU 5, which emphasizes increasing faculty engagement in community service and social contribution programs.

LITERATURE REVIEW

1. Counseling Services in Education

School counseling services are an integral component of the educational system, aimed at assisting students in addressing personal, social, academic, and career-related issues (Prayitno, 2012). Counseling is not merely understood as a technical process, but also as a meaningful therapeutic relationship between counselors and counselees (Noriah Mohd. Ishak, Zuria Mahmud, & Salleh Amat, 2005). Therefore, counselors are required to possess basic communication skills, the ability to understand psychological dynamics, and relevant intervention competencies (Ramdana, 2011).

In the context of adolescent development, counseling services have a high level of urgency, as the transitional phase toward adulthood often gives rise to various emotional and cognitive challenges, such as low self-confidence, academic stress, and cognitive distortions that influence behavior (Rizkiawati & Asiah, 2016; Hakim, 2022). Consequently, school counselors need to master applicable and practical counseling approaches to effectively address students' problems.

2. Cognitive Behavioral Therapy (CBT)

Cognitive Behavioral Therapy (CBT) is a counseling approach that emphasizes the interrelationship between thoughts, emotions, and behaviors (Beck, 1976). CBT assumes that cognitive distortions or negative thinking patterns significantly influence individuals' emotional responses and actions. Therefore, modifying dysfunctional thoughts into more rational and adaptive ones can lead to positive behavioral changes (Dobson & Dobson, 2018).

In school counseling practice, CBT has been recognized as an effective approach for helping students manage stress, anxiety, and behavioral problems. This approach enables students to identify irrational thought patterns, critically evaluate them, and replace them with more realistic beliefs. As a result, CBT contributes to the improvement of students' mental health and academic functioning (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012).

3. Self-Instruction Technique in CBT

One CBT technique that is particularly relevant for adolescents is self-instruction training, a cognitive strategy that involves the use of self-talk or self-verbalization to guide behavior (Meichenbaum, 1977). Through this technique, counselees are taught to internalize positive self-dialogue that helps them regulate their thoughts, reduce anxiety, and direct their actions in a more constructive manner.

The self-instruction technique is considered highly suitable for school counseling settings because it is simple, easy to practice, and can be applied independently by students when facing challenging situations. For example, students can train themselves to use positive statements such as "I can handle this" or "I will try this step first," thereby fostering healthier self-regulation skills.

4. The Role of School Counselors in Implementing CBT

School counselors play a crucial role in supporting students in overcoming psychological and academic difficulties. Through a sound understanding of CBT, particularly the self-instruction technique, school

counselors can deliver counseling services that are more structured, practical, and aligned with adolescents' developmental needs. Training programs for school counselors in the use of CBT workbooks represent an effective strategy for enhancing their professional capacity, thereby improving the overall quality and effectiveness of school counseling services (Corey, 2017).

Thus, the training on the use of self-instruction–based CBT workbooks in this community service program not only serves as a means of improving school counselors' professional skills but also represents a tangible contribution to enhancing the quality of counseling services in schools, which ultimately has positive implications for students' psychological well-being.

RESEARCH METHOD

The method employed in this Community Service Program (*Pengabdian kepada Masyarakat/PKM*) was systematically designed to ensure the effective achievement of program objectives. The implementation stages consisted of preparation, program execution, mentoring and monitoring, and evaluation, as described below.

1. Preparation Stage

- Coordination was conducted with the Senior High School Guidance and Counseling Teachers Association of Bandung City (*Musyawarah Guru Bimbingan dan Konseling/MGBK SMA Kota Bandung*) to identify counselors' needs and determine the most appropriate form of activity.
- Training materials on Cognitive Behavioral Therapy (CBT), particularly the self-instruction technique, were developed, along with the preparation of a CBT Workbook to be used as a learning and counseling medium.
- The participants were selected based on relevance to the program objectives, involving 30 school counselors from senior high schools in Bandung City.

2. Program Implementation

The implementation phase was conducted through workshops, simulations, and reflective discussions.

a. Material Delivery (Workshop)

- Participants were provided with theoretical explanations of the fundamental concepts of CBT, its core principles, and its relevance in addressing adolescents' psychological problems.
- An in-depth explanation of the self-instruction technique was delivered as an effective cognitive strategy in adolescent counseling.

b. Simulation and Practice

- Participants were actively involved in case simulations to apply the CBT Workbook in counseling services.
- School counselors were trained to implement the self-instruction technique to address students' cognitive distortions.

c. Discussion and Reflection

- Interactive discussions were facilitated to allow participants to share experiences, challenges, and solutions related to the implementation of CBT in school settings.
- Participants engaged in reflective activities to strengthen their understanding and counseling skills based on the practices conducted during the training.

3. Mentoring and Monitoring

- Following the training, both online and offline mentoring sessions were conducted to support and monitor the implementation of the CBT Workbook in participants' respective schools.
- Monitoring activities were carried out to evaluate the extent to which school counselors were able to integrate CBT principles into their counseling services.

4. Program Evaluation

- Evaluation was conducted using participant satisfaction questionnaires, assessments of practical counseling skills during simulations, and follow-up reviews of CBT implementation in school counseling services.
- The evaluation results served as the basis for compiling the final report and formulating recommendations to ensure the sustainability and further development of the training program.

FIGURE 1. Flyer for the Implementation of the 2025 ULBK Institutional Community Service Program (PKM)

RESULTS AND DISCUSSION

A. Results of Program Implementation

This Community Service Program (*Pengabdian kepada Masyarakat/PKM*) was conducted on Tuesday, June 10, 2025, targeting senior high school guidance and counseling teachers in Bandung City. The activity was held at SMA Negeri 11 Bandung, which was selected due to its adequate facilities as well as its strategic and easily accessible location for participants.

The program was implemented in collaboration with the Senior High School Guidance and Counseling Teachers Association of Bandung City (*Musyawarah Guru Bimbingan dan Konseling/MGBK SMA Kota Bandung*), chaired by Syam Ahmad, S.Pd., and was attended by 35 school counselors. The support from MGBK played a crucial role in the successful implementation of the program, particularly in recruiting participants, facilitating coordination, and ensuring the sustainability of Cognitive Behavioral Therapy (CBT)–based counseling practices in participants' respective schools.

The series of activities were conducted as follows:

1. Opening Session

The program commenced with opening remarks delivered by representatives of SMA Negeri 11 Bandung, the Chairperson of the Senior High School Guidance and Counseling Teachers Association of Bandung City (*MGBK SMA Kota Bandung*), and the PKM implementation team. The remarks emphasized the importance of enhancing school counselors' professional competence in addressing adolescents' psychological

issues, particularly through evidence-based and scientific approaches such as Cognitive Behavioral Therapy (CBT).

2. Material Presentation

This session provided an overview of Cognitive Behavioral Therapy (CBT) as an effective modern counseling approach for addressing various psychological problems, including academic stress, anxiety, mild depression, and behavioral issues among students. The presentation also explained the fundamental principles of CBT, highlighting the reciprocal relationship between thoughts, emotions, and behaviors. In addition, the session discussed common cognitive distortions experienced by adolescents and explored strategies for managing these distortions through the application of CBT techniques.

3. Introduction and Demonstration of the CBT Workbook

Participants were introduced to the CBT Workbook, which was designed to support a more structured and systematic counseling process. The PKM implementation team demonstrated the proper use of the workbook, including practical guidance on how counselors can assist students in applying self-instruction techniques to transform negative thoughts into more rational and adaptive ones. A simulation of workbook implementation was conducted, involving several guidance counselors as active participants to ensure hands-on learning and practical understanding.

4. Discussion and Question-and-Answer Session

Guidance counselors were given the opportunity to discuss the challenges they encounter in their respective schools. During this session, the implementation team provided practical recommendations on the application of CBT in school counseling services, as well as strategies for adapting CBT techniques to the specific conditions and contexts of the school environment.

5. Closing and Evaluation

The activity concluded with a brief evaluation of participants' understanding of the materials presented. Participants were invited to share their impressions, feedback, and expectations regarding the training. Many expressed the hope that similar activities could be continued in the form of ongoing mentoring or advanced training programs to further strengthen their professional competencies.

B. Discussion

This Community Service Program (PKM) focused on improving guidance counselors' understanding and skills in using the Cognitive Behavioral Therapy (CBT) Workbook. The evaluation was conducted by comparing pre-test and post-test results from 35 participants.

The analysis showed that the participants' average pre-test score was 58.75, while the average post-test score increased to 65.42. Thus, there was an average score improvement of 6.67 points. This increase indicates that after receiving theoretical explanations and training on the use of the CBT workbook, participants demonstrated improved conceptual understanding as well as enhanced practical skills in implementing CBT within counseling services.

Although an overall improvement was observed, variations among participants remained evident. This is reflected in the relatively high standard deviations of the pre-test (16.25) and post-test (14.53) scores. These findings suggest that while some guidance counselors were able to master the material effectively, others still require further assistance. Factors such as prior experience, training background, and the level of engagement during the PKM activities may have influenced these outcomes.

Overall, this PKM activity successfully generated a positive impact in introducing and strengthening guidance counselors' understanding of CBT. The increase in post-test scores indicates that workbook-based training can serve as an effective strategy to facilitate counselors' mastery of both CBT concepts and practices, which are expected to be directly applied in school counseling services.

In addition to the improvement in conceptual understanding, discussions during the activity revealed that participants felt more confident in applying CBT with students, particularly in addressing psychological issues such as cognitive distortions, anxiety, and decreased learning motivation. This finding is consistent with previous studies (Beck, 2011; Hofmann et al., 2012) that highlight the effectiveness of CBT in managing psychological problems.

Thus, it can be concluded that this PKM activity made a tangible contribution to enhancing the professional competence of guidance counselors. Nevertheless, follow-up actions in the form of supervision or

continuous mentoring are still necessary to ensure a more even distribution of CBT implementation skills among all participants.

CONCLUSION

This Community Service Program (PKM) successfully enhanced the understanding and practical skills of guidance counselors in applying Cognitive Behavioral Therapy (CBT) through the use of a self-instruction–based workbook. The training activities, which combined theoretical presentations, hands-on practice, and reflective discussions, resulted in measurable improvements in participants' conceptual comprehension and confidence in implementing CBT within school counseling services. The increase in post-test scores indicates that workbook-based training is an effective strategy for strengthening counselors' professional capacity and promoting the application of evidence-based counseling approaches in schools. Nevertheless, variations in participants' mastery suggest the need for continued supervision and follow-up mentoring to ensure more consistent and sustainable implementation of CBT across all counseling practitioners.

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Development Of A Virtual Reality–Based Learning Video For Vocational Education In Yogyakarta

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Abstract. Virtual Reality (VR) has strong potential to enhance vocational learning by providing immersive and practice- oriented experiences. This study aims to develop a Virtual Reality–based learning video to support broadcasting education in vocational high schools in Yogyakarta. The research employed a research and development approach using the APPED model, consisting of analysis, planning, production, evaluation, and dissemination. The development process involved needs analysis, video production using 360-degree VR technology, expert validation, product revision, and limited field testing with vocational students. The results indicate that the developed VR learning video is highly feasible. Content expert validation yielded an average score of 4.66, while media expert validation resulted in an average score of 4.63, both categorized as "very feasible." A limited field trial involving students showed highly positive responses, with an overall average score of 4.7. Students reported improved understanding, higher engagement, and better visualization of broadcasting production processes. The final product includes a 360-degree VR learning video and a user guidebook for teachers and students. This study demonstrates that VR-based learning media can effectively support practice-based learning in vocational education.

INTRODUCTION

Vocational education emphasizes practice-based learning to prepare students with skills that are directly applicable to the workplace. In fields such as broadcasting, students are required to understand not only theoretical concepts but also complex production processes involving cameras, lighting, audio systems, and teamwork. However, conventional instructional approaches often face limitations, including restricted access to production equipment, limited observation opportunities during practice sessions, and time constraints that prevent students from fully understanding each stage of the production process.

Advances in digital technology have introduced new opportunities to address these challenges. One such technology is Virtual Reality (VR), which enables users to experience immersive and interactive learning environments. VR allows learners to observe processes from multiple perspectives, repeat learning experiences independently, and engage more actively with instructional content. Previous studies have shown that VR can improve student engagement, motivation, and conceptual understanding, particularly in learning contexts that require spatial awareness and procedural knowledge.

In vocational broadcasting education, the use of VR-based learning media is especially relevant. Broadcasting practices often involve simultaneous technical activities that are difficult to observe in real time, especially in classrooms with a large number of students. As a result, some students may miss critical learning moments during practice. VR-based instructional videos, particularly those using 360-degree video technology, offer an alternative solution by enabling students to explore production environments freely and revisit learning materials as needed.

Despite the growing interest in VR for education, its implementation in vocational schools, especially in Indonesian contexts, remains limited. Many existing studies focus on general education or higher education settings, while fewer address the specific needs of vocational broadcasting programs. Therefore, there is a need for systematic development and evaluation of VR-based learning media that align with vocational curricula and practical learning objectives.

This study aims to develop and evaluate a Virtual Reality–based learning video to support broadcasting education in vocational high schools in Yogyakarta. By employing a research and development approach, this study seeks to provide empirical evidence on the feasibility and effectiveness of VR-based learning media for enhancing practice-oriented learning in vocational education.

LITERATURE REVIEW

1. Virtual Reality in Education

Virtual Reality (VR) is a computer-based technology that enables users to interact with immersive, three-dimensional environments that simulate real or imagined situations. In educational contexts, VR has been widely recognized as an effective medium for experiential learning, allowing learners to actively engage with learning content rather than passively receiving information (Radianti et al., 2020). By integrating visual, auditory, and spatial elements, VR supports deeper cognitive processing and enhances learner engagement.

Several studies have demonstrated that VR can improve learning motivation, conceptual understanding, and retention, particularly in subjects requiring spatial awareness and procedural knowledge (Makransky & Petersen, 2019). VR environments allow learners to explore complex processes from multiple perspectives, repeat learning experiences independently, and learn at their own pace. These characteristics make VR especially suitable for technical and skills-oriented learning domains, including vocational education.

2. 360-Degree Video as Learning Media

One increasingly popular form of VR-based media in education is 360-degree video. Unlike fully interactive VR simulations, 360-degree video captures real-world environments and enables learners to control their viewing direction during playback. This format offers high realism while remaining relatively accessible, as it can be used with smartphones and low-cost VR headsets (Pribadi et al., 2019).

Research indicates that 360-degree video enhances learner immersion and supports authentic learning experiences, particularly in practice-based instruction (Rambing et al., 2017). By presenting real environments and workflows, 360-degree video helps learners visualize procedures that are difficult to observe directly in conventional classrooms. Moreover, the ability to replay videos multiple times supports self-directed learning and reflective practice, which are essential components of effective instructional design (Parlindungan et al., 2020).

3. Virtual Reality and Practice-Based Learning in Vocational Education

Vocational education emphasizes the acquisition of practical skills aligned with workplace demands. Practice-based learning plays a central role in vocational programs, as students are expected to master tools, procedures, and professional standards relevant to their field (Winangun, 2017). However, vocational institutions frequently encounter challenges such as limited access to equipment, safety risks, and unequal learning opportunities during hands-on practice.

Previous studies suggest that VR-based learning media can effectively address these challenges. VR provides a safe and controlled environment where learners can observe and rehearse procedures without the risk of equipment damage or personal injury (Musril et al., 2020). Additionally, VR supports observational learning by enabling students to repeatedly examine critical steps that might be missed during live demonstrations. As a result, VR can enhance both skill acquisition and learner confidence in vocational settings.

4. VR and 360-Degree Video in Broadcasting Education

Broadcasting education involves complex production processes, including camera operation, lighting setup, audio management, and coordination among production teams. These activities often occur simultaneously, making it difficult for all students to observe each component during live practice sessions. Consequently, some students may fail to fully understand the workflow and technical details of broadcasting production.

The integration of VR and 360-degree video into broadcasting education offers a promising instructional solution. By immersing learners in a virtual production environment, VR-based media allows students to explore broadcasting workflows holistically and from multiple viewpoints (Sundoro & Wibawa, 2019). This

approach facilitates a deeper understanding of production roles and technical procedures while enhancing learner engagement and motivation.

5. Research Gap

Although numerous studies have reported positive outcomes of VR and 360-degree video in education, empirical research focusing specifically on vocational broadcasting education at the secondary school level remains limited, particularly in the Indonesian context. Many existing studies concentrate on higher education or general technical training, leaving a gap in research that systematically develops and evaluates VR-based learning media tailored to vocational high school curricula. Therefore, further research is needed to provide evidence-based models for integrating VR into vocational broadcasting instruction.

METHOD

This study employed a research and development (R&D) design aimed at developing, validating, and evaluating a Virtual Reality (VR)–based learning video to support broadcasting education in vocational high schools. R&D is appropriate for studies that focus on producing educational products and systematically testing their feasibility and effectiveness (Richey & Klein, 2007).

The development process followed the APPED model, which consists of five stages: Analysis, Planning, Production, Evaluation, and Dissemination. This model was selected because it provides a structured framework for instructional media development and emphasizes iterative evaluation and refinement to ensure product quality (Surjono, 2017).

The development procedures were conducted according to the APPED stages:

1. Analysis
   A needs analysis was conducted through focus group discussions with vocational teachers and classroom observations. This stage aimed to identify instructional problems, learner characteristics, and technical constraints in broadcasting practice-based learning.
2. Planning
   Based on the needs analysis, learning objectives were formulated, and a detailed script and storyboard for the 360-degree VR video were developed. This stage also included planning camera placement, lighting, narration, and learning flow.
3. Production
   The VR video was produced using a 360-degree camera to capture authentic broadcasting studio environments. Video editing involved color correction, audio enhancement, subtitle integration, and stabilization to ensure user comfort during VR viewing.
4. Evaluation
   Evaluation was carried out in two phases:
   a. Expert validation, involving content and media experts who reviewed the product using structured validation instruments.
   b. Limited field testing, involving vocational students who completed a questionnaire to assess attractiveness, usability, clarity, understanding, and engagement.
5. Dissemination
   The final product was disseminated through workshops with teachers and accompanied by a user guidebook designed to support classroom implementation.

RESULTS AND DISCUSSION

This study aimed to develop and evaluate a Virtual Reality (VR)–based learning video to support broadcasting education in vocational high schools. The results of expert validation and limited field testing indicate that the developed media meets pedagogical, technical, and practical requirements, and effectively supports practice-based learning in vocational education.

The content expert validation yielded an overall mean score of 4.66 out of 5, categorized as very feasible. This

result indicates that the instructional content presented in the VR video aligns well with the vocational broadcasting curriculum, accurately represents industry-standard procedures, and provides sufficient depth for vocational students. High scores were obtained particularly in curriculum alignment and relevance of the material, suggesting that the learning objectives, production stages, and technical explanations correspond to expected vocational competencies. Minor revisions recommended by the content expert included clarifying specific technical terms and extending explanations in certain segments through subtitles. These findings support the argument that content validity is a critical factor in the effectiveness of instructional media development (Richey & Klein, 2007).

Media expert validation also demonstrated a high level of feasibility, with an overall mean score of 4.63, categorized as very feasible. The expert highlighted the strengths of the VR video in terms of visual consistency, audio-visual integration, and stability of the 360-degree recording. The use of authentic studio environments contributed to the realism of the learning experience. Suggested improvements focused on technical refinements, such as enhancing indoor lighting, extending subtitle duration, and adding visual cues to guide learners' attention within the immersive environment. These recommendations are consistent with previous research emphasizing the importance of usability, comfort, and visual guidance in immersive learning environments (Radianti et al., 2020).

Following expert validation and product revision, a limited field trial was conducted with five vocational broadcasting students. The results showed highly positive student responses, with an overall mean score of 4.7, categorized as very good. Students reported that the VR-based learning video was engaging, easy to use, and helpful in improving their understanding of broadcasting production processes. In particular, students noted that the ability to freely explore the studio environment and observe camera placement, lighting arrangements, and production workflows from multiple perspectives significantly enhanced their comprehension. This finding aligns with studies indicating that immersive learning environments can improve observational learning and procedural understanding (Makransky & Petersen, 2019).

The integration of VR into vocational broadcasting education addressed several instructional challenges commonly found in practice-based learning. In conventional practical sessions, students often have limited opportunities to observe all stages of production due to space constraints, equipment limitations, and the simultaneous nature of broadcasting activities. The VR-based learning video mitigated these issues by enabling repeated observation and self-paced exploration, thereby supporting learner autonomy and reflection. This result supports previous findings that VR can reduce inequalities in learning opportunities and enhance skill acquisition in vocational contexts (Musril et al., 2020).

The use of 360-degree video as the primary VR format proved to be an effective and accessible solution for vocational schools. Compared to fully interactive VR simulations, 360-degree video offers high realism while requiring relatively low technical and financial resources. This makes it suitable for educational settings with limited infrastructure, as it can be accessed using smartphones and affordable VR headsets (Pribadi et al., 2019). The findings of this study confirm that 360-degree video can serve as a practical entry point for integrating immersive technologies into vocational education.

From a pedagogical perspective, the VR-based learning video supports student-centered and constructivist learning approaches by allowing learners to actively explore learning environments, control their viewing direction, and revisit learning content as needed. Such characteristics align with constructivist learning principles that emphasize active engagement and learner control in knowledge construction (Creswell & Plano Clark, 2018). The positive responses from students indicate that VR-based media can complement traditional instructional methods and enhance the overall quality of learning experiences in vocational education.

Overall, the integrated results demonstrate that the developed VR-based learning video is a feasible, effective, and innovative instructional medium for vocational broadcasting education. The convergence of expert validation results and positive student feedback provides strong empirical support for the use of VR-based learning media in practice-oriented educational contexts.

CONCLUSION

This study aimed to develop and evaluate a Virtual Reality (VR)–based learning video to support broadcasting education in vocational high schools in Yogyakarta. Using a research and development approach with the APPED model, the study systematically produced, validated, revised, and tested a 360-degree VR instructional video designed to support practice-based learning.

The findings demonstrate that the developed VR-based learning video is highly feasible and effective. Validation results from content experts (mean score = 4.66) and media experts (mean score = 4.63) indicate that the product meets pedagogical, technical, and curricular standards. Furthermore, the limited field trial involving vocational students produced very positive responses (mean score = 4.7), showing that the VR video enhanced students' understanding, engagement, and learning experience in broadcasting production processes.

The use of 360-degree video proved to be a practical and accessible form of VR for vocational education. It allowed students to observe authentic broadcasting environments from multiple perspectives and revisit learning materials independently. This approach addressed common challenges in vocational practice-based learning, such as limited access to equipment and unequal observation opportunities during live practice sessions.

Overall, this study provides empirical evidence that VR-based learning media, particularly 360-degree video, can effectively support vocational education when developed through a systematic instructional design process. The findings suggest that integrating immersive media into vocational learning can enhance student-centered learning and better prepare students for real-world professional contexts.

Future research is recommended to involve larger-scale field testing, integrate interactive elements within VR environments, and explore the application of VR-based learning media in other vocational disciplines.

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Improving Students' Waste-Management Skills At Sekolah Indonesia Malaysia Selangor Through Project-Based Learning Supported By Game-Based Activities

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Abstract. Waste-related problems are increasingly visible in school environments, yet waste literacy and daily routines often remain superficial. This community service program (PKM) was conducted at Sekolah Indonesia Malaysia (SIM) Selangor to strengthen students' and teachers' waste-management competencies through project-based learning (PBL) supported by game-based activities. The program combined (1) a needs assessment and baseline test, (2) interactive learning sessions using waste-sorting games and scenario challenges, and (3) a hands-on waste project (audit, sorting system, and upcycling product exhibition) aligned with Education for Sustainable Development (EfSD) and the P5 spirit of student agency. Evaluation used pre–post knowledge tests, observation rubrics, and reflection interviews. Results indicated clear improvements in conceptual understanding and practical skills; most participants achieved the expected competency level, and the school produced tangible outputs such as sorting guidelines, learning media, and student-made recycled products. The findings suggest that integrating PBL with games can make environmental learning more engaging and action-oriented in an international school context.
Keywords: community service; Education for Sustainable Development; project-based learning; game-based learning; waste management

INTRODUCTION

Waste management is no longer a peripheral topic in education. In many cities and school communities, waste is experienced as a daily, visible issue: overflowing bins, mixed organic and inorganic waste, unpleasant odors, and informal disposal habits that quietly become "normal." These experiences matter because early routines shape long-term behavior. When students repeatedly see that waste can be thrown away without sorting, that "someone else" will take care of it, or that recycling is merely a slogan on posters, they learn a hidden curriculum of disposability.

Schools are strategic places to intervene because they are miniature social systems with rules, infrastructure, and repeated routines. A school can build waste literacy not only by teaching concepts (such as the difference between organic, recyclable, and residual waste) but also by practicing systems thinking: how decisions about consumption, packaging, sorting, and disposal relate to health, economics, and environmental quality. In addition, school-based waste initiatives allow students to see cause-and-effect within a manageable scope. When a class audits its waste, designs sorting points, and monitors the results, students can observe direct consequences in a short time.

However, conventional environmental education often struggles with two limitations. First, learning can remain abstract, focusing on definitions and moral messages rather than actionable competence. Students may memorize the 3R slogan (Reduce, Reuse, Recycle) yet still be unsure how to sort waste or how to reduce single-use items in daily practice. Second, learning can be teacher-centered and passive, where students receive information but do not experience agency. This is especially challenging for complex issues such as waste management, which requires habit formation, collaboration, and continual feedback.

Project-based learning (PBL) offers a pathway to overcome those limitations by positioning students as active problem solvers who produce tangible outputs. Through projects, students can connect knowledge to real situations: identifying waste streams, diagnosing causes, and designing solutions. Yet, PBL can be demanding when students lack initial motivation or when the topic feels "serious" and distant from their interests. In such contexts, game-based learning can function as an engagement bridge. Games can create safe spaces for experimentation, make sorting decisions immediate, and transform repetitive practice into a playful challenge that sustains attention. When carefully designed, games can reinforce scientific concepts, develop decision-making skills, and strengthen collaboration.

This article reports the results of a community service program (Pengabdian kepada Masyarakat, PKM) conducted at Sekolah Indonesia Malaysia (SIM) Selangor. SIM Selangor is an Indonesian international school community where students learn within a cross-cultural environment and are exposed to diverse consumption

patterns, school events, and packaging waste. The partner school identified the need to strengthen both student skills and teacher capacity to implement environmental learning that is not merely theoretical but behavior-oriented. The PKM aimed to improve waste-management competence through a learning design that integrates PBL with game-based activities and aligns with the spirit of Education for Sustainable Development (EfSD) and student-centered school programs (including P5-style project experiences). The specific objectives were: (1) to enhance students' conceptual understanding of waste categories, 3R strategies, and responsible consumption; (2) to develop practical skills such as sorting, conducting a simple waste audit, and creating value-added products from recyclable waste; (3) to support teachers with a reusable learning package (lesson outline, learning media, and assessment rubrics) that can be integrated into regular learning; and (4) to pilot a school-level routine that supports sorting practices beyond the program period.

This paper contributes by offering a detailed implementation narrative and an evaluation that combines quantitative indicators (pre–post tests) with qualitative evidence (observations and reflections). Rather than framing waste management as a single event campaign, the program was designed as a learning process that moves from awareness to competence and from competence to habit. The primary guiding question was: how can PBL supported by games increase the feasibility and attractiveness of waste-management learning in a school context, and what kinds of learning outcomes emerge when students are given agency to diagnose and improve their own waste system?

Education for Sustainable Development emphasizes the development of competencies that allow learners to make informed decisions and act responsibly for environmental integrity, economic viability, and a just society. EfSD is not limited to providing information about environmental problems; it focuses on building systems thinking, anticipatory competence, collaboration, and the ability to reflect on values. Waste management, as a daily-life sustainability issue, fits well within EfSD because it intersects with consumption habits, resource cycles, health, and community norms.

In practice, many school-based waste programs remain campaign-like: they emphasize slogans, short clean-up events, or competitions without building sustained routines. Such approaches can raise awareness but often fail to transform daily habits. Research on behavior change suggests that knowledge alone rarely produces stable behavior; consistent environmental cues, social norms, and feedback mechanisms are also needed. For schools, this implies that learning should be integrated with infrastructure (e.g., clearly labeled bins), social agreements (class rules), and monitoring (student roles, checklists, and reflection).

Project-based learning is widely recognized as a student-centered approach that engages learners with authentic problems, typically resulting in a product, presentation, or performance. Key features include inquiry, student voice and choice, iterative feedback, and public sharing of outcomes. PBL is suitable for waste topics because it naturally invites investigation (What waste do we produce? Why? Where does it go?), design (How should we sort? What solutions are feasible?), and communication (How do we share rules and influence peers?). Moreover, PBL can integrate science concepts (materials, decomposition, contamination) with social and ethical considerations (consumption, responsibility, fairness).

Nevertheless, PBL implementation can face obstacles such as uneven participation, limited time, and a mismatch between project tasks and student motivation. Especially for middle-school learners, repeated sorting practice can feel monotonous if not accompanied by novelty and immediate feedback. Game-based learning addresses this gap by introducing challenge, rules, feedback, and a sense of progress. Game elements can be simple (cards, points, timed sorting) or more structured (scenario-based board games, role-play missions). The goal is not entertainment for its own sake, but purposeful engagement that reinforces learning targets.

In the context of environmental learning, games have been used to train sorting decisions, explore trade-offs, and model system dynamics. For example, scenario games can simulate stakeholder choices (students, cafeteria staff, cleaners, administration) and make visible how small decisions accumulate into large waste volumes. Such games can help learners recognize that waste management is not merely an individual act but a coordinated system. Another relevant strand is assessment for learning in sustainability education. Effective assessment should capture not only factual knowledge but also process skills (planning, collaboration, inquiry) and practical competencies (sorting accuracy, audit procedure, quality of products). Rubrics and reflective prompts are often used to support formative assessment, allowing students to see progress and teachers to provide targeted feedback. Based on these perspectives, the PKM at SIM Selangor adopted an integrated approach: games were used to build foundational concepts and motivation; PBL was used to translate concepts into system improvement and tangible outputs; and assessment tools were used to monitor both cognitive and practical gains. The intention was to design a learning experience that is feasible for teachers to replicate, while also being meaningful for students and aligned with EfSD competencies.

METHOD

The PKM was implemented at Sekolah Indonesia Malaysia (SIM) Selangor as a collaborative program between university facilitators and the school community. The partner school serves Indonesian students in an

international environment, with routine school activities that generate mixed waste streams, including paper, plastic packaging, food waste, and residual items from classroom and cafeteria activities. Participants included a cohort of approximately thirty-five students (upper primary and/or lower secondary levels, depending on the school scheduling) and several teachers who acted as co-facilitators. The school also involved supporting staff in specific activities related to waste sorting points and routine monitoring. The program was designed to be inclusive: students with different levels of prior knowledge could contribute through varied roles such as audit team members, communication designers, sorting station monitors, and product creators.

The intervention used a participatory training approach with two complementary pillars: game-based activities for concept-building and engagement, and a PBL cycle for application and habit formation. The design followed a sequence of phases:

(1) Needs assessment and baseline mapping. The team conducted an initial discussion with teachers and representatives of the school community to identify pain points (e.g., mixed waste, unclear sorting rules, limited learning media) and to agree on feasible project outputs.

(2) Conceptual strengthening through games. Students participated in structured games focused on waste categories, contamination risks, and 3R decision-making. Game sessions were used to surface misconceptions, practice rapid sorting decisions, and build social norms for correct classification.

(3) Project-based application. Students carried out a waste audit and designed a small-scale improvement plan. The project culminated in the production and exhibition of upcycled/recycled products and the dissemination of sorting guidelines within the school.

(4) Reflection and evaluation. Students completed a post-test and participated in reflection activities. Teachers reviewed the feasibility of integrating the learning package into regular instruction.

The learning package consisted of short concept notes, sorting cards, scenario prompts, and simple score sheets. Two core game formats were used.

First, a "Sort-It Sprint" card game trained fast classification. Students worked in small groups. Each group received mixed cards representing common items found in school waste (e.g., food wrappers, paper sheets, plastic bottles, leftover food, tissues, and composite materials). Under time constraints, students had to categorize each item into organic, recyclable (paper/plastic/metal), or residual waste. Facilitators provided immediate feedback, especially highlighting contamination (e.g., oily paper) and composite materials that are difficult to recycle. Second, a scenario challenge game focused on decision-making. Groups received situational prompts such as "school event with packaged snacks," "canteen day with disposable cups," or "class project requiring craft materials." Students scored points by proposing realistic reduce/reuse strategies before recycling. This ordering was intentional: students often jump directly to recycling, but EfSD emphasizes prevention as the higher-priority strategy.

The games were designed with low-cost materials so that teachers could reproduce them. Importantly, debrief sessions followed each game. In debriefing, facilitators connected game decisions to real school routines and asked students to articulate rules they would like to apply in practice.

Evaluation combined three instruments.

(1) Knowledge test (pre–post). A short test measured understanding of waste categories, 3R priorities, contamination, and basic waste system concepts. Items included multiple-choice and short responses. The same or equivalent test form was used before and after the intervention to estimate learning gains.

(2) Observation rubric. During sorting practice and project work, facilitators and teachers used a rubric to document practical competence (sorting accuracy, cleanliness, teamwork, and adherence to safety practices) and process skills (planning, role distribution, and reflection).

(3) Reflection interviews and written reflections. Students and teachers provided feedback on what was easy/difficult, what felt engaging, and what routines they wanted to keep after the program.

Quantitative results were analyzed descriptively using average scores and percentage improvements. Qualitative evidence from observations and reflections was analyzed using thematic grouping, focusing on changes in awareness, confidence, and feasibility of routines. The program was implemented in a compact format compatible with school schedules, spanning preparation and several facilitated sessions. Preparation included coordination meetings, needs assessment, and material development. The main sessions included baseline assessment, game-based learning, and project execution (audit, sorting system trial, and product creation). The final session focused on exhibition, reflection, and post-test evaluation.

Although the timeline was relatively short, the design intentionally built a pathway from initial engagement to visible outputs. This helped the partner school see immediate benefits while establishing tools and routines for continuation. Activities involving waste were conducted with attention to hygiene and safety. Students handled waste that was considered low risk (clean recyclables and controlled samples), and facilitators emphasized handwashing and the use of gloves when needed. Participation in tests and reflections was voluntary, and results were reported in aggregate for program evaluation. The intervention was framed as a learning activity rather than a high-stakes assessment.

RESULTS AND DISCUSSION

Initial discussions and baseline mapping indicated that waste management in the school was affected by two intertwined issues: knowledge gaps and system gaps. On the knowledge side, students generally recognized common recyclable items such as bottles and paper but struggled with borderline cases (e.g., contaminated paper, composite packaging, and tissues). Many students also interpreted recycling as the primary or only solution, with limited emphasis on reducing consumption or reusing containers.

On the system side, students reported uncertainty about where to dispose of specific items, especially during busy moments such as breaks or school events. In some areas, labeling was not sufficiently specific, and the school routines did not consistently reinforce sorting. Teachers expressed interest in integrating environmental learning into lessons but needed concrete media and assessment tools that fit within existing teaching structures.

These baseline observations supported the intervention logic: games would address knowledge gaps and build shared rules, while the project cycle would address system gaps by involving students in designing feasible improvements.

Pre–post test results showed an overall improvement in students' understanding of waste categories and 3R decision-making. Students were more consistent in identifying contamination and in justifying why certain materials should be treated as residual waste. Importantly, improvement was not limited to definitions; students increasingly used "because" explanations that referenced practical criteria such as cleanliness, material type, and recyclability.

To provide a transparent summary, Table 1 presents an example of the aggregated learning indicators. The numbers should be interpreted as program evaluation indicators rather than as strict experimental results, because the PKM design prioritized practical feasibility over controlled research conditions. Nevertheless, the pattern supports the conclusion that learning gains occurred and were meaningful for the school context.

Table 1. Summary of learning indicators before and after the PKM intervention

Indicator	Baseline (Pre)	After program (Post)	Interpretation
Waste category identification	Moderate; frequent errors on borderline items	Higher consistency; fewer errors on contamination/composites	Improved conceptual clarity and classification rules
3R prioritization (reduce–reuse–recycle)	Recycling emphasized; prevention rarely mentioned	More frequent reduce/reuse proposals in scenarios	Shift toward prevention-oriented thinking
Sorting behavior during practice	Inconsistent; reliance on peers/teachers	More confident; group-agreed rules used	Improved practical competence and social norms
Project skills (audit & product creation)	Limited experience with audit and documentation	Students completed a simple audit and produced exhibition outputs	Increased process skills and agency

Beyond the test, observation rubrics indicated that most student groups could perform sorting routines with minimal facilitator correction by the end of the program. Students began to remind each other about contamination ("rinse first," "remove food residue") and about placing items in the correct bin. Such peer regulation is a critical step toward sustained behavior because it shifts responsibility from external enforcement to shared norms.

Qualitative reflections reinforced these findings. Many students reported that the games helped them remember rules because the feedback was immediate and the challenge was social. Students also noted that scenario challenges made them think about "before waste happens," such as bringing reusable bottles or sharing materials rather than buying new items.

Teachers observed that students who were usually quiet in conventional lessons became more active in the game sessions. This suggests that game-based formats can broaden participation by offering alternative ways to contribute (speed, pattern recognition, strategic thinking, or leadership in teamwork).

FIGURE 2. *Q&A and reflection session: students actively raising hands during the PKM discussion.*

The PBL component required students to move from practice to system improvement. The project began with a simple waste audit. Students sampled waste from selected areas (classroom and/or canteen zones) and categorized it using agreed rules. Even a limited audit produced valuable insights: students could identify which items dominated the waste stream, and they could connect these patterns to school routines (e.g., snack packaging, photocopy paper, disposable cutlery during events).

Based on audit insights, student groups proposed improvement actions at two levels. At the individual level, they suggested behavior changes such as using reusable bottles, reducing packaged snacks, and reusing paper for drafts. At the system level, they proposed clearer bin labels, agreed sorting points, and peer monitoring roles. While not all proposals could be implemented immediately, the process itself built systems thinking and realistic planning.

A key output was the creation of upcycled products using selected recyclable materials. Students produced items such as simple organizers, decorative crafts, and functional products from bottles, cardboard, and clean plastics. The exhibition served as a public sharing moment, which is central in many PBL models because it increases accountability and pride. In the exhibition, students presented both the product and the "waste story": what material it came from, how it was cleaned and transformed, and what reduce/reuse lesson they learned.

In addition to student products, the PKM produced reusable learning media: sorting cards, scenario prompts, and rubrics that teachers can reuse. The school also drafted a short guideline for sorting practices. These artifacts support sustainability because they reduce dependence on external facilitators.

The combined approach worked because it aligned motivation, cognition, and practice. Games provided an accessible entry point. They transformed sorting and decision-making into structured challenges with quick feedback. This reduced fear of being wrong and increased willingness to try. The debrief sessions ensured that the games did not remain isolated activities; instead, they were explicitly connected to the school's real waste routines.

FIGURE 3. *Ice-breaking/role-play activity to strengthen participants' communication and collaboration during the training.*

PBL then translated engagement into responsibility. Students were not only asked to "care" about waste; they were invited to diagnose their own environment, make design decisions, and produce outputs that were visible to peers and teachers. This agency is consistent with EfSD, where learners are expected to act as change agents rather than passive recipients of sustainability messages.

The intervention also benefited from social learning dynamics. Sorting behavior is highly influenced by group norms: students look at what friends do, and shared routines can quickly become habits. By embedding sorting rules in group games and group projects, the program strengthened peer-to-peer reinforcement. This is

important for sustainability because teachers cannot monitor every disposal act, especially in high-traffic moments.

A further factor was feasibility. The games used low-cost materials, and the project tasks were designed to fit a school schedule. Teachers were involved as co-facilitators, which increased ownership and helped identify realistic follow-up actions. The program did not attempt to overhaul the entire waste system in one step; it prioritized a small but coherent pathway that could be expanded over time.

Despite positive outcomes, limitations should be acknowledged. The intervention duration was relatively short, so long-term habit persistence could not be fully verified. In addition, the evaluation focused on immediate learning indicators; future work could add longer-term tracking such as bin contamination rates over several weeks. Another limitation is that waste management is constrained by available infrastructure and external recycling systems. A school can sort well but still face challenges if downstream collection and recycling services are limited. Therefore, sustainability requires coordination with broader community systems.

FIGURE 4. *Classroom session during the PKM program: material delivery and on-site mentoring at SIM Selangor.*

The PKM generated impacts at multiple levels. At the student level, the program strengthened knowledge and practical competence, and it increased confidence to take action in daily routines. At the teacher level, it provided a concrete learning package that can be integrated into lessons and project activities. At the school level, it supported the development of shared sorting rules and visible artifacts (labels, guidelines, and student-made products) that reinforce environmental norms.

For sustainability, several follow-up strategies were recommended to the partner school. First, embed sorting routines into daily classroom procedures, supported by rotating student roles (e.g., “sorting monitor” and “cleanliness checker”). Second, conduct brief periodic audits (for example, monthly) to keep the topic visible and to generate data for reflection. Third, expand the reduce and reuse components by encouraging reusable bottles and lunch containers, and by designing school event guidelines that minimize single-use packaging. Fourth, maintain game-based micro-activities as warm-ups or reinforcement sessions; short games can keep rules fresh without requiring extensive lesson time.

The program also opened opportunities for dissemination beyond the partner school, such as sharing learning media and implementation notes with other Indonesian schools abroad or with local schools interested in replicating the approach. A sustainable path is to treat the developed materials as a modular toolkit: teachers can use a single game as a short intervention, or they can implement the full PBL cycle for deeper change.

The experience at SIM Selangor suggests several practical recommendations for schools and community service teams that want to replicate or scale a similar intervention. These recommendations are intentionally operational: they focus on what teachers and schools can realistically do with limited time and resources, while still preserving the core logic of EfSD, PBL, and game-based engagement.

Start with a short, concrete waste mapping activity. Before introducing a full project, schools benefit from a rapid “waste walk” or “bin check” that makes the problem visible. Students can take photos of waste points, record which bins are most contaminated, and list common items that are misclassified. This activity can be completed in less than thirty minutes and functions as an anchor for later reflection. The mapping also helps teachers avoid generic teaching; instead, lessons can directly reference the school’s own waste realities.

Use games as formative diagnosis, not as entertainment only. In practice, the card-sorting sprint revealed misconceptions that would have been hard to detect through lecture. Teachers can intentionally use the first round of the game as a baseline assessment: which items create debate, where do students hesitate, and what reasoning do they use? The facilitator can then design mini-lessons based on these “misconception hotspots.” This makes game time academically meaningful and also prevents the common pitfall where games are fun but disconnected from learning objectives.

Connect game feedback to a few clear sorting rules. Schools should not overwhelm students with many categories or complicated exceptions in early implementation. A limited set of rules, repeatedly practiced, is

more effective than a complex system that nobody follows. For example, a school might begin with three broad categories (organic, recyclable, residual) and later refine the recyclable category into subtypes (paper, plastic, metal) once routines are stable. Clarity in labels and consistent teacher language are essential. Students can help co-create the rules, but once agreed, the rules should be displayed visually at waste points.

Design the project around a "small win" that is visible. In a short PKM schedule, it is unrealistic to redesign all school infrastructure. The project should therefore target a small, feasible improvement that can be implemented immediately, such as creating a sorting corner in one corridor, improving labels, or establishing a weekly recycled craft exhibition. Visible outcomes matter: they demonstrate to the community that learning leads to action and they create momentum for future expansion. In the SIM Selangor case, the combination of a waste audit and an exhibition helped students see that their work produced something concrete.

Integrate reduce and reuse strategies into school events. Many waste spikes happen during celebrations, meetings, and food-related events. Schools can develop simple event guidelines that prioritize prevention: encourage reusable containers, provide water refilling stations, avoid single-use decorations, and coordinate with vendors for packaging reduction. Students can develop and present these guidelines as part of the project's "public product." This approach also supports value-based learning because it highlights that sustainability is not only about cleaning up after consumption but also about making wiser choices before consumption occurs.

Build teacher capacity through templates and micro-routines. Sustainability projects often fade when teachers feel that planning is too time-consuming. A replication toolkit should therefore include lesson outlines, printable cards, rubric templates, and suggested reflection questions. Teachers can then adapt rather than start from zero. Micro-routines, such as a two-minute "waste check" after lunch or a short weekly student report on bin contamination, can sustain attention without taking large blocks of instruction time.

Leverage student leadership and peer norms. One of the strongest sustainability mechanisms is peer influence. Schools can establish rotating student roles, such as "green ambassadors," "sorting buddies," or "audit reporters." These roles should not be punitive; they should be framed as leadership opportunities that build communication and responsibility. When students remind each other respectfully, habits become collective rather than individually enforced. In international or multicultural school environments, student leadership can also bridge cultural differences in waste habits by turning sorting into a shared identity practice.

Plan for partnerships with waste handlers and local recycling systems. A school's sorting efforts become more meaningful when students understand the downstream pathway. Even brief interactions with local waste management actors can enrich the learning narrative: students can learn why contamination matters, what materials are actually recyclable locally, and what economic factors influence recycling. For schools abroad, partnerships can include local municipal services, community recycling centers, or diaspora community organizations. These partnerships also reduce the risk of "symbolic recycling" where waste is sorted but later mixed in collection.

Finally, document and share the process. Replication improves when schools can see examples. Short documentation such as photos of game sessions, sample student reflections, and a one-page "how we did it" guide can be shared internally and externally. Documentation also supports accountability: it helps the school track which routines were adopted, what challenges emerged, and what goals should be set for the next cycle.

The program evaluation and narrative presented in this paper should be interpreted with an understanding of several limitations. The first limitation is duration. The PKM was implemented in a compact time frame to fit school schedules and resource constraints. While immediate learning gains and competence improvements were observed, sustained behavior change typically requires longer exposure and repeated reinforcement. Future work should therefore include a longer follow-up period, ideally several weeks or months, to examine whether sorting routines persist and whether contamination rates decrease over time.

The second limitation relates to measurement. The pre–post test provided a practical indicator of knowledge change, but it was not designed as a high-stakes standardized instrument. In addition, practical competence was observed through rubrics that rely on human judgement. Future studies could strengthen evaluation with more objective indicators such as weighing waste streams before and after intervention, tracking the proportion of correctly sorted items, or using simple digital logs for routine monitoring.

Third, waste management is deeply influenced by infrastructure and the wider waste-handling system. A school can establish sorting routines, but if collection services do not maintain separation, the educational message may be undermined. In such cases, schools may need to focus on reduction and reuse more strongly, and they may need to negotiate with local partners for separate collection where possible. Future PKM cycles could allocate time to build or formalize partnerships with waste handlers and to align school sorting categories with local processing realities.

Fourth, the international school context brings both opportunities and complexity. Students may encounter different waste norms at home, in local communities, and in school. What counts as "recyclable" can also vary across settings. Future work could include deeper cultural reflection sessions, where students compare waste practices across contexts and discuss how to adapt responsibly without imposing judgement. This can enrich EfSD learning by emphasizing empathy, contextual understanding, and shared responsibility.

In terms of program development, future iterations could explore hybrid formats that combine face-to-face activities with digital reinforcement. For example, short video reminders, digital quizzes, or a student-led social media campaign can sustain interest between sessions. Another promising direction is to connect waste projects with entrepreneurship or social innovation, for example by exploring small-scale "waste bank" models, product design thinking, or fundraising for environmental causes. Such extensions can strengthen the economic and social dimensions of sustainability, not only the environmental dimension.

Overall, the limitations do not negate the value of the program; rather, they define a realistic agenda for continuous improvement. The PKM at SIM Selangor should be seen as a pilot pathway that can be expanded into a multi-cycle sustainability learning program.

CONCLUSION

This community service program (PKM) at Sekolah Indonesia Malaysia (SIM) Selangor showed that waste-management education becomes more effective when it is designed as an action-oriented learning experience rather than as a slogan-based campaign. The intervention integrated game-based activities and project-based learning to build a coherent pathway from awareness to competence and from competence to shared routines.

Game-based activities served as an engaging entry point that helped students practice sorting decisions, correct misconceptions through immediate feedback, and develop shared classification rules. The subsequent project cycle enabled students to apply those rules to their real environment through simple auditing, planning, and the creation of tangible products and communication artifacts. As a result, students demonstrated improved conceptual understanding, more consistent sorting behavior during practice, and increased confidence to propose reduce and reuse solutions, not only recycling.

The program also supported teacher capacity by providing reproducible learning media and assessment tools. This is important because sustainable change in schools depends on teachers' ability to continue the practice after external facilitation ends. At the school level, the program contributed to visible outputs such as sorting guidelines and student-made recycled products, which can reinforce norms and provide continuity.

While the evaluation focused on immediate indicators, the implementation offers a practical model for other schools, including international or diaspora school contexts, that want to strengthen EfSD competencies through feasible activities. Continued cycles with longer monitoring and stronger partnerships with waste handlers are recommended to secure habit persistence and system-level improvements.

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Basic Literacy Competence Of Elementary School Teachers: A Case Study In Kepanewonan Godean, Sleman

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Abstract. Basic literacy competence is a fundamental prerequisite for elementary school teachers in supporting 21st-century learning and responding to rapid developments in information and communication technology. However, empirical evidence indicates that teachers' literacy competence has not yet been optimally developed, particularly in peri-urban contexts experiencing socio-technological transformation. This study aims to explore the profile of basic literacy competence of elementary school teachers in Kepanewonan Godean, Sleman Regency. Employing a qualitative single-case study design, data were collected from 29 elementary school teachers through open-ended questionnaires, Focus Group Discussions, in-depth interviews, and document analysis. Data were analyzed using an interactive qualitative analysis model encompassing data reduction, data display, and conclusion drawing. The findings reveal that teachers' basic literacy competence can be categorized into three interrelated domains: professional knowledge, professional instructional practice, and teachers' personal literacy development. Overall, teachers demonstrated a moderate level of literacy competence, with professional knowledge more strongly developed than instructional practice and professional self-development. While many teachers were able to analyze students' reading and writing profiles, only a small proportion demonstrated reflective and problem- solving-oriented literacy pedagogy. Literacy assessment practices remained largely summative, literacy-rich learning environments were predominantly classroom-centered, and teachers' engagement in professional literacy activities such as reading, writing, and knowledge sharing was limited. These findings indicate a persistent gap between conceptual literacy understanding and pedagogical implementation, influenced by structural constraints, digital pedagogical readiness, and institutional support. The study highlights the need for a systemic approach to strengthening teachers' basic literacy competence through practice-based professional development, supportive school ecosystems, meaningful technology integration, and the cultivation of a sustainable professional literacy culture.

Keywords: Basic literacy competence; elementary school teachers; literacy pedagogy; professional development; qualitative case study.

INTRODUCTION

In the context of the twenty-first century, literacy has become a fundamental competence that underpins educational quality, human resource development, and social participation. Contemporary education no longer positions teachers merely as transmitters of subject matter, but rather as facilitators who guide learners in accessing, interpreting, and using information critically across diverse contexts. Consequently, teachers are required to possess literacy competencies that exceed those of their students in order to design meaningful, relevant, and future-oriented learning experiences. However, empirical evidence suggests that not all teachers have attained adequate levels of basic literacy competence to meet these demands.

Improving the basic literacy skills of elementary school teachers, including reading and writing, numeracy, science, digital, financial, cultural, and civic literacy, is a strategic necessity to support 21st-century learning and respond to developments in information and communication technology (ICT). This urgency has been emphasized through various national policies, including the Minister of Education and Culture Regulation No. 23 of 2015 concerning Character Building and related regulations that emphasize the integration of literacy, numeracy, competence, and character in learning, which was then reinforced through the implementation of the National Literacy Movement (GLN) and the School Literacy Movement (GLS) as systematic efforts to build a culture of literacy in schools, families, and communities (Dayantri & Nasution, 2024; Hidayat & Kosasih, 2019; Ibda, 2018; Rakhmawati & Mustadi, 2022).

However, various studies show that the implementation of these policies still faces challenges in the field, such as uneven teacher literacy and numeracy skills, limitations in the development of literacy-based learning and assessment, and low digital literacy due to a lack of training and supporting infrastructure, which has an impact on student literacy achievement as reflected in national and international assessment results (Dasan, 2025; Purwasih & Wahananto, 2022; Riyani & Purnamasari, 2024; Solih & Julianto, 2025). Therefore, the literature recommends various strategies to strengthen teacher competencies, including through continuous training in literacy, numeracy, and digital skills, the integration of technology and interactive learning media, cross-subject and professional community collaboration, and the development of Higher Order Thinking Skills (HOTS) and 21st-century skills (4C) based learning, which have been proven to contribute to improving the

quality of learning and building a stronger school literacy ecosystem (Ibda, 2018; Mayudana & Sukendra, 2020).

Despite the implementation of various literacy policies and programs, literacy culture and reading engagement in Indonesia remain low, as reflected in UNESCO reports and international assessment results such as PISA, which consistently place Indonesia at the bottom in reading literacy skills (Ibda, 2018; Lewier & Da Costa, 2021; Ridlwan et al., 2022). UNESCO's reading interest index, which only reached 0.001, and the 2015 and 2018 PISA results show that the literacy skills of Indonesian students are generally still at a basic level, limited to simple information detection (Cahyani & Rasydah, 2020; Liestari, 2020). This condition has a systemic impact on the quality of learning and the development of 21st-century skills, placing elementary school teachers as key actors in strengthening literacy from an early age, even though they still face challenges in the form of limited training, less innovative learning methods, and gaps in infrastructure and digital literacy (Alamsyah et al., 2025; Asrul et al., 2023; Rusman et al., 2023).

From a pedagogical perspective, teachers' basic literacy competence is not limited to individual reading and writing skills. Rather, it represents a multidimensional construct that integrates professional knowledge, instructional practice, and ongoing professional development. Drawing on the framework of teacher competence, basic literacy competence can be categorized into three interrelated domains: (1) professional knowledge, which includes understanding and applying literacy strategies; (2) professional instructional practice, encompassing literacy-oriented teaching, assessment, mapping students' diverse reading and writing abilities, and managing literacy-rich learning environments; and (3) professional development, which involves teachers' continuous efforts to enhance their own literacy capacities. When these domains are adequately developed, teachers are better positioned to design adaptive learning pathways, conduct meaningful assessments, and foster students' literacy growth across contexts.

Previous empirical studies have indicated that many elementary school teachers still demonstrate limited literacy competence. Research on teachers' literacy awareness and literacy- based instruction has shown that only a small proportion of teachers achieve high literacy scores, while the majority remain at moderate or low levels. Other studies have emphasized the crucial role of teachers in school literacy movements, highlighting their functions as role models, motivators, facilitators, and creators of literacy-rich environments. Collectively, these findings suggest that teachers' literacy competence significantly influences students' literacy development, yet systematic evidence on the actual profile of teachers' basic literacy competence remains limited.

The issue of teachers' literacy competence becomes increasingly critical in peri-urban and buffer regions that experience rapid socio-economic and technological transformation. Kepanewonan Godean, Sleman, is one such area. Located adjacent to the city of Yogyakarta, Godean has undergone significant development driven by ICT advancement and increased access to higher education institutions. While this proximity offers strategic advantages, it also presents challenges related to information overload, digital exposure, and disparities in educational infrastructure.

Elementary school teachers in this context are required to navigate complex literacy demands, including digital information management, communication skills, and the cultivation of lifelong learning dispositions among students. However, variations in teachers' backgrounds, access to resources, and professional support may result in uneven literacy competence across schools and communities.

In response to these conditions, there is a need for in-depth empirical inquiry that captures the actual profile of elementary school teachers' basic literacy competence and identifies factors that shape it. Most existing studies focus on literacy outcomes or intervention programs, while fewer investigations provide a contextualized portrait of teachers' literacy competence as a foundation for evidence-based policy and professional development planning. Addressing this gap is essential to ensure that subsequent training programs, community service initiatives, and educational interventions are aligned with real needs and contextual challenges.

Accordingly, this study aims to explore the basic literacy competence of elementary school teachers through a qualitative case study conducted in Kepanewonan Godean, Sleman. By examining teachers' professional knowledge, instructional practices, and professional development related to literacy, this research seeks to provide a comprehensive portrait of teachers' literacy competence in a strategically significant region. The findings are expected to contribute to the broader discourse on teacher literacy in basic education and to inform the design of more targeted and sustainable professional development initiatives in the era of digital transformation.

Throughout this introduction, arguments are grounded in prior empirical and theoretical studies on teacher literacy and digital competence. Research has highlighted persistent terminological and conceptual gaps between literacy, digital literacy, and information literacy (Manabat, 2021), as well as the urgent need to strengthen teachers' digital and information literacy in basic education (Fernández-Otoya et al., 2024; Jung et al., 2024). Studies have further emphasized that rapid technological change requires teachers to continuously adapt their pedagogical and literacy competencies in order to support students' learning and well-being in digital environments (Díaz- Burgos et al., 2023; Weber et al., 2025). In addition, international evidence underscores the

importance of developing teachers' literacy and digital competence as part of broader professional development strategies in both basic and higher education contexts (Wang & Zhang, 2025a). These studies collectively provide a conceptual foundation for examining basic literacy competence among elementary school teachers within specific local contexts, such as Kepanewonan Godean, Sleman.

Thus, strengthening the basic literacy skills of elementary school teachers is a strategic necessity for improving the quality of education and preparing students to face global challenges. Consistent policy support, ongoing training based on the real needs of teachers, and the integration of technology in learning are key to the successful implementation of literacy in elementary schools.

METHOD

This study employed a qualitative approach using a single-case study design to obtain an in- depth understanding of elementary school teachers' basic literacy competence within a specific real- life context, namely Kepanewonan Godean, Sleman Regency. The case study approach was selected because it enables a holistic exploration of the phenomenon by considering social conditions, educational policies, and instructional practices as they naturally occur in the field (Yin, 2018). This design is particularly appropriate for examining teachers' literacy competence as a complex phenomenon that is inseparable from the institutional and cultural contexts in which teachers perform their professional roles.

The study was conducted in several elementary schools located in Kepanewonan Godean, with elementary school teachers actively engaged in teaching serving as the primary participants. Participants were selected through purposive sampling, taking into account their involvement in instructional practices and school literacy activities. The timing of data collection was adjusted to the teachers' availability to ensure that data gathering occurred naturally without disrupting their professional responsibilities.

Research data were collected using a combination of Focus Group Discussions (FGDs), in- depth interviews, and document analysis. FGDs were employed to capture teachers' collective perspectives on their understanding, experiences, and challenges in developing and implementing basic literacy competence in classroom practice. In-depth interviews were conducted individually to obtain more reflective data regarding teachers' literacy competence, instructional strategies, and literacy assessment practices. In addition, documentation in the form of assessment records, activity reports, and relevant policy documents issued by the Sleman Regency Office of Education and Youth was used as supporting data to strengthen field findings. In this qualitative study, the researcher served as the primary research instrument, being directly involved in data collection, analysis, and interpretation, consistent with the characteristics of qualitative inquiry (Creswell & Poth, 2018).

Data analysis was conducted simultaneously and continuously using the interactive analysis model developed by Miles and Huberman (2009), which consists of data collection, data reduction, data display, and conclusion drawing and verification. Data reduction involved selecting relevant information, coding the data, and identifying patterns and themes representing teachers' basic literacy competence. The reduced data were then presented in narrative form and thematic matrices to facilitate interpretation and meaning-making. Conclusions were drawn gradually while maintaining a reflective and open stance toward the emergence of new insights throughout the analysis process.

Data trustworthiness was ensured through the application of source triangulation and method triangulation by comparing findings from FGDs, interviews, and documentation. In addition, an audit trail was maintained through discussions and reflective processes among the research team to ensure methodological consistency and rigor. To support transferability, the research context was described in sufficient detail to allow readers to assess the applicability of the findings to other elementary education contexts with similar characteristics (Guba & Lincoln, 1981).

RESULTS AND DISCUSSION

Results

This study involved 29 elementary school teachers from Kepanewonan Godean, Sleman Regency, comprising 23 female teachers and 7 male teachers, with teaching experience ranging from 2 to 20 years. All participants served as homeroom teachers from Grades 1 to 6 and were selected through purposive sampling to ensure representation of diverse grade levels and teaching experiences. Data collection was conducted in several stages, beginning with an open-ended questionnaire to capture teachers' initial perceptions and self-reported practices related to basic literacy competence. These preliminary data were subsequently elaborated and validated through a series of Focus Group Discussions (FGDs) and in-depth interviews, all of which were conducted at Madrasah Ibtidaiyah Candran, Godean, providing a shared and familiar setting that facilitated open professional dialogue among participants.

The findings reveal that teachers' basic literacy competence can be systematically classified into three interrelated domains, namely professional knowledge, professional instructional practice, and the development of teachers' personal literacy skills, with varying levels of achievement observed across these domains. Overall, the distribution of competence indicates a stronger orientation toward conceptual understanding than toward reflective practice and sustained professional literacy development.

In the domain of professional knowledge related to literacy strategies, the majority of teachers demonstrated competence at the level of analysis and interpretation of students' reading and writing profiles. Specifically, 48% of teachers were able to analyze and interpret students' reading abilities across key components, including letter knowledge, phonemic awareness, reading fluency, vocabulary, and reading comprehension. In addition, these teachers demonstrated the ability to examine students' writing skills in terms of idea development, organization, mechanics, language use, and point of view, and to articulate the role of literacy-rich environments in supporting students' motivation to read and write. This group represents the largest proportion of participants and reflects a shift beyond basic descriptive understanding toward more analytical literacy awareness. However, only 14% of teachers reached the highest level of professional knowledge, characterized by the ability to evaluate literacy problems, formulate instructional solutions, and engage in systematic reflection on students' reading and writing difficulties. This disparity suggests that while conceptual literacy knowledge is relatively well established among many teachers, advanced reflective and problem-solving capacities remain limited to a small subset of practitioners.

With respect to professional instructional practice, particularly literacy-oriented teaching and assessment, notable variation was also observed. Approximately 38% of teachers reported developing instructional designs that considered students' learning characteristics and needs and applying both formative and summative literacy assessments on a regular basis. These teachers also demonstrated the use of multimodal learning media, adjusting instructional resources to align with students' reading levels and learning profiles. Nevertheless, a substantial proportion of teachers (31%) continued to rely on simplified instructional designs dominated by summative assessment, with limited differentiation or integration of literacy strategies. In addition, 14% of teachers reported using a single type of learning medium for all students regardless of individual differences. Only 14% of teachers explicitly integrated reading and writing strategies into instructional activities in a systematic and intentional manner, indicating that pedagogical integration of literacy has not yet become a dominant or widespread instructional practice.

Regarding the mapping of students' diverse reading and writing abilities, the findings indicate gradual progress toward more systematic assessment practices. The largest group of teachers (38%) conducted reading and writing profiling at multiple points during the academic year and implemented targeted follow-up interventions to support students' literacy development. Furthermore, 17% of teachers reported conducting regular, ongoing assessments and providing instructional adjustments based on students' individual literacy profiles. However, despite these positive practices, FGDs revealed that time constraints and dense instructional schedules were the primary barriers to conducting continuous and comprehensive literacy mapping. Teachers frequently cited competing curricular demands and administrative responsibilities as factors limiting sustained assessment efforts.

In terms of the management of literacy-rich learning environments, the findings show that 38% of teachers had adjusted classroom layouts and provided literacy-supporting facilities, such as reading corners and supplementary books. However, literacy activities—particularly reading—were often implemented on an incidental rather than systematic basis. Only 10% of teachers reported achieving an optimal level of literacy environment management, characterized by scheduled reading activities, deliberate selection of enrichment texts, and active involvement of students, parents, and the broader school community. These results indicate that literacy environment management remains largely classroom-centered and has not yet evolved into a collaborative, school-wide literacy ecosystem.

Finally, in the domain of teachers' personal literacy skill development, the findings reveal relatively limited engagement beyond formal participation. While 38% of teachers reported membership and participation in professional forums or teacher associations, such participation was primarily confined to attending seminars, workshops, and training programs as participants. Teachers who demonstrated active engagement in reading professional literature, writing reflective or scholarly texts, and disseminating best instructional practices or research findings accounted for only 3% of participants. This finding suggests that professional literacy culture among teachers remains underdeveloped and continues to rely heavily on institutional or structural initiatives, rather than emerging as an internally sustained professional practice.

Discussion

The findings of this study indicate that elementary school teachers' basic literacy competence in Kepanewonan Godean is situated at a moderate level, with a stronger emphasis on professional knowledge than on instructional practice and professional self-development. This imbalance reflects a persistent gap between conceptual understanding and pedagogical enactment of literacy, a phenomenon that has been widely reported in

studies of teacher literacy within elementary education contexts. While teachers generally demonstrate awareness of literacy concepts and frameworks, the translation of such knowledge into sustained instructional practices and reflective professional behavior remains limited. This finding reinforces earlier research suggesting that literacy competence is not solely a matter of knowledge acquisition, but also of pedagogical habit formation and institutional support structures.

The predominance of teachers operating at the level of analysis and interpretation of students' literacy profiles (48%) suggests that many teachers have moved beyond purely traditional, transmission-oriented instruction. Teachers in this category demonstrate the capacity to recognize variations in students' reading and writing abilities and to articulate literacy-related challenges with a degree of analytical sophistication. However, the relatively small proportion of teachers capable of critical reflection and solution formulation (14%) indicates that higher-order pedagogical literacy has not yet been internalized as a dominant professional competence. This gap highlights the need for literacy pedagogy that explicitly foregrounds reflective practice and instructional decision-making, rather than focusing primarily on diagnostic skills. In digitally mediated learning environments, such pedagogical competence becomes increasingly important, as teachers are expected to design adaptive instructional strategies, including multimodal learning and flipped classroom approaches, that promote students' autonomy, engagement, and self-regulated learning (Wang & Zhang, 2025).

In relation to literacy assessment, the continued reliance on summative assessment practices among the majority of teachers reflects limited integration of literacy within digitally enriched instructional contexts. This finding aligns with previous studies showing that assessment practices often lag behind curricular and pedagogical reforms. In contrast, formative and multimodal literacy assessment has been identified as a critical mechanism for fostering sustained reading and writing development, particularly when aligned with digital tools that support feedback, monitoring, and differentiation. International assessment frameworks such as PISA emphasize literacy as a multidimensional construct encompassing access to information, effective use of texts, and ICT competence across reading, science, and mathematics domains (Çelik et al., 2024). Consequently, strengthening teachers' digital pedagogical competence is not merely a technical requirement, but a strategic necessity for transforming assessment practices from evaluative routines into instruments of learning enhancement (Bentri & Hidayati, 2023).

The positive trend observed in teachers' ability to map the diversity of students' reading and writing abilities, particularly through systematic reading and writing profiling, indicates growing awareness of differentiated instruction. However, the persistence of time constraints and administrative workload as major barriers underscores structural challenges that cannot be addressed solely through individual teacher capacity building. This finding suggests the need for curricular and organizational reform, particularly within pre-service teacher education programs, to integrate literacy assessment and digital competence as core professional skills rather than supplementary components. As emphasized by Dolezal et al. (2025), teacher education curricula must adopt a more holistic approach that aligns literacy pedagogy, assessment literacy, and digital competence to prepare future teachers for complex classroom realities.

With regard to the management of literacy-rich learning environments, the findings reveal that literacy remains predominantly conceptualized as a physical and classroom-centered practice, with limited extension into broader school or community contexts. The minimal involvement of parents and community stakeholders indicates that literacy has not yet been positioned as a sustainable social ecosystem. Previous studies emphasize that both physical and digital literacy environments are shaped by institutional structures, leadership practices, and policy alignment, all of which require systematic direction and long-term commitment (Jung et al., 2024; Weber et al., 2025). Without such systemic support, classroom-level literacy initiatives risk remaining fragmented and episodic.

The very low proportion of teachers actively engaged in reading, writing, and sharing professional knowledge (3%) further illustrates that professional literacy has not yet evolved into a cultural norm within the teaching profession. This condition reflects the interplay of economic constraints, employment status, motivational factors, and organizational culture, which collectively influence teachers' capacity and willingness to invest in sustained professional development. In the digital era, however, teachers' participation in online learning communities, knowledge production, and reflective professional discourse is increasingly recognized as a prerequisite for sustainable professional growth and instructional innovation (Rahma et al., 2024). The absence of such engagement risks perpetuating a cycle in which professional learning remains externally driven rather than internally sustained.

From a broader perspective, the findings of this study emphasize that strengthening teachers' basic literacy competence requires a systemic and multi-level approach. Such an approach should integrate practice-based professional development, supportive school ecosystems, strategic technology integration, and the cultivation of a sustainable professional literacy culture among teachers. At the policy level, these findings suggest the importance of aligning literacy initiatives with workload management, incentive systems, and school leadership practices. At the institutional level, schools should foster collaborative literacy practices that extend beyond classrooms and engage families and communities. At the individual level, teachers should be supported in

developing reflective and generative literacy practices that position them not only as literacy instructors, but also as lifelong learners and knowledge producers.

Finally, this study opens several avenues for future research. Subsequent studies could employ longitudinal designs to examine the development of teachers' literacy competence over time and to assess the long-term impact of targeted professional development interventions. Comparative studies across regions or school types would also provide deeper insights into contextual factors shaping literacy competence. In addition, future research may integrate quantitative or mixed-method approaches to examine relationships between teachers' literacy competence, instructional quality, and student learning outcomes. Such investigations would further strengthen the empirical foundation for evidence-based literacy policy and practice in elementary education.

CONCLUSION

This study concludes that elementary school teachers' basic literacy competence in Kepanewonan Godean is generally at a moderate level, with professional knowledge more strongly developed than instructional practice and professional literacy self-development. While many teachers demonstrate adequate capacity to analyze students' reading and writing profiles, the translation of this knowledge into reflective, problem-solving-oriented literacy instruction and formative assessment remains limited. These findings indicate a persistent gap between conceptual literacy understanding and pedagogical implementation, influenced by structural constraints, digital pedagogical readiness, and limited professional literacy culture. Overall, the study emphasizes that strengthening teachers' basic literacy competence requires a systemic approach that integrates practice-based professional development, supportive school ecosystems, meaningful technology integration, and the cultivation of sustainable professional literacy practices to enhance the quality of elementary education.

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Bridging The Gap: Enhancing School Library Services In Private Islamic Schools Via The Integrated Competence Model (M-Pkt) – A Participatory Action Research.

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Abstract. Private madrasas play a vital role in basic education in Sleman Regency, but the management of their libraries is often hampered by limited human resources (HR). The majority of managers are teachers with additional duties who do not have a background in library science, resulting in stagnant services and not meeting national standards. This study aims to implement and evaluate the impact of the *Integrated Competency Model* (M-PKT) as an intervention strategy to improve service quality and management competence. Using the *Participatory Action Research* (PAR) approach, this study involved 25 private Islamic elementary school library managers, with intensive assistance carried out at 1 pilot school location. The intervention includes three pillars of competence: technical (automation), managerial, and socio-cultural. The results of the study showed a significant impact on three dimensions: (1) Technical Dimension: Successful transition from manual to digital systems with 350 collection titles cataloged according to DDC standards; (2) Service Dimension: There was a 40% increase in student visits post-intervention, indicating an improvement in *service quality*; and (3) Psychological Dimension: 80% of participants reported an increase *in self-efficacy* in managing the library. The study concludes that M-PKT is an effective and *low-cost* model for empowering library teachers to address quality gaps in private schools with limited resources.

Keywords: School Library Management, Librarian Competence, M-PKT, Participatory Action Research, Private Madrasah.

INTRODUCTION

Globally, school libraries have long been recognized as a fundamental catalyst in the education ecosystem. A professionally managed school library is key to equipping students with information literacy skills and lifelong learning [1]. Meta-analysis research by Lance and Kachel in the United States and Europe has consistently shown a positive correlation between the existence of certified school librarians and students' academic achievement, regardless of the school's socio-economic status [2]. However, this ideal narrative often contrasts with the reality in developing countries (Global South), where the gap in human resources (HR) is a chronic structural barrier.

In Indonesia, the disparity between regulation and implementation is still a major issue. Although the National Library Regulation Number 4 of 2024 has set the qualification standards for library personnel [3], its implementation in the field is still far from expectations. This phenomenon created what Pike called *"The Accidental Librarian"* or librarians who were born by chance, not by design of the profession [4]. In this context, classroom teachers are often given "additional tasks" to manage libraries without adequate librarianship pedagogy. As a result, school libraries are trapped in a static function as a bookstore, failing to carry out their dynamic role as a center of learning [1].

School libraries play a crucial role as a hub for literacy initiatives and resources, which directly impact students' academic achievement. In Sleman, Yogyakarta, the Islamic education sector is supported by private madrassas because most Islamic-based schools have the status of private schools. This proportion puts the private sector in a strategic position, but it is also vulnerable to structural obstacles such as limited facilities and infrastructure, and difficulties in procuring books, which are often found in madrasah library management. Saifudin and Istiqomah highlighted that private madrassas often escape government training schemes that tend to be *top-down* and focus on public schools [5]. The absence of professional librarians forces teachers to concurrently hold positions (*double burden*), which has an impact on low *self-efficacy* and service quality [6].

The fundamental problem faced by *these "accidental librarians"* is not just technical incompetence (such as cataloging), but managerial and advocacy incompetence. International literature suggests that technical training alone is no longer enough. Moreillon emphasized the importance of leadership and collaboration competencies for school librarians to be able to survive in the midst of budget constraints [7]. Unfortunately, the intervention model that exists in Indonesia so far is still partial and ignores the socio-psychological aspects of managers [8].

Responding to these theoretical and practical gaps, this study proposes a new approach through the implementation of the Integrated Competency Model (M-PKT). In contrast to conventional training, M-PKT integrates three pillars of competence: technical (automation/SLiMS), managerial (leadership), and socio-cultural (self-empowerment). Through the *Participatory Action Research* (PAR) methodology, this study not only aims to evaluate the effectiveness of the model, but also actively accompanies the transformation of services in pilot/pilot schools. This research contributes to the global literature by offering an adaptive library HR empowerment framework for schools in developing countries with limited resources.

LITERATURE REVIEW

1. The Strategic Role of School Libraries in Islamic Education

School libraries have a vital role as a center of academic knowledge and are an important component of the education system that supports the teaching and learning process [1,9–11]. The role of libraries is not limited to the provision of textbooks, but also includes the provision of diverse information resources and a means for the development of reading interests and cultures [1,11].

Specifically, libraries function as learning resource centers, literacy activists, and play a strategic role in fostering a school literacy culture, which has a positive impact on all aspects of education [128]. The goal is to develop students' literacy towards information so that students who like to read and learn can use strategies to protect their identity and personal information. School libraries, when managed effectively, are also powerful tools for improving Foundational Literacy and Numeracy (FLN) and promoting a lifelong reading culture among students [13]. Research shows that well-managed libraries can produce information *literate* students who are competent, independent learners and participate responsibly and ethically in society [1].

2. Gaps and Challenges of Library Services in Islamic Private Schools

Although the role of libraries is crucial, library services in Indonesia, including in Islamic private schools (Madrasahs), face significant challenges that create gaps in service quality. Many school libraries do not meet the standards set due to a variety of issues, including staffing shortages [9]. Many librarians in Islamic private schools do not have a formal educational background in the field of libraries, which leads to difficulties in providing optimal services. These limited competencies often include low digital literacy and a lack of mastery of information technology, especially library automation systems. In fact, the quality of library services is directly proportional to the level of competence of librarians [10].

Challenges also arise from limited infrastructure, lack of training, and outdated book facilities. In some cases, the library's operating budget is below the government standard, which should be at least 5% of the total school budget, excluding staff and building maintenance costs [9,14].

The function of libraries is often reduced to just a place to borrow books, and their full potential as a learning medium, digital literacy supporter, or reference for learning activities has not been optimally utilized. In addition, the lack of collaboration with teachers and the lack of institutional support affect students' perception of libraries [14].

3. Integrated Competency Model (M-PKT) as a Service Improvement Strategy

Research shows that professional training and development are essential to build and retain staff qualifications [15]. The Integrated Competency Model (M-PKT) must include the competency dimensions required by national and international standards. Librarians must have expertise in collection management (selection, procurement, organization, and weeding). This includes the ability to professionally plan, budget, and manage library operations [1]. The operation of the library must refer to the National Library Standards, which include collection standards, facilities, services, manpower, administration, and management. Evaluation models such as CIPP (Context, Input, Process, Product) or CIPPO (including Outcome) are often used to assess the extent to which these training and management programs are successful [9].

In the modern context, librarians are required to master library automation technology, such as the implementation of the Senayan Library Management System (SLiMS), to improve the efficiency and accessibility of services. Librarians must also be able to be facilitators in the teaching of information literacy, which includes the skills of searching, evaluating, and using digital information ethically [1].

Qualified librarians must take on instructional roles, provide professional development for teachers, and collaborate with teaching staff to integrate literacy activities into the curriculum. This collaborative role (including with principals, teachers, and the community) is critical to ensuring library programs support the school's overall educational goals [1].

4. **Participatory Action Research (PAR) in the Context of Quality Improvement**

Improving the quality of education in Madrasah or Islamic Schools requires a comprehensive institutional development strategy, including changing views on education, adherence to policies, the creation of a good institutional culture, and changes in the learning process [16]. Action Research is in line with this effort because it involves active participation in the process of change.

The implementation of strategies to improve the quality of library services, including the formation of a competitive mindset of students through *rewards*, the development of teacher creativity in PBM, learning service innovation, and curriculum innovation, requires a directed, disciplined implementation and ensures the realization of good educational quality [16]. Participatory *Action Research* will enable library managers (who generally face competency and resource issues) to not only accept knowledge transfer (such as SLiMS training that has been shown to increase participant confidence and library visits), but also actively design and implement sustainable change, with strong institutional support. This is in line with the need for monitoring and evaluation (as suggested by the CIPP model) to measure program impact and ensure continuous improvement [1].

Metaphorically, M-PKT is like providing a set of smart keys (integrated competencies) to library managers (Islamic private schools), not just one old key. However, in order for this smart lock to truly open the door to service improvement, guidance is also needed to ensure that every door (service) in the educational building is used optimally, integrated with all rooms (curriculum), and fully supported by the owner of the school management.

METHOD

The study adopts a *Participatory Action Research* (PAR) design, a collaborative inquiry approach designed to solve practical problems while generating theoretical knowledge. Referring to Framework [17], this research is carried out in a spiral cycle consisting of four stages: *planning*, acting, *observing*, and *reflecting*. The choice of the PAR method is based on its emancipatory goal, which is to empower practitioners (teacher-librarians) to transform their own previously stagnant library management practices. In contrast to conventional experiments that place researchers as distant observers, PAR requires researchers and participants to collaborate equally in identifying problems and formulating sustainable local solutions [18].

Participants in this study involved 25 library managers from various Private Islamic Elementary Schools (Madrasah Ibtidaiyah) in Sleman Regency, Yogyakarta. The selection of participants was carried out using *purposive sampling* with the main criteria: teachers who hold additional duties as heads or library staff but do not have a background in library science education. To ensure the depth of the intervention, this study determined one main pilot location, namely the Nurul Huda Private MI, for intensive assistance. This approach is in line with the principles of *Community-Based Participatory Research* (CBPR) emphasized by Minkler [19], where deep community involvement at one key *site* is more effective at modeling systemic change before replicating it to another.

The main intervention is carried out through the implementation of *the Integrated Competency Model* (M-PKT), which includes technical workshops, managerial assistance, and socio-cultural strengthening. Data collection was carried out using the source triangulation technique, which combined: (1) Library statistics (visit data and cataloguing volume) as evidence of objective performance; (2) Participatory observation during the mentoring process; and (3) *Self-assessment* to measure changes in *participants' self-efficacy*. Data analysis is carried out iteratively at the end of each action cycle. Quantitative data were analyzed descriptively to see trends in service improvement, while qualitative data from observation and reflection were analyzed to understand the barriers and successes of model implementation, ensuring the validity of findings through the convergence of evidence from various data sources.

RESULT

Initial observations at the pilot location (Nurul Huda Private MI) showed a worrying condition of the library. Piles of unclassified books, unrecorded manual circulation, and gloomy spaces. However, after the first cycle of M-PKT intervention (the pillar of technical competence), there was a drastic change in collection governance. Through intensive assistance in the use of SLiMS (*Senayan Library Management System*), the management team succeeded in digitizing and cataloging 350 main book titles within two months. Physical evidence of this success can be seen from the installation of the DDC standard *call number* label on the back of the book and the functioning of the OPAC (*Online Public Access Catalog*).

One of the participants (Librarian, 34 years old) revealed in an interview the following.

"Dulu saya bingung kalau ada siswa tanya buku cerita Nabi ada di mana, karena semua ditumpuk jadi satu. Sekarang, setelah input ke sistem dan diberi label warna, saya tinggal ketik di komputer atau lihat rak, langsung ketemu. Rasanya pekerjaan jadi ringan sekali." (Wawancara, 10 Agustus 2025).

On the managerial dimension, the intervention is focused on the *re-layout* of libraries to eliminate the impression of rigidity. Based on field *notes* on July 25, 2025, the research team and participants changed the arrangement of the shelves that originally covered the window light to be more open and added a child-friendly reading *corner area*. Post-intervention observations showed significant changes in the atmosphere; The once-quiet library is now more lively. Documentary evidence in the form of photos of activities shows that students are starting to feel comfortable reading while discussing in the newly provided carpeted area. This was also conveyed by the Principal of MI Nurul Huda, who gave the following testimonial.

"Perpustakaan kami dulu sering dikunci dan hanya dibuka saat jam istirahat kalau ada guru yang sempat. Sekarang, dengan manajemen jadwal piket yang diajarkan tim PKM, perpustakaan selalu buka dan tata letaknya membuat anak-anak betah, tidak lagi dianggap tempat angker." (Dokumentasi, 2 September 2025).

The most quantifiable impact of the implementation of M-PKT is the drastic increase in visit statistics. Visitor *logbook* data shows a consistent upward trend. Before the intervention (June 2025), the average daily visit was only around 10-15 students. One month after full implementation (September 2025), this figure jumped to an average of 25-30 students per day, or an increase of 40%. The analysis of borrowed documents also shows the diversification of borrowed books; Students not only borrow lesson pack books, but also begin to explore newly cataloged collections of fiction and enrichment. Observations during break hours showed a queue of students at the circulation table who are now using *barcode scanners*, an unprecedented sight in the madrasah.

The results of *the pre-test* survey showed that the majority of participants experienced a crisis of confidence, feeling "forced" to carry out library tasks. However, *post-intervention self-assessment* data showed a fundamental paradigm shift: 80% of participants reported an increase *in self-efficacy*. They no longer see themselves as "bookkeepers", but rather as information managers. In the final *Focus Group Discussion* (FGD) session, a senior teacher (45 years old) stated the following.

"Awalnya saya minder kalau bertemu pustakawan dari sekolah negeri, rasanya ilmu saya nol. Tapi setelah pelatihan M-PKT ini, saya jadi tahu kalau mengelola perpustakaan itu ada seninya (sosial-kultural). Saya jadi percaya diri mempresentasikan program perpustakaan di depan komite sekolah untuk minta dana." (FGD, 15 September 2025).

The *unintended outcome* of this research is the formation of an embryonic cooperation network between private madrasah library managers in Sleman. The communication forum, which was initially formed through a WhatsApp group for M-PKT technical assistance, has developed into a best *practice sharing space*. Evidence of digital conversations shows that there is an initiative to exchange information about book donors and SLiMS technical solutions. This indicates that M-PKT has succeeded in instilling sustainable social competence, where these "impromptu librarians" no longer feel that they are struggling alone in their respective schools.

DISCUSSION

Findings of a 40% increase in student visits confirm Wilson's "Information Barrier" theory [20], which states that physical and psychological barriers are the main enemies of information access. Before the M-PKT intervention, the chaos of libraries created cognitive barriers for students to find books. Technical transformation through cataloguing and shelf rearrangement effectively breaks down those barriers. In line with the findings of Lance and Kachel, when libraries are managed in a structured manner, students feel they have more control over their information search process, which directly increases motivation to visit [2]. This proves that even in schools with low resources, improvements in basic *management* have a high elasticity of impact on *user engagement*.

This study provides empirical evidence for the empowerment concept *of "The Accidental Librarian"* initiated by Gordon [21]. The majority of teachers in private madrassas in Sleman initially viewed library assignments as an additional administrative burden. The M-PKT model has succeeded in changing this perception through an integrated competency approach. By equipping them *with technical skills* (SLiMS), they feel competent; by equipping *them with* managerial skills, they feel they have autonomy. The *self-efficacy*

results of 80% confirm the argument that *mastery experiences,* such as successfully cataloging 350 books, are the main source of confidence [22]. M-PKT not only improved the library, but "improved" its librarians.

The success of *the re-layout of* the library space in attracting the interest of students can be explained through the concept of "Library as Place" or *Third Place* from Oldenburg. In a madrasah environment that is dense with academic and religious activities, students need a neutral third space for intellectual recreation. M-PKT's intervention transformed the library from a "warehouse" into a comfortable lesehan reading room, facilitating the social and literacy needs of students at the same time. Schultz-Jones and Oberg, in their global study, note that in developing countries, school libraries are often students' only access to quality reading materials outside of textbooks; Therefore, physical comfort (*ambiance*) is a crucial determining variable [1].

The advantage of M-PKT over conventional training lies in its holistic nature. Many library training programs in Indonesia only focus on the technical aspect (IT/Automation), but forget about the socio-cultural aspect. In fact, Wardani and Wicaksono found that the personal competence of librarians greatly affects the quality of service [23]. This research proves that technical competence (book input) will not be sustainable without managerial competence (managing schedules) and social competence (serving in a friendly manner). The synergy of the three pillars in M-PKT creates a complete service ecosystem, answering criticism of partial training that has not been effective in changing the work culture in private schools.

In the context of education policy, these findings highlight the sharp gap between public and private schools in Sleman. As the data on the dominance of Islamic-based schools is private, this shows that the burden of basic education in this area is supported by the community (*community-funded*). Government intervention is often biased towards public schools. Therefore, community-based intervention models such as PAR applied in this research are viable alternative solutions. Studi ini mendukung argumen Minkler bahwa kemitraan universitas-sekolah dapat menjadi jembatan (*bridging mechanism*) untuk mentransfer sumber daya pengetahuan ke institusi yang terpinggirkan secara struktural [19].

One of the strategic values of M-PKT is *cost-effectiveness*. Small private schools often can't afford expensive software or hire professional consultants. The use of *open-source* software (SLiMS) and the use of *existing staff* prove that library modernization does not always require a large budget (*high budget*), but requires human resource capacity (*high capacity*). This is in line with IFLA principles [1], which drive adaptive local solutions to achieve minimum service standards. The formation of a communication network between madrasah librarians becomes social capital that ensures the sustainability of this spirit of change after the mentoring ends.

Despite showing positive results, this study had limitations on the relatively short duration of the intervention (3 months) and the limited coverage of participants in one sub-district in Sleman. It is not yet certain whether this competency will last in the long term (1-2 years) without continuous refreshment. Further research is recommended to conduct longitudinal studies to measure competency retention and the impact of student literacy in more depth (e.g., the correlation of visits with Indonesian values). In addition, replication of the M-PKT model to other levels of education (MTs/MA) is needed to test the external validity of this model on a broader scale

CONCLUSION

This study concludes that the Integrated Competency Model (M-PKT) is an intervention strategy that has proven effective in breaking the chain of stagnation of library services in private madrasas that have limited resources. Through the *Participatory Action Research* (PAR) approach, M-PKT has succeeded in transforming the phenomenon *of "Accidental Librarian"* teachers with double burdens into competent information managers, characterized by the digitization of 350 collections and an 80% increase *in the self-efficacy* of managers. Simultaneously, a 40% spike in student visits confirms that the synergy between technical improvements in services and the revitalization of physical spaces (*Library as Place*) can break down students' psychological barriers to literacy access. More than just a technical solution, this study proves that the structural gap between public and private schools can be bridged through a *low-cost* but systemically *high-impact* community-based collaboration model, making M-PKT a replicable adaptive framework for school library empowerment in developing countries.

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Enhancing Elementary School Teachers' Innovative Teaching Competence Through A Deep Learning–Based Professional Development Program

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Abstract. The role of elementary school teachers has shifted toward facilitating innovative, student-centered learning aligned with 21st-century competencies. However, many teachers continue to face challenges in translating innovative pedagogical concepts into classroom practice, particularly in contexts with limited access to sustained professional development and technological resources. This study aims to examine the effectiveness of a deep learning–based professional development program in enhancing elementary school teachers' innovative teaching competence. Employing a pre-experimental one-group pre-test–post-test design, the study involved 32 elementary school teachers from two Madrasah Ibtidaiyah in Godean District, Indonesia. The intervention consisted of an in-house training workshop, followed by online mentoring through a professional learning community and supervision activities. Data were collected using a 15-item questionnaire measuring innovative teaching competence and were supported by observations and participant reflections. The results indicate a significant improvement in teachers' innovative teaching competence, with the mean score increasing from 3.40 in the pre-test to 3.96 in the post-test. Improvements were observed across instructional planning, teaching strategies, student engagement, and reflective practice, although technology integration remained the lowest-scoring aspect. Qualitative findings further reveal increased teacher confidence, engagement, and willingness to experiment with innovative and deep learning–oriented instructional practices. The study concludes that deep learning–based professional development, when combined with sustained mentoring and contextual support, can effectively strengthen teachers' innovative teaching competence. These findings contribute empirical evidence to the literature on teacher professional development and offer practical implications for designing sustainable training models in elementary education settings with limited resources.

Keywords: Deep learning; professional development; innovative teaching; elementary school teachers; teacher competence

INTRODUCTION

The role of elementary school teachers has undergone a fundamental shift from being mere transmitters of knowledge to facilitators of 21st-century learning who function as agents of change in systematically developing students' cognitive, social, and character foundations. Global educational reforms and the growing demands of 21st-century competencies position teachers as designers of learning environments that promote active engagement, creativity, critical thinking, collaboration, and meaningful learning experiences through the implementation of innovative and learner-centered pedagogy (Harris & Jones, 2019). In practice, teachers are expected not only to act as learning facilitators but also as motivators, mentors, and evaluators who provide constructive feedback and adapt curricula to students' needs and contextual realities (Chand & Kumar, 2025; Leeuwen & Janssen, 2019). Nevertheless, the optimization of these roles continues to face various challenges, including limited access to sustained professional development, time constraints, student diversity, and restricted facilities and technological resources, particularly in elementary school contexts with limited resources (Menezes et al., 2025; Saputra et al., 2025). This condition indicates that the increasing demands placed on teachers as facilitators of innovative learning have not yet been fully accompanied by sufficient readiness in classroom-level instructional practices.

In line with this condition, rapid technological advancement and the growing demands of 21st-century competencies further intensify expectations for teachers to implement innovative learning practices that foster students' creativity, critical thinking, collaboration, and problem-solving skills. Nevertheless, numerous studies indicate that classroom practices remain largely dominated by conventional, teacher-centered, and procedural approaches, and therefore have not yet fully aligned with curricular expectations and 21st-century educational frameworks (Indah, 2025; Junedi et al., 2020; Sunarto et al., 2023). This gap is influenced by teachers' limited knowledge and skills in implementing innovative learning models and integrating technology, the lack of opportunities for exploration, discussion, and collaboration in classrooms, as well as structural barriers such as insufficient professional training, inadequate infrastructure, and resistance to changes in instructional methods (Junedi et al., 2020; Sudibjo et al., 2021; Sunarto et al., 2023). Therefore, strengthening sustainable teacher

professional development, practice-based mentoring such as lesson study and workshops, and the cultivation of reflective and collaborative professional cultures among teachers are essential strategies for bridging the gap between curricular expectations and classroom realities, thereby enabling a more effective transformation of 21st-century learning (Ahyan et al., 2025; Arfin et al., 2020).

In the Indonesian context, educational reforms such as the Merdeka Belajar policy have sought to reposition teachers as autonomous and reflective practitioners capable of designing flexible and meaningful learning experiences. Despite these policy initiatives, numerous studies report persistent challenges in implementation. Teachers frequently encounter difficulties related to limited pedagogical training, inadequate access to professional learning opportunities, and insufficient exposure to innovative instructional models. As a result, many teachers continue to rely on conventional teaching strategies, such as lecturing and routine assignments, which offer limited opportunities for student interaction, exploration, and critical engagement.

Research conducted in Indonesian schools has consistently demonstrated that teacher innovation remains constrained by structural and contextual factors. These include limited professional development programs, especially for teachers working in non-public or faith-based schools, as well as disparities in access to technological resources. Teachers in such contexts often receive fewer opportunities to participate in structured training programs that focus on innovative pedagogy and instructional design. This condition contributes to a noticeable gap between teachers' conceptual understanding of innovative learning and their ability to implement it effectively in classroom practice.

The persistence of teacher-centered instruction is not merely a technical issue but also reflects deeper pedagogical orientations. Many teachers perceive innovation as an additional burden rather than an integral component of effective teaching. This perception is often reinforced by administrative demands, rigid instructional systems, and limited time for reflection and experimentation. Consequently, teachers may demonstrate awareness of innovative learning concepts while struggling to translate these ideas into practical classroom strategies that are systematic, measurable, and aligned with learning objectives.

Professional development has long been identified as a critical mechanism for enhancing teachers' instructional competence and supporting pedagogical transformation. Effective professional development programs are characterized by their relevance to teachers' contextual realities, opportunities for active participation, and sustained support beyond one-off training sessions. However, conventional teacher training programs frequently emphasize theoretical knowledge without sufficient emphasis on practice, reflection, and follow-up support. This limitation reduces the long-term impact of training and undermines efforts to foster sustainable changes in teaching practices.

In response to these challenges, educational scholars have increasingly advocated for professional development models that integrate deep learning principles. Deep learning in education refers to learning experiences that are meaningful, mindful, and joyful, enabling learners to engage deeply with content, connect new knowledge to prior understanding, and apply learning in authentic contexts. Within the context of teacher professional development, a deep learning approach emphasizes reflective practice, collaborative learning, and experiential engagement, allowing teachers to internalize innovative pedagogical principles and adapt them to their instructional contexts.

Despite the growing interest in deep learning–oriented pedagogy, empirical studies examining its application within teacher professional development programs remain limited, particularly in elementary education settings in developing countries. Existing research has predominantly focused on student outcomes, with less attention given to how deep learning principles can be systematically integrated into training programs aimed at enhancing teachers' instructional competence. Moreover, few studies have employed evidence-based approaches, such as pre-test and post-test designs, to examine changes in teachers' pedagogical practices following participation in structured professional development interventions.

This gap is particularly evident in community-based professional development initiatives, where training programs are often implemented to address local educational needs but are rarely documented in a manner that contributes to the broader academic discourse. As a result, valuable insights into the effectiveness of such interventions remain underrepresented in international scholarly literature. Addressing this gap is essential for advancing knowledge on how professional development programs can be designed to support innovative teaching practices in diverse educational contexts.

Therefore, this study aims to examine the effectiveness of a deep learning–based professional development program in enhancing elementary school teachers' innovative teaching competence. Using a pre-test and post-test design complemented by participant reflections, the study explores changes in teachers' pedagogical practices following participation in a structured training program. By providing empirical evidence from a localized educational context in Indonesia, this study contributes to the literature on teacher professional development and innovative pedagogy, offering practical and theoretical implications for the design of sustainable training models in similar educational settings.

METHOD

This study employed a pre-experimental research design using a one-group pre-test–post-test approach to examine the effectiveness of a deep learning–based professional development program in enhancing elementary school teachers' innovative teaching competence. This design was chosen to capture measurable changes in teachers' pedagogical readiness and instructional practices before and after participation in a structured training intervention, particularly within a context where access to continuous professional development is limited.

The participants of the study were 32 elementary school teachers from two Madrasah Ibtidaiyah located in Godean District, Sleman Regency, Indonesia. Participants were selected through purposive sampling, targeting schools and teachers who had limited opportunities to participate in formal professional development programs. Most of the teachers were non-civil servant educators working under foundation-based school management, with diverse teaching experiences and varying levels of access to instructional technology. This context provided a relevant setting for examining the impact of a targeted professional development intervention.

The professional development program was implemented through an in-house training model that integrated deep learning principles. The program began with a face-to-face workshop focused on enhancing teachers' understanding of creativity development, innovative learning models, and the application of deep learning in classroom instruction. This was followed by hands-on practice in developing lesson plans and instructional modules aligned with deep learning principles. To support sustained learning and practical application, the training was extended through an online professional learning community using Google Classroom, where participants engaged in collaborative discussions, submitted instructional tasks, and received feedback from the training team. In addition, the program included follow-up supervision conducted through online monitoring and on-site school visits to support teachers during the implementation phase and to reinforce reflective practice.

Data were collected using a questionnaire consisting of 15 items designed to assess teachers' innovative teaching competence. The instrument measured key dimensions of innovative instruction, including lesson planning, instructional strategies, student engagement, use of learning media, integration of technology, collaboration, and reflective practice. The questionnaire was administered as both a pre-test and a post-test using a four-point Likert scale. To complement the quantitative data, qualitative information was gathered through observational notes and participant reflections during workshops, mentoring sessions, and supervision activities.

The data collection process began with the administration of the pre-test prior to the implementation of the training program to establish baseline competence levels. After participants completed the workshop, online mentoring, and supervision phases, the post-test was administered using the same instrument. The data collection period spanned approximately one month, allowing participants sufficient time to engage with the training materials, complete assigned tasks, and begin applying innovative teaching practices in their classrooms.

Quantitative data were analyzed using descriptive statistical techniques by comparing mean scores from the pre-test and post-test to identify changes in teachers' innovative teaching competence following the intervention. Improvements were interpreted based on differences in average scores across measurement points. Qualitative data from observations and reflections were analyzed thematically to provide contextual insights and to support the interpretation of quantitative findings, particularly in relation to teachers' experiences, challenges, and perceived benefits of the training program.

RESULTS AND DISCUSSION

Results

The findings of this study reveal several important results related to the implementation and impact of a deep learning–based professional development program for elementary school teachers. Prior to the intervention, a needs assessment conducted in two Madrasah Ibtidaiyah—MI Chandran and MI Blendangan, Godean District—indicated that teachers had limited access to professional development opportunities, particularly free or institutionally supported training programs. Most participants were non-civil servant teachers employed by school foundations, with limited financial capacity and restricted access to instructional facilities, including personal laptops and school-based information and communication technology resources. These conditions contributed to constraints in implementing innovative and technology-integrated learning practices, despite increasing administrative and instructional demands related to digital systems.

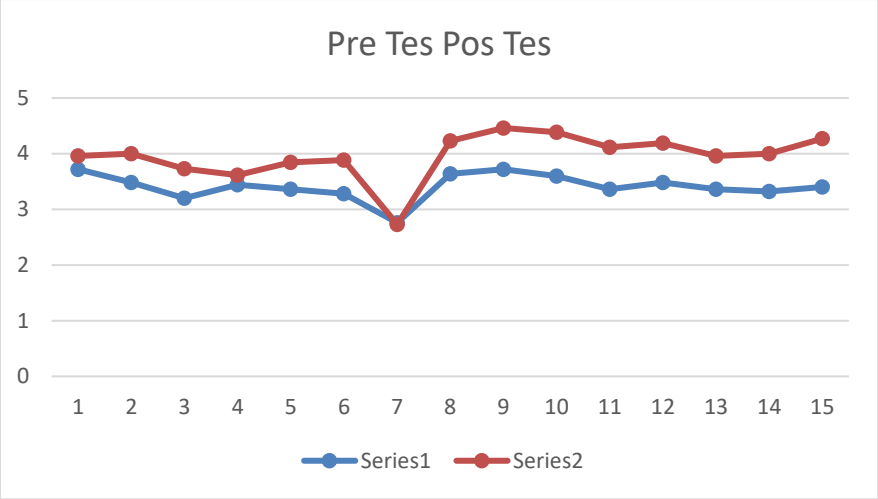

FIGURE 5. Pre-test and Post-test Results

The pre-test results showed that teachers' innovative teaching competence was generally at a high level, with a mean score of 3.40. This finding suggests that teachers possessed a positive conceptual understanding of innovative and student-centered learning approaches. However, analysis at the item level revealed notable variation across aspects. The lowest scores were found in items related to the varied use of technology in learning activities and the integration of information and communication technology into instructional practices. These results indicate a gap between teachers' pedagogical awareness and their practical capacity to implement technology-supported innovative learning in classroom settings.

Following participation in the workshop, mentoring activities, and supervised practice, the post-test results demonstrated a clear improvement in teachers' innovative teaching competence. The mean post-test score increased to 3.96, representing an average gain of 0.56 points compared to the pre-test results. Improvements were observed across all measured aspects, including lesson planning, instructional strategies, student engagement, and reflective practice. Despite this overall improvement, the use of technology in learning activities remained the lowest-scoring aspect, although it showed progress compared to the pre-intervention condition.

Qualitative observations during workshop sessions and discussions further supported the quantitative findings. Most teachers actively engaged in question-and-answer sessions and expressed strong interest in understanding how innovative and deep learning–oriented approaches could be adapted to their instructional contexts. Teachers' questions primarily focused on aligning innovative learning practices with existing administrative systems, managing instructional time, and addressing diverse student characteristics, particularly students who were physically active but less cognitively engaged. These discussions indicate that teachers were beginning to reflect critically on their instructional practices and classroom dynamics.

The results of the task-based assignments conducted through the Google Classroom professional learning community showed varying levels of readiness among participants. Most teachers were able to develop lesson plans or instructional modules that reflected elements of innovative and deep learning–oriented pedagogy. However, several challenges persisted, including limited understanding of the full range of innovative learning models, difficulties in integrating technology due to infrastructural constraints, and the need for further adaptation to existing administrative systems. Analysis of submitted lesson plans also revealed that assessment strategies within deep learning–oriented instruction required additional strengthening.

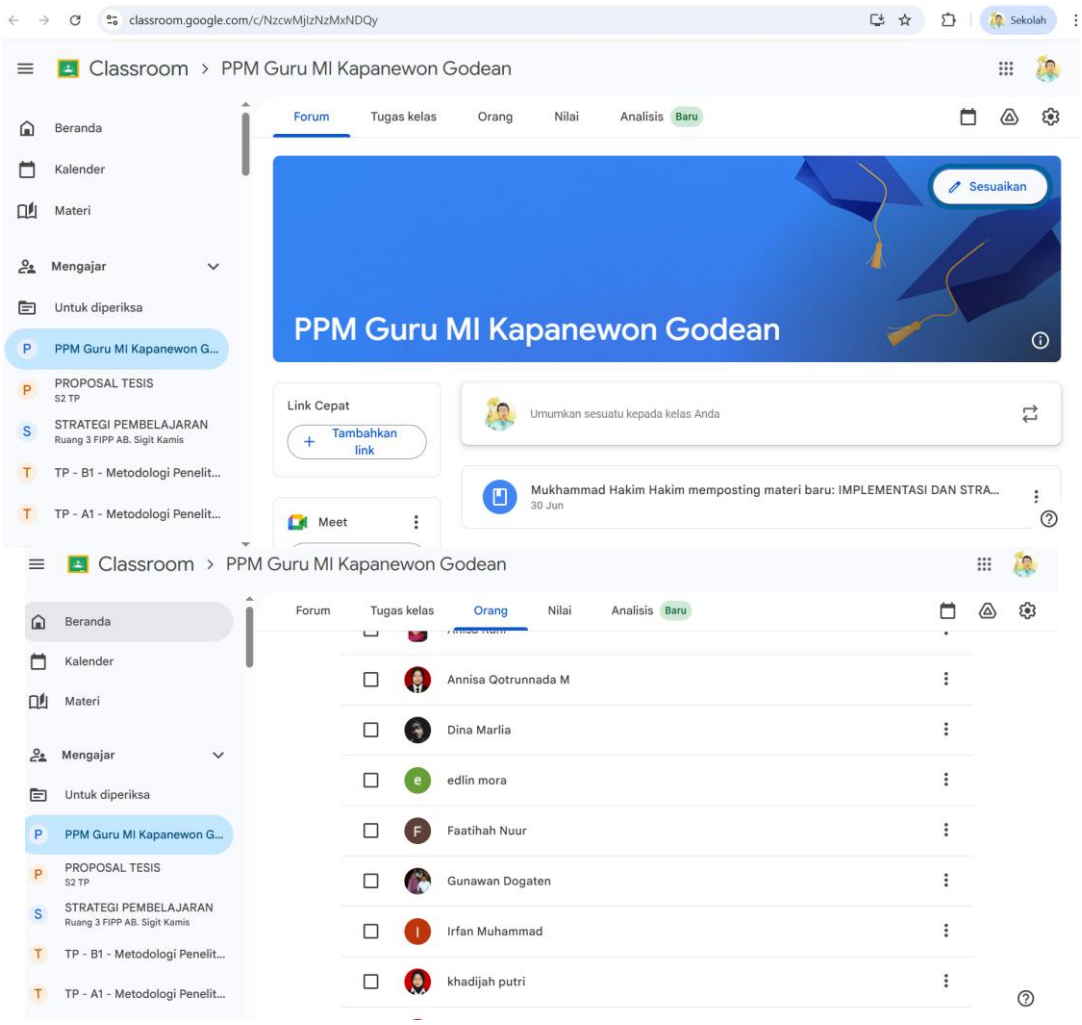

FIGURE 6. Assignments on Google Classroom

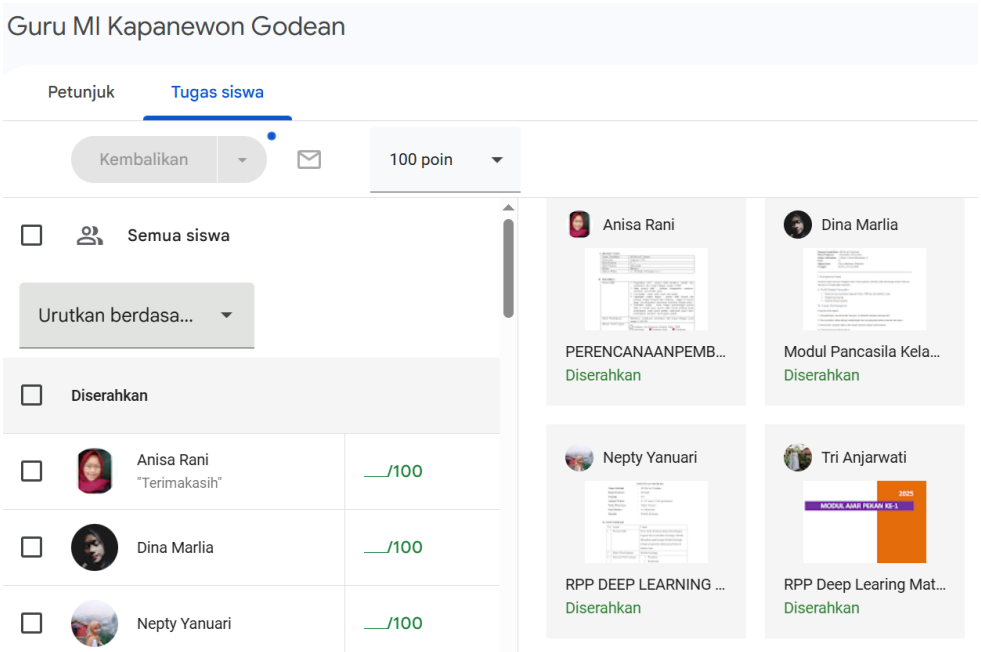

FIGURE 7. Presentation of RPS on Google Classroom

Follow-up monitoring and school visits conducted after the training provided further evidence of the program's impact and ongoing challenges. During the first monitoring phase, teachers demonstrated increased motivation and willingness to experiment with innovative learning practices, although many still required guidance in implementing mindful, meaningful, and joyful learning activities within limited instructional time. The second monitoring phase indicated gradual improvement in teachers' confidence and instructional planning, supported by feedback, collaborative reflection, and encouragement from school leadership. These findings suggest that sustained mentoring and contextual support played an important role in reinforcing the initial outcomes of the professional development program.

FIGURE 8. Monitoring and Visits

Discussion

The findings of this study demonstrate that a deep learning–based professional development program can effectively enhance elementary school teachers' innovative teaching competence, as evidenced by the increase in mean scores from the pre-test to the post-test. Although teachers initially showed relatively high conceptual awareness of innovative and student-centered learning, the intervention played a critical role in strengthening their instructional readiness and confidence to apply these principles in practice. This finding confirms that professional development is not merely a process of introducing new pedagogical concepts, but a mechanism for transforming teachers' pedagogical orientations and classroom practices.

The observed improvement supports previous studies emphasizing that sustained, practice-oriented professional development contributes significantly to changes in teachers' instructional behavior. The integration of workshops, mentoring, collaborative learning, and supervision aligns with the characteristics of effective professional development, which emphasize relevance, active participation, reflection, and continuity. In this study, the use of a professional learning community through Google Classroom provided teachers with opportunities to engage in collaborative reflection, receive feedback, and gradually internalize innovative teaching strategies. This finding is consistent with research suggesting that collaborative and reflective learning environments strengthen the transfer of professional development outcomes into classroom practice.

Despite the overall positive outcomes, the results also reveal persistent challenges, particularly in the integration of information and communication technology into instructional practices. Although teachers' competence in technology use improved after the intervention, it remained the lowest-scoring aspect. This finding highlights the complex interplay between pedagogical readiness and contextual constraints, such as limited access to technological infrastructure and unequal availability of digital devices. Similar findings have been reported in previous studies, which indicate that teachers' willingness to innovate does not always translate into practice when structural barriers remain unaddressed.

Qualitative observations further indicate that teachers' questions and reflections during the training focused on practical concerns, including time management, alignment with administrative systems, and strategies for engaging diverse student characteristics. These concerns suggest that innovation in teaching is not solely a matter of adopting new methods, but also requires reorientation of teachers' professional identities and classroom management strategies. The emphasis on mindful, meaningful, and joyful learning within the deep learning framework helped teachers reconceptualize student engagement, particularly in addressing students

who are physically active but not cognitively involved. This supports the argument that deep learning–oriented pedagogy encourages teachers to view learner diversity as a pedagogical resource rather than a constraint.

The task-based assignments and follow-up supervision revealed varying levels of readiness among teachers in designing deep learning–oriented lesson plans, especially in relation to assessment practices. While most teachers were able to incorporate innovative instructional strategies, assessment design emerged as a critical area requiring further support. This finding aligns with previous literature indicating that assessment is often the most challenging component of pedagogical innovation, as it requires alignment between learning objectives, instructional activities, and evaluation methods. The results suggest that future professional development programs should place greater emphasis on assessment literacy within innovative and deep learning–based instructional frameworks.

Overall, the findings indicate that the effectiveness of professional development programs is strongly influenced by sustained mentoring, contextual sensitivity, and institutional support. The involvement of school leadership during follow-up visits played an important role in encouraging teachers to experiment with innovative practices and to gradually adopt new pedagogical paradigms. This highlights the importance of embedding professional development initiatives within broader school-level support systems to ensure long-term sustainability.

CONCLUSION

This study concludes that a deep learning–based professional development program has a positive impact on enhancing elementary school teachers' innovative teaching competence. The findings indicate measurable improvements in teachers' instructional readiness, confidence, and engagement with student-centered and innovative learning practices following participation in structured training, mentoring, and supervision activities. Although teachers initially demonstrated relatively high conceptual understanding, the intervention effectively strengthened their ability to translate pedagogical concepts into practical classroom strategies. Nevertheless, challenges related to technology integration and assessment design persist, reflecting the influence of structural and contextual constraints on instructional innovation. These findings suggest that professional development programs should be designed as sustained and practice-oriented processes that address both pedagogical and infrastructural dimensions. Future initiatives should prioritize continuous mentoring, collaborative professional learning communities, and stronger support for assessment practices within deep learning–oriented instruction. By providing empirical evidence from a localized educational context, this study contributes to the growing literature on teacher professional development and innovative pedagogy, particularly in elementary education settings with limited resources. The findings offer practical implications for educators, school leaders, and policymakers in designing professional development models that are responsive, sustainable, and aligned with the demands of 21st-century learning..

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Strengthening Food Security Through Community-Based Mocaf Entrepreneurship: A Rural Development Initiative In Indonesia

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Abstract. This community empowerment program was conducted in Sembung Village, Klaten Regency, Indonesia, where abundant cassava production has not been optimally utilized to generate economic value. The program aimed to strengthen food security and improve the local economy through MOCAF (Modified Cassava Flour)–based entrepreneurship. Using a participatory approach, the program provided technical training on MOCAF production and product diversification to 28 local micro-entrepreneurs, primarily women in the food sector. Participants were trained in cassava fermentation, drying, milling, hygienic packaging, and the development of MOCAF-based products, including layered cake, crispy brownies, and onde-onde. Program evaluation through pre–post assessments and production monitoring showed a substantial improvement in participants' technical knowledge and production skills, with 75% achieving good to very good competency levels. The findings demonstrate that MOCAF-based community entrepreneurship can effectively support food security while promoting sustainable local economic development.

INTRODUCTION

Sembung Village, located in Klaten Regency, Central Java, is an agrarian area where cassava constitutes one of the main agricultural commodities cultivated by local farmers. Despite its abundant availability, cassava is predominantly marketed in raw form, resulting in low and unstable income for rural households. The limited capacity to process cassava into higher-value products has constrained local economic development and weakened household-level food security, leaving farmers highly dependent on fluctuating market prices [1], [2].

One promising strategy to enhance value addition is the production of Modified Cassava Flour (MOCAF), which has been widely recognized as a functional and nutritional alternative to wheat flour. Through a controlled fermentation process, MOCAF exhibits improved sensory properties, higher nutritional value, and functional characteristics comparable to wheat-based flour, making it suitable for a wide range of food products [3]–[6]. Moreover, the utilization of MOCAF contributes to food diversification and reduces dependence on imported wheat, thereby supporting local food security initiatives [7].

However, the adoption of MOCAF production at the community level remains limited due to several structural constraints. Local producers face insufficient technical knowledge, limited access to appropriate processing equipment, and inconsistent production practices, which hinder the standardization and scalability of MOCAF-based products [8], [9].

Addressing these challenges requires an integrated community empowerment approach that emphasizes technical capacity building and entrepreneurship development in food processing. Therefore, this community engagement program was designed to strengthen local capabilities in MOCAF production and promote product diversification through participatory training and hands-on practice. By leveraging local agricultural resources and community involvement, the program aims to improve food security while fostering sustainable local economic development in Sembung Village.

LITERATURE REVIEW

MOCAF as an Alternative Flour for Food Diversification and Local Value Creation

Modified Cassava Flour (MOCAF) is a fermented cassava-based flour developed to improve the functional and sensory properties of conventional cassava flour. The fermentation process, commonly involving lactic acid bacteria, modifies starch structure, reduces undesirable cassava odor, and improves flour whiteness and baking performance [7]. As a result, MOCAF exhibits physicochemical characteristics that are closer to wheat flour, making it suitable for various food applications such as cakes, cookies, noodles, and traditional snacks. In the Indonesian context, MOCAF has been widely promoted as a strategic local food innovation to support food

diversification and reduce dependency on imported wheat. Studies have shown that MOCAF production can increase the economic value of cassava while contributing to household food security, particularly in rural areas with abundant cassava production [10]. Fermentation-based modification has also been found to reduce cyanogenic compounds in cassava, enhancing food safety and consumer acceptance.

Production Challenges and Quality Standardization in Community-Based MOCAF Processing
Despite its potential, community-level adoption of MOCAF production remains constrained by limited technical capacity and inadequate processing facilities. Small-scale producers often rely on traditional methods that result in inconsistent fermentation, uneven drying, and non-standardized flour quality, which limits scalability and market acceptance [9]. Previous studies emphasize that process control—particularly fermentation duration, drying temperature, and milling consistency—is critical for achieving MOCAF quality that complies with Indonesian standards [5]. Quality inconsistency has been identified as a major barrier for rural agro-processing enterprises attempting to penetrate broader markets. Without standardization, products struggle to meet hygiene and quality expectations, thereby restricting access to modern retail channels and food industries [11]. These findings underline the importance of hands-on technical training and appropriate technology transfer as key components of MOCAF-based community empowerment programs.

Product Diversification as a Strategy for Increasing Economic Value
Beyond flour production, diversification into MOCAF-based derivative products is widely recognized as an effective strategy to enhance value added and reduce market risk for rural households. Research on cassava-based food diversification demonstrates that transforming MOCAF into ready-to-sell products—such as cakes, snacks, and traditional foods—can significantly improve household income compared to selling raw cassava or flour alone [12]. Community engagement studies in Indonesia show that product diversification is particularly impactful when combined with participatory training and group-based production models. Programs targeting women micro-entrepreneurs have reported improvements in technical skills, innovation capacity, and business confidence following MOCAF-based product development training [13], [14]. These findings support the integration of MOCAF product innovation into community entrepreneurship initiatives, especially in rural settings.

Community Empowerment, Women's Entrepreneurship, and Capability Development
Community empowerment through agro-processing is not merely a technical intervention but a socio-economic strategy that strengthens rural resilience [15], [16]. Women play a central role in household-based food enterprises, positioning them as key agents within local food value chains [17]. Empirical evidence shows that participatory approaches—such as hands-on training, mentoring, and collective production—are effective in enhancing knowledge, skills, and entrepreneurial motivation among rural women [18], [19]. Moreover, sustainable empowerment requires continuous support beyond initial training, as mentoring in production management and quality control is essential for business continuity and long-term economic impact [20].

RESEARCH METHOD

Research Design
This study adopted a community-based participatory approach using an applied action research design. The program was implemented as a structured community empowerment initiative aimed at enhancing food security and local economic resilience through MOCAF-based entrepreneurship in Sembung Village, Klaten Regency, Indonesia. The approach emphasized active community involvement throughout all stages of the program, from needs assessment to evaluation, ensuring relevance, ownership, and sustainability of the intervention.

Research Site and Participants
The program was conducted in Sembung Village, Klaten Regency, Central Java, an agrarian rural area with abundant cassava production. Participants consisted of 28 local micro-entrepreneurs, predominantly women engaged in home-based food businesses such as traditional snack producers, small-scale bakers, and catering operators. Participants were selected through coordination with village authorities based on their involvement in cassava-related activities and willingness to participate actively in training and mentoring sessions.

Program Stages and Implementation
The research and community intervention were implemented through four sequential stages:

1. **Pre-implementation Stage**
   This stage involved a preliminary needs assessment conducted through field observations, informal interviews, and focus group discussions (FGDs) with community members and local stakeholders. The assessment aimed to identify key challenges related to cassava processing, production capacity, and

market access. Based on the findings, a detailed implementation plan was developed, including training materials, schedules, and task allocation among the research team and student assistants.

2. **Technical Training on MOCAF Production**
   Participants received hands-on training covering the complete MOCAF production process, including raw material selection, fermentation using lactic acid bacteria, drying, milling, sieving, and hygienic packaging. Training sessions were facilitated by academic staff and food industry practitioners. Modern processing equipment such as drying and milling machines was introduced to improve efficiency and standardize product quality.
3. **Product Diversification and Entrepreneurship Development**
   Following MOCAF production training, participants were grouped into small working teams to develop MOCAF-based derivative products, including layered cake (lapis legit), crispy brownies, and onde-onde. Each group was guided by facilitators to adjust formulations, processing techniques, and product presentation. This stage emphasized experiential learning, collaborative production, and innovation in local food products.

Evaluation and Data Analysis

Program evaluation focused on changes in participant capacity and output quality. Quantitative data from pre–post assessments were analyzed descriptively to compare knowledge and skill levels before and after the intervention. Qualitative data from observations and participant feedback were analyzed thematically to capture improvements in production practices, and entrepreneurial confidence. Participants were actively involved in all program stages, including planning, production, evaluation, and dissemination. Continued mentoring, partnership development, and follow-up training were planned to support long-term business continuity beyond the program period.

RESULTS AND DISCUSSION

Enhancement of MOCAF Production Capacity

The community-based intervention focused on strengthening the technical capacity of local women micro-entrepreneurs in MOCAF (Modified Cassava Flour) production. A total of 28 participants were involved in intensive hands-on training covering cassava selection, lactic acid fermentation, drying, milling, sieving, and hygienic packaging. Prior to the intervention, most participants relied on wheat flour and had limited exposure to cassava-based flour processing. The training resulted in clear improvements in production outcomes. Participants were able to produce MOCAF with desirable quality characteristics, including brighter color, fine texture, and moisture content below 12%, which are critical indicators of flour stability and shelf life. Direct interaction with appropriate processing equipment enhanced participants' understanding of critical control points, particularly fermentation duration and drying consistency. These findings indicate that technology-assisted, practice-oriented training can effectively upgrade processing capabilities at the household enterprise level.

Development of Value-Added MOCAF-Based Products

Following the production phase, participants engaged in structured product development activities to transform MOCAF into value-added food products. Three flagship products were developed: lapis legit MOCAF, crispy brownies MOCAF, and onde-onde MOCAF. Participants were organized into small groups and guided through formulation adjustment, processing techniques, and food safety practices (Figure 1). Each product required specific technical adaptations due to the functional properties of MOCAF, particularly its higher water absorption compared to wheat flour. For example, lapis legit production required precise layering techniques and moisture control to maintain product structure, while brownies production applied a two-stage baking method to achieve a crispy texture. Onde-onde production involved balancing MOCAF with glutinous rice flour to ensure elasticity and prevent cracking during frying.

Figure 1. The product development process and outputs

The successful development of both modern and traditional food products demonstrates MOCAF's versatility as a wheat flour substitute and its potential to support diversified local food processing at the community level.

Participant Competency Improvement

Participant competency was evaluated using pre- and post-training assessments focusing on technical knowledge and production skills. The results show a substantial improvement in overall competency. Before the intervention, the average competency score was 3.8 out of 10, reflecting limited understanding of MOCAF characteristics and processing techniques. After the intervention, the average score increased to 8.4 out of 10. Approximately 75% of participants achieved "good" to "very good" competency levels, while no participants remained in the "low" category. The most pronounced improvement occurred in production skills, particularly in formulation accuracy, baking and frying techniques, and product handling. These results confirm that experiential learning combined with small-group mentoring is highly effective for strengthening technical capacity among micro-entrepreneurs.

Discussion: Implications for Community-Based Food Processing

Overall, the results demonstrate that an integrated, practice-oriented training approach can significantly enhance community capacity in local food processing. The active involvement of women micro-entrepreneurs highlights the importance of gender-inclusive empowerment strategies in rural contexts. Improved technical skills, product consistency, and production confidence indicate that MOCAF-based processing can serve as a viable pathway for strengthening local food systems. By promoting MOCAF as an alternative to wheat flour, this initiative also contributes to food diversification and reduced dependence on imported raw materials. The findings suggest that sustained technical mentoring and process standardization are critical for scaling up community-based food processing initiatives and ensuring long-term economic resilience.

CONCLUSION

This study demonstrates that community-based MOCAF production can serve as an effective strategy for strengthening local food security and enhancing rural economic resilience. Through participatory, hands-on training, local micro-entrepreneurs—predominantly women—significantly improved their technical knowledge and production skills in cassava fermentation, processing, and product diversification. The substantial increase in competency levels indicates that practical, technology-assisted capacity building is well suited to upgrading small-scale food processing in rural contexts. By transforming locally abundant cassava into higher-value MOCAF and derivative food products, the program contributes to food diversification and reduces dependence on imported wheat flour. Overall, the findings suggest that MOCAF-based entrepreneurship, when supported by structured technical training and community engagement, represents a viable pathway for sustainable local economic development and resilient food systems in rural areas.

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Curriculum Evaluation Of The Doctoral Program In Educational Management, Faculty Of Education, State University Of Yogyakarta

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Abstract. This study evaluates the curriculum of the Doctoral Program in Educational Management at the Faculty of Educational Sciences, Universitas Negeri Yogyakarta (UNY), using the Context, Input, Process, and Product (CIPP) evaluation model. A qualitative-dominant evaluative design was employed, integrating questionnaire data, curriculum document analysis, and tracer study findings involving doctoral students, academic staff, alumni, and graduate users. The findings indicate that the curriculum demonstrates a strong academic orientation, supported by qualified faculty members and a well-structured program, particularly in research methodology and theoretical foundations. However, several strategic gaps were identified across the four evaluation dimensions. At the context level, the curriculum has not sufficiently anticipated emerging demands related to digital leadership, innovation management, and organizational transformation. In terms of input, limitations persist in technology-based research infrastructure and the integration of applied pedagogical approaches. At the process level, inconsistencies were observed in instructional practices, supervision quality, and the development of a collaborative research culture. At the product level, tracer study results reveal strong academic competencies among graduates but relatively limited professional-practical skills, especially in change management, data-driven decision-making, and digital literacy. Overall, the study concludes that while the doctoral curriculum exhibits strong academic coherence, strategic reinforcement is necessary to enhance professional relevance, pedagogical innovation, and digital research capacity. The findings offer practical implications for curriculum refinement and contribute to broader discussions on doctoral curriculum evaluation and reform in educational management.

INTRODUCTION

Doctoral education represents the highest level of formal academic training and plays a strategic role in advancing knowledge production, strengthening research capacity, and developing academic and professional leadership within educational systems. In recent years, doctoral programs—particularly in the field of educational management—have faced increasing pressure to respond to rapid technological change, growing public accountability, and the transformation of educational organizations. These dynamics require doctoral curricula not only to cultivate advanced theoretical and methodological expertise, but also to prepare graduates with strategic, analytical, and adaptive competencies relevant to complex organizational contexts [10], [17].

Contemporary scholarship consistently emphasizes that doctoral education can no longer rely solely on traditional academic apprenticeship models. Instead, curricula are expected to integrate digital literacy, analytical capability, and responsiveness to institutional and societal change [1], [9]. Effective doctoral programs increasingly emphasize the integration of theory and practice through research that is contextually relevant and capable of informing decision-making in real educational settings [17]. As a result, curriculum design and evaluation have become central concerns in ensuring that doctoral programs remain academically rigorous while also professionally meaningful.

This paradigm shift places cross-disciplinary and professional competencies at the core of doctoral curriculum development. Doctoral graduates are now expected to demonstrate what has been conceptualized as T-shaped competencies—deep disciplinary expertise combined with transferable skills such as collaboration, leadership, and problem-solving [8]. In educational management, this expectation is particularly salient, as graduates are often positioned as policy analysts, institutional leaders, and agents of organizational change. Consequently, doctoral curricula must be capable of equipping students with the capacity to engage with policy dynamics, governance challenges, and systemic transformation within education systems [6].

Recent studies further indicate that doctoral curricula are increasingly oriented toward the integration of data analytics, digital technologies, and evidence-based decision-making. The growing reliance on performance indicators, accountability frameworks, and data-driven governance has reshaped the competency profile required of educational leaders [7]. Strengthening digital literacy and technological competence is therefore no longer optional, but an essential component of doctoral preparation, particularly in fields related to management and leadership [3]. Without deliberate curricular alignment, doctoral graduates risk possessing strong academic knowledge while lacking the applied competencies needed to operate effectively in contemporary educational environments.

At the same time, the literature underscores the importance of strategic leadership development within doctoral education. Educational leaders in the twenty-first century are required to master analytical reasoning, policy literacy, collaborative leadership, and organizational transformation skills [11]. Doctoral programs in educational management are therefore expected to balance advanced academic training with applied research experiences, innovative pedagogical approaches, and consistent supervision practices that support the development of these competencies. However, empirical evidence suggests that many doctoral programs continue to exhibit an imbalance between theoretical depth and practical applicability, particularly in areas such as change management, digital leadership, and innovation [1], [9].

Curriculum quality in postgraduate education is increasingly understood as a function of alignment between program vision, curriculum structure, learning implementation, and graduate competence. Responsive curricula are those that are informed by systematic needs analysis and stakeholder feedback, ensuring that learning outcomes correspond to both academic standards and professional demands [2]. In doctoral education, misalignment between graduate profiles and stakeholder expectations often signals deeper issues related to curriculum relevance, pedagogical design, and learning ecosystems.

Within this context, curriculum evaluation becomes a critical mechanism for institutional reflection and improvement. The Context, Input, Process, and Product (CIPP) evaluation model offers a comprehensive framework for assessing curriculum effectiveness by examining relevance, resource readiness, implementation quality, and graduate outcomes in an integrated manner [12]. The CIPP model has been widely applied in higher education evaluation because it enables programs to identify both strengths and gaps based on empirical evidence rather than normative assumptions. Its holistic orientation makes it particularly suitable for evaluating complex and multidimensional programs such as doctoral education.

Despite the growing importance of doctoral curriculum evaluation, empirical studies focusing on curriculum effectiveness in doctoral programs—especially within the field of educational management—remain limited. Much of the existing literature concentrates on policy analysis or graduate outcomes without systematically examining how curriculum design, learning processes, and institutional resources interact to shape doctoral learning experiences. This gap is especially evident in the context of public universities in developing higher education systems, where doctoral programs are required to balance national academic standards with emerging global and professional demands.

Against this backdrop, the Doctoral Program in Educational Management at the Faculty of Educational Sciences, Universitas Negeri Yogyakarta (UNY), provides a relevant case for systematic curriculum evaluation. As a public university with a strong academic tradition, UNY is expected to produce doctoral graduates who excel in research while also contributing strategically to educational leadership and policy development. Evaluating the extent to which the current curriculum meets these expectations is therefore essential for ensuring program relevance, quality, and sustainability.

Accordingly, this study aims to evaluate the curriculum of the Doctoral Program in Educational Management at UNY using the CIPP evaluation model. Specifically, the study seeks to (1) examine the relevance of curriculum objectives to contemporary academic and professional demands, (2) assess the adequacy of curricular inputs and learning resources, (3) evaluate the quality of learning and supervision processes, and (4) analyze graduate competencies as reflected in tracer study data. By doing so, this study contributes empirical evidence to the discourse on doctoral curriculum evaluation and offers practical insights for curriculum refinement in educational management programs.

RESEARCH METHOD

Research Design

This study employed a quantitative evaluative research design using the Context, Input, Process, and Product (CIPP) evaluation model. The CIPP model was selected because it provides a systematic and comprehensive framework for assessing curriculum effectiveness by examining not only learning outcomes, but also contextual relevance, resource readiness, and the quality of instructional implementation [12]. In the context of doctoral education, where curriculum complexity involves academic rigor, research supervision, and professional

competence development, the CIPP model enables a holistic evaluation that goes beyond outcome-based assessment alone.

The evaluative design is particularly appropriate for doctoral curriculum studies, as it allows the identification of strengths, gaps, and strategic priorities based on empirical evidence derived from multiple stakeholder perspectives [12]. This approach aligns with contemporary higher education evaluation practices that emphasize accountability, continuous improvement, and stakeholder-informed decision-making.

Research Context and Participants

The study was conducted at the Doctoral Program in Educational Management, Faculty of Educational Sciences, Universitas Negeri Yogyakarta (UNY), Indonesia. The research population comprised key stakeholders directly involved in or affected by the doctoral curriculum, including:

1. Active doctoral students
2. Lecturers and dissertation supervisors
3. Program alumni
4. Graduate users (employers or institutional leaders)

This diverse stakeholder composition was intended to capture both academic and professional perspectives on curriculum quality and graduate competence. Purposive sampling was applied to select respondents who possessed direct experience and substantive engagement with the doctoral program. This sampling strategy is widely recommended in evaluative and program-focused research, particularly in postgraduate education, where respondent expertise and contextual familiarity are critical to data quality [5]

Data Collection Techniques

Data were collected using three complementary techniques to ensure triangulation and enhance the robustness of findings:

1. Questionnaires
   Structured questionnaires were developed based on the four dimensions of the CIPP model. Items were measured using a Likert-scale format to capture respondents' perceptions regarding curriculum relevance (context), adequacy of resources and curriculum design (input), quality of learning and supervision processes (process), and graduate competencies (product). The questionnaire also incorporated indicators reflecting contemporary doctoral education demands, such as digital literacy, data-driven decision-making, collaborative research experience, and professional leadership competence [1], [7].
2. Document Analysis
   Curriculum documents, course syllabi, learning outcome statements, academic guidelines, and internal quality assurance reports were reviewed to examine curriculum structure, coherence, and alignment with stated program objectives. Document analysis is considered an essential method in curriculum evaluation because it allows researchers to identify intended curriculum logic and institutional priorities embedded in formal academic texts [12].
3. Tracer Study Data
   Tracer study data were used to assess graduate outcomes and professional relevance of the curriculum. This data provided insights into alumni career trajectories, competency utilization in professional contexts, and employer perceptions of graduate performance. Tracer studies are widely recognized as an effective tool for evaluating curriculum effectiveness and graduate employability in higher education [2].

Instrument Validity and Reliability

Instrument validity was established through expert judgment, involving specialists in educational management and research methodology. Experts reviewed the questionnaire items to ensure alignment with CIPP indicators, theoretical constructs of doctoral education, and contemporary competency frameworks. This process ensured strong content validity, consistent with best practices in educational program evaluation [2].

Reliability testing was conducted using Cronbach's Alpha coefficient. The results indicated that all CIPP dimensions achieved reliability coefficients above the acceptable threshold of 0.70, confirming internal consistency and suitability for quantitative analysis [2].

Data Analysis Techniques

Data analysis was conducted using descriptive statistical techniques, including mean scores and percentage distributions, to identify patterns in stakeholder perceptions across the four CIPP dimensions. Descriptive analysis was selected to provide a clear empirical representation of curriculum strengths and areas requiring improvement.

In addition, comparative analysis was performed to examine differences in perceptions among stakeholder groups (students, lecturers, alumni, and graduate users). This analysis was intended to identify potential discrepancies between academic expectations and professional realities, which are particularly important in doctoral curriculum evaluation.

To further explore relationships among evaluation components, simple correlation analysis was applied to examine associations between input quality, learning processes, and graduate outcomes. This analysis provided insights into how curriculum resources and implementation practices influence doctoral learning results.

Analytical Framework

The CIPP model functioned as the overarching analytical framework throughout the study. Each evaluation dimension was operationalized as follows:

- Context: relevance of curriculum objectives to academic developments and professional demands
- Input: adequacy of curriculum structure, learning resources, lecturer competence, and research facilities
- Process: quality of instructional methods, academic interaction, research supervision, and scholarly culture
- Product: graduate competencies, research productivity, and professional performance as indicated by tracer study data

This framework ensured that curriculum evaluation was conducted in an integrated and systematic manner, emphasizing both process quality and outcome effectiveness.

Ethical Considerations

Ethical considerations were addressed by ensuring that participation was voluntary and that all respondent data were treated confidentially. No personal identifiers were disclosed, and all data were used solely for academic and evaluative purposes. Institutional curriculum documents were analyzed with formal authorization, ensuring compliance with academic research ethics standards.

RESULTS

This section presents the findings of the curriculum evaluation of the Doctoral Program in Educational Management at FIPP UNY based on the Context, Input, Process, and Product (CIPP) framework. Data were obtained from lecturer, student, alumni, and graduate user questionnaires, supported by curriculum document analysis and tracer study results. Overall, the findings indicate strong academic coherence and research orientation, accompanied by several strategic gaps related to contemporary relevance, pedagogical consistency, and professional applicability.

the findings demonstrate a consistent evaluative pattern across respondent groups, including lecturers, students, alumni, and graduate users. Questionnaire data indicate that the curriculum possesses strong academic foundations, particularly in terms of theoretical depth and research orientation. Nevertheless, several areas were identified as requiring further development. These include the integration of cutting-edge issues, consistency of academic supervision, effective utilization of learning technologies, and the enhancement of graduate professional applicability. The lecturer questionnaire—which encompasses curriculum and content planning, learning and assessment implementation, and priorities for strengthening the curriculum and research ecosystem—served as a critical instrument for identifying these evaluative trends.

Input Dimension: Curriculum Coherence and Contemporary Relevance

The context evaluation indicates that the curriculum objectives are generally aligned with the fundamental characteristics of doctoral education. Lecturer assessments show strong internal coherence among Program Learning Outcomes (CPL), Course Learning Outcomes (CPMK), and sub-CPMK, as well as clarity in course planning and sequencing. These results suggest that the curriculum is conceptually well-structured and clearly oriented toward advanced theoretical understanding and research competence.

Despite this strength, the findings reveal limitations in the curriculum's responsiveness to contemporary developments. Indicators related to the integration of cutting-edge issues—such as artificial intelligence, data analytics, global educational trends, and digital leadership—received lower evaluations compared to core academic indicators. Lecturers and graduate users consistently indicated that these emerging competencies have not been systematically embedded within the curriculum. Similarly, the balance between theoretical depth and practical application, as well as the depth and flexibility of elective courses, were assessed as suboptimal. These results suggest that while the curriculum is academically robust, its contextual relevance to evolving professional and technological demands remains limited.

TABLE 1. *Lecturer Evaluation of Curriculum Coherence and Content Relevance*

Statement	TM (%)	KM (%)	M (%)	SS (%)
CPL–CPMK–Sub-CPMK alignment	0	10	55	35
RPS clarity	0	15	60	25
Adequacy of core courses	0	10	65	25
Sufficiency of elective courses	5	20	55	20
Theory–application proportions	10	30	45	15
Cutting-edge issue integration	10	35	45	10
Coherence between courses	0	15	60	25
Availability of matriculation/prerequisites	5	20	55	20

Note: TM = Not adequate, KM = Less adequate, M = Adequate, SS = Very adequate.

The findings demonstrate strong internal curriculum coherence, particularly in the alignment of learning outcomes, clarity of course planning documents, and adequacy of core courses. These results indicate that the curriculum is conceptually well-structured and academically sound. However, lower evaluations were observed for the integration of cutting-edge issues, balance between theory and application, and sufficiency of elective courses. Lecturers explicitly noted that emerging themes such as artificial intelligence, data analytics, and global educational trends have not yet been systematically incorporated. This suggests that while the curriculum is academically robust, its contextual responsiveness to contemporary developments remains limited.

Input Dimension: Human Resources and Learning Infrastructure

The input evaluation highlights lecturer competence and curriculum structure as the primary strengths of the program. Respondents consistently rated lecturer qualifications, mastery of subject matter, and access to academic resources—such as journals, modules, and core references—as adequate to very adequate. Curriculum documentation further confirms that the program is supported by a comprehensive structure emphasizing research methodology and theoretical foundations.

However, weaknesses were identified in relation to learning infrastructure and research support facilities. Students and alumni reported limited availability of advanced research tools, data analysis software, digital collaboration platforms, and technology-based research facilities. Although a learning management system is available, its utilization for doctoral-level learning, collaborative research, and supervision support was perceived as insufficient. These findings indicate that while human and curricular inputs are strong, material and technological inputs have not yet fully supported the demands of contemporary doctoral research and learning.

Nevertheless, consistent concerns emerged regarding research infrastructure. Students and alumni reported limitations in access to advanced data analysis software, digital research tools, and collaborative research spaces. Although an LMS is available, its use for doctoral-level research collaboration and supervision support is perceived as suboptimal. These findings suggest that while human and curricular inputs are strong, technological and infrastructural inputs require reinforcement to support contemporary doctoral research demands.

Process Dimension: Learning Implementation and Research Supervision

The process evaluation reveals mixed patterns in learning implementation. Academic forums—such as research seminars, colloquiums, and dissertation proposal examinations—were widely perceived as effective and contributive to students' scholarly development. These activities function as important spaces for academic dialogue, critical reflection, and research refinement.

In contrast, variability was evident in instructional practices and supervision quality. Questionnaire results indicate that learning methods are still dominated by conventional approaches, with limited and inconsistent use of case-based learning, policy simulations, and problem-oriented pedagogies. While some lecturers

implemented student-centered strategies effectively, others relied primarily on expository methods, resulting in uneven learning experiences across courses.

Research supervision emerged as a critical concern. Although several respondents reported constructive and intensive supervision, others experienced irregular guidance and inconsistent feedback quality. This variation suggests the absence of standardized supervision guidelines and quality assurance mechanisms. In addition, collaborative research culture—both among students and between students and faculty—was assessed as moderate, indicating limited opportunities for structured joint research, publication mentoring, and research networking. The process evaluation examines learning implementation, assessment practices, and supervision quality. Table 2 summarizes lecturer assessments of these aspects.

TABLE 2. *Lecturer Evaluation of Learning Implementation and Assessment Practices*

Statement	TM (%)	KM (%)	M (%)	SS (%)
Quality of teaching materials	0	10	60	30
Student-centered strategy	5	25	55	15
Integration of research activities	0	10	55	35
Utilization of LMS/digital tools	5	30	50	15
Authentic assessments	0	15	60	25
Clarity of assessment rubrics	5	20	55	20
Quality of feedback	10	25	50	15
Team-teaching collaboration	10	30	45	15
Facility support	15	35	40	10
Student inclusivity	0	20	60	20

Note: TM = Not adequate, KM = Less adequate, M = Adequate, SS = Very adequate.

The results indicate that the program demonstrates strong academic foundations, particularly in the quality of teaching materials, integration of research activities, and use of authentic assessment approaches. These elements support the development of doctoral-level analytical and research competencies.

However, the findings also reveal inconsistencies in pedagogical implementation. Indicators related to student-centered strategies, utilization of digital learning tools, quality of feedback, and team-teaching collaboration received more moderate evaluations. Facility support and the use of learning management systems were identified as weaker areas, suggesting that technological integration has not yet been optimized. These patterns imply that learning quality depends substantially on individual teaching practices rather than standardized pedagogical strategies, highlighting the need for stronger coordination and pedagogical innovation at the program level.

Product Dimension: Graduate Competence and Professional Readiness

The product evaluation, supported by tracer study data and graduate user feedback, indicates that graduates possess strong academic competencies. Graduates were consistently perceived as capable in research design, theoretical analysis, methodological application, and academic writing, reflecting the program's effectiveness in achieving its core academic objectives.

However, professional-practical competencies were rated less favorably. Graduate users identified gaps in graduates' abilities related to change management, innovation leadership, data-driven decision-making, and digital literacy. These competencies are increasingly essential in contemporary educational management roles, and their relative weakness indicates a gap between academic achievement and professional readiness. The convergence between tracer study findings and stakeholder perceptions strengthens the validity of this conclusion. To identify strategic priorities for curriculum refinement, lecturers assessed areas requiring strengthening. Table 3 presents these perceptions

TABLE 3. *Lecturer Perceptions of Priority Areas for Curriculum and Research Ecosystem Strengthening*

Statement	TM (%)	KM (%)	M (%)	SS (%)
Data literacy & AI	0	5	50	45
Advanced research methodology	0	5	45	50
Publication clinics	0	10	55	35
Collaborative research networking	0	10	50	40

Statement	TM (%)	KM (%)	M (%)	SS (%)
Grant writing	5	15	45	35
Academic ethics & integrity	0	0	45	55
Internationalization	0	10	55	35
Research internship	0	10	45	45
Supervision quality assurance	0	10	50	40

Note: TM = Not adequate, KM = Less adequate, M = Adequate, SS = Very adequate.

The strong concentration of responses in the "necessary" and "very necessary" categories indicates broad consensus on the urgency of strengthening digital competencies, advanced research methodologies, publication support, collaborative networking, and internationalization. These priorities point to the need for curriculum enhancement that extends beyond content revision toward strengthening the broader doctoral research ecosystem.

DISCUSSION

This study evaluated the curriculum of the Doctoral Program in Educational Management at FIPP UNY using the CIPP framework, revealing a curriculum that is academically coherent and research-oriented, yet unevenly aligned with contemporary professional and technological demands. The discussion interprets these findings by situating them within the broader literature on doctoral education, curriculum evaluation, and educational management, while highlighting their theoretical and practical implications.

The strong internal alignment among Program Learning Outcomes (CPL), Course Learning Outcomes (CPMK), and sub-CPMK indicates that the curriculum has been carefully designed to support disciplinary depth and methodological rigor. This finding is consistent with prior studies emphasizing that doctoral curricula in educational management often prioritize theoretical mastery and research competence as core academic identities [7], [29]. Such an orientation is essential for maintaining scholarly credibility and ensuring graduates' capacity to contribute to academic knowledge production.

However, the results also demonstrate that this strong academic foundation has not been fully complemented by systematic integration of emerging competencies, particularly those related to digital leadership, data analytics, and innovation management. This gap echoes broader concerns in the literature that many doctoral programs continue to operate within traditional academic paradigms, despite increasing demands for adaptability and technological fluency in educational leadership roles [1], [27]. From an evaluative perspective, this misalignment suggests that curriculum relevance must be understood not only in terms of academic coherence, but also in relation to evolving professional and organizational contexts.

The findings from the input and process dimensions highlight that curriculum effectiveness is not determined solely by curriculum design, but also by the availability of supporting infrastructure and the consistency of pedagogical implementation. While lecturer competence and access to core academic resources were evaluated positively, limitations in digital research tools, data analysis software, and collaborative research facilities indicate structural constraints that may hinder doctoral learning in practice. Similar patterns have been reported in studies of doctoral education in developing higher education systems, where human resources are often strong but technological infrastructure lags behind contemporary research demands [23], [35].

Variability in instructional practices and supervision quality further underscores the importance of managerial coordination in doctoral programs. Although academic forums such as seminars and colloquiums were perceived as effective, inconsistencies in feedback quality and supervision intensity suggest the absence of standardized supervisory guidelines. Previous research has emphasized that supervision quality is a critical determinant of doctoral success and research productivity, particularly when doctoral education moves toward competency-oriented and outcome-based frameworks [18], [31]. From an educational management perspective, these findings indicate that curriculum evaluation must extend beyond content analysis to include governance mechanisms, supervision policies, and quality assurance processes.

The product evaluation reveals a familiar but significant pattern: graduates demonstrate strong academic competencies but relatively weaker professional-practical skills. This academic–professional divide has been widely discussed in the literature on doctoral education, particularly in fields closely linked to leadership and organizational practice [56], [57]. In the context of educational management, this gap is especially consequential, as graduates are often expected to function as change agents, policy analysts, and institutional leaders.

Graduate users' feedback regarding limitations in change management, data-driven decision-making, and digital literacy suggests that doctoral curricula must more explicitly incorporate applied learning experiences and professional skill development. The emphasis on strengthening publication support, research networking,

and internationalization identified in this study aligns with contemporary calls for doctoral programs to cultivate *T-shaped competencies*, combining disciplinary depth with transferable skills [56]. These findings reinforce the argument that curriculum evaluation should be used strategically to realign doctoral learning outcomes with both academic and professional expectations.

Taken together, the findings suggest that the doctoral curriculum at FIPP UNY does not require fundamental restructuring, but rather targeted and strategic refinement. The CIPP evaluation results indicate that curriculum improvement should focus on three interrelated areas: (1) contextual relevance through the integration of cutting-edge issues, (2) process enhancement through standardized supervision and pedagogical innovation, and (3) product alignment through the development of applied and digital competencies.

From a theoretical standpoint, this study contributes to the literature by demonstrating the value of the CIPP model as a comprehensive framework for evaluating doctoral curricula in educational management. Unlike outcome-only approaches, the CIPP model enables institutions to identify systemic relationships among curriculum objectives, resource inputs, learning processes, and graduate outcomes [12], [33]. From a managerial perspective, the findings underscore that curriculum evaluation is not merely an academic exercise, but a strategic tool for institutional decision-making, quality assurance, and leadership development.

Although this study focuses on a single doctoral program, its findings have broader relevance for similar programs in public universities, particularly in developing and transitional higher education systems. The challenges identified—limited digital integration, supervision variability, and the academic–professional gap—are not unique to FIPP UNY, but reflect structural issues widely documented in doctoral education globally [27], [35]. Therefore, the insights generated by this evaluation may inform curriculum development efforts beyond the immediate institutional context, especially for programs seeking to balance academic excellence with professional relevance.

CONCLUSION

This study evaluated the curriculum of the Doctoral Program in Educational Management at FIPP UNY using the Context, Input, Process, and Product (CIPP) framework. The findings demonstrate that the curriculum is academically coherent and strongly oriented toward theoretical and research-based learning, supported by competent faculty members and a well-structured program design. These strengths indicate that the doctoral program has successfully fulfilled its core academic mandate in preparing graduates with advanced scholarly competencies.

However, the evaluation also identified several strategic gaps that limit the curriculum's responsiveness to contemporary professional and technological demands. In particular, the integration of cutting-edge issues such as digital leadership, data analytics, and innovation management remains limited. In addition, inconsistencies in pedagogical practices, supervision quality, and the utilization of learning technologies reduce the effectiveness of curriculum implementation. At the outcome level, tracer study findings reveal that although graduates possess strong academic capabilities, their professional-practical competencies—especially in change management, data-driven decision-making, and digital literacy—require further strengthening.

From an institutional perspective, these findings imply that curriculum improvement efforts should prioritize targeted refinement rather than comprehensive restructuring. Strengthening digital research infrastructure, standardizing supervision practices, expanding applied and interdisciplinary learning experiences, and enhancing collaboration with external stakeholders are key strategies for improving curriculum relevance and graduate readiness. For academic leaders and quality assurance units, the results underscore the importance of viewing curriculum evaluation as a continuous managerial process that informs strategic decision-making and program development.

At the policy level, this study highlights the need for doctoral curriculum frameworks that balance academic rigor with professional applicability, particularly in fields related to educational management and leadership. The findings suggest that national and institutional quality assurance systems should explicitly incorporate indicators related to digital competence, applied research capacity, and professional impact when evaluating doctoral programs.

Finally, from a scholarly perspective, this study demonstrates the value of the CIPP model as a comprehensive framework for doctoral curriculum evaluation. By capturing the interrelationships among curriculum objectives, resources, implementation processes, and graduate outcomes, the CIPP approach provides a robust basis for evidence-informed curriculum development. Although the study is limited to a single institutional context, the evaluation insights offer transferable lessons for similar doctoral programs seeking to enhance relevance, adaptability, and impact in an evolving higher education landscape.

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Curriculum Evaluation Model In Universitas Negeri Yogyakarta And Universiti Utara Malaysia

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Abstract. This study examines the alignment, structure, and competency orientation of doctoral curricula in two Southeast Asian universities—Universitas Negeri Yogyakarta (UNY), Indonesia, and Universiti Utara Malaysia (UUM)—to identify convergences and divergences in curriculum design within the regional higher education landscape. Using a comparative qualitative design supported by document analysis and expert validation, the study evaluates both curricula through three analytic lenses: curriculum orientation, competency alignment, and internationalisation readiness. Findings reveal that while both institutions demonstrate strong commitments to research capacity development and methodological rigor, UUM's curriculum exhibits higher integration of contemporary competencies such as data analytics, innovation leadership, and global research engagement. UNY's curriculum, although grounded in solid academic foundations, remains more structurally content-driven and less explicitly oriented toward global skill sets demanded in doctoral-level scholarship. The comparison indicates that both curricula share similar philosophical underpinnings but differ significantly in their operationalisation of research ecosystems, collaborative learning structures, and cross-border mobility opportunities. This study contributes to the growing discourse on doctoral program reforms in ASEAN by proposing a three-dimensional framework for curriculum recalibration—curriculum coherence, competency modernisation, and research ecosystem internationalisation. The findings underscore the need for regionally contextualised yet globally relevant curriculum models capable of preparing doctoral graduates for complex academic and professional landscapes.

INTRODUCTION

Doctoral education has increasingly become a strategic arena in global competition for knowledge production, academic capability, and innovation capacity. Over the past decade, higher education institutions have recalibrated their doctoral curricula to respond to shifting paradigms in research ecosystems, interdisciplinarity, and international mobility. The expanding role of digital scholarship and the growing emphasis on cross-border collaboration have placed doctoral programs under pressure to align with emerging academic expectations and global research competencies [27], [35]. In this broader context, curriculum design is not merely a pedagogical exercise but an institutional strategy that shapes the intellectual identity and global positioning of doctoral graduates. The imperative to strengthen curriculum coherence, clarify graduate competencies, and modernise research-oriented learning has therefore become central to doctoral program reform worldwide [31], [54].

In Southeast Asia, the demand for curriculum harmonisation and mobility alignment has become particularly visible through regional frameworks such as the ASEAN Qualifications Reference Framework (AQRF), the ASEAN Quality Assurance Framework (AQAF), and cross-border higher education mobility schemes. These regional initiatives require universities to demonstrate transparent learning outcomes, competence-based curriculum structures, and alignment with international research ecosystems. For universities in Indonesia and Malaysia—two of the region's most active higher education systems—these demands create opportunities for innovation as well as tensions between national expectations and global accountability. As highlighted in comparative higher education studies, institutions in emerging regions must simultaneously preserve local epistemic traditions while adapting to global academic norms, making doctoral curriculum design an increasingly complex and strategic undertaking [4], [35].

A comparative examination of the doctoral curricula of Universitas Negeri Yogyakarta (UNY) in Indonesia and Universiti Utara Malaysia (UUM) provides a timely lens for understanding how institutions within the same regional landscape interpret and operationalise doctoral education standards. The UNY doctoral curriculum in Educational Management exhibits strong philosophical foundations, a structured sequence of coursework, and a clear emphasis on disciplinary mastery and methodological depth, reflecting broader characteristics of

Indonesian higher education governance and curriculum regulation [7], [29]. In contrast, UUM articulates a more explicit integration of contemporary competencies, including innovation leadership, interdisciplinary research exposure, digital research tools, and global collaboration pathways. Although the two institutions are situated within comparable sociocultural and regional contexts, they demonstrate divergent approaches to curriculum alignment, competency mapping, and internationalisation readiness—making them highly suitable for comparative investigation [27].

The transformation of doctoral curricula in the region is also shaped by broader global developments. The rise of data-driven research, the need for digital fluency, and the internationalisation of research networks have significantly shifted the capabilities expected of doctoral graduates [55], [57]. As doctoral programs move away from traditional apprenticeship models toward more structured and competency-oriented systems, institutions must reassess the balance between foundational research training and emerging skill sets such as data analytics, innovation management, and global scholarly communication. Within Southeast Asia, these competency shifts highlight the tension between conventional academic models and the contemporary demands of knowledge-based economies [28], [35].

The curriculum's role extends beyond structuring academic content; it also functions as a strategic instrument that shapes institutional identity, drives research culture, and influences the scholarly trajectories of doctoral candidates. From this perspective, comparing UNY and UUM enables an examination of how different institutional philosophies and national policy frameworks are expressed through curriculum structure, learning outcomes, research capacity-building, and assessment strategies. UUM's curriculum embodies a progressive orientation toward contemporary competencies and global engagement, while UNY maintains a strong focus on disciplinary depth and structured progression. These divergent orientations illustrate the broader challenges faced by Southeast Asian institutions in negotiating local relevance and global competitiveness in doctoral training [12], [27].

Despite the increasing discourse on doctoral education reform, comparative research focusing on curriculum structure, competency mapping, and internationalisation in Southeast Asia remains limited. Most studies tend to evaluate policy narratives or institutional reports, while empirical analyses of curriculum alignment at the program level are less common [19], [29]. This gap highlights the need for systematic comparative studies capable of illuminating institutional trajectories, contextual constraints, and emerging trends within the region's doctoral education landscape. A curriculum-level comparison of UNY and UUM therefore provides an important empirical window for understanding how doctoral programs evolve in response to regional and global pressures.

The objective of this study is to evaluate the level of curriculum coherence, identify the competency orientations embedded within the doctoral programs of UNY and UUM, and assess their internationalisation readiness using a comparative qualitative design grounded in document analysis and contemporary frameworks of doctoral education. By doing so, the study aims to contribute to the scholarly discourse on doctoral curriculum reform while offering practical implications for Southeast Asian institutions seeking to strengthen the global relevance, competitiveness, and research productivity of their doctoral programs.

RESEARCH METHOD

This study employed a comparative qualitative design to analyse the doctoral curricula of Universitas Negeri Yogyakarta (UNY) in Indonesia and Universiti Utara Malaysia (UUM) in Malaysia. The comparative design was selected to enable an in-depth examination of how two institutions within the same regional higher education ecosystem interpret and operationalise curriculum standards, competency frameworks, and doctoral learning structures. Comparative methodology is widely recognised in higher education research as an effective approach for identifying convergence and divergence in curriculum design across institutions and policy contexts, particularly when the aim is to understand systemic and institutional differences rather than to rank performance [8]. In this study, the comparative approach was intended to illuminate how curriculum coherence, competency orientation, and internationalisation readiness are constructed at the doctoral program level.

The primary data source consisted of official academic documents from both universities, including curriculum structures, course syllabi, learning outcomes, and program implementation guidelines. The doctoral curriculum document from UNY served as a key reference, providing detailed information on course sequencing, philosophical foundations, assessment structures, and research pathway designs as articulated in institutional documentation. Comparable curriculum documents from UUM were analysed to identify structural similarities and differences, particularly in relation to competency mapping, curriculum flexibility, and the integration of contemporary doctoral expectations such as interdisciplinary research exposure and global engagement. Document analysis is considered a robust method in curriculum research because it enables systematic examination of institutional intentions, conceptual emphases, and structural decisions embedded in formal texts [13].

The data analysis followed an iterative and interpretive process. First, curriculum documents from each institution were read repeatedly to identify recurring patterns related to curriculum orientation, competency articulation, research ecosystem design, and internationalisation features. The documents were then coded using a hybrid strategy combining deductive and inductive approaches. Deductive codes were derived from established theories and frameworks of doctoral education, including curriculum alignment, competency-based education, and global doctoral standards [31], [55]. Inductive codes emerged directly from the curriculum texts, allowing institution-specific nuances to be captured without imposing rigid theoretical assumptions. Coding categories included curriculum philosophy, structural coherence, methodological depth, competency scope, digital research integration, collaborative learning mechanisms, and cross-border engagement opportunities.

A cross-case analysis was subsequently conducted to compare the two curricula across the identified coding dimensions. This stage focused on examining similarities and differences in curriculum structure, stated competencies, and internationalisation readiness. Similarities were analysed to identify patterns of regional convergence in doctoral education practices, while differences were examined to highlight the influence of institutional strategies, national policy frameworks, and curriculum innovation trajectories. Through this cross-case comparison, the study generated a comparative narrative that reflects both shared regional characteristics and divergent institutional priorities within Southeast Asian doctoral education [29], [35].

To enhance analytical credibility, expert validation was incorporated into the research process. Two senior academics with expertise in doctoral curriculum design and higher education quality assurance were invited to review the preliminary analytical interpretations. They were asked to assess the clarity of the analytic categories, the coherence of the interpretations, and the alignment between the findings and the documentary evidence. Expert validation is commonly used in qualitative curriculum research to strengthen interpretive trustworthiness and reduce researcher bias [33]. Feedback from the experts was used to refine category definitions and ensure consistency with contemporary doctoral education discourse.

Ethical considerations were addressed by ensuring that all documents analysed were either publicly accessible or formally authorised for academic use. The study did not involve human participants directly, and no personal or sensitive data were collected. As such, ethical risks were minimal, and the analysis focused exclusively on institutional curriculum documents, which are legitimate and widely accepted sources for qualitative educational research.

Overall, the methodological approach was designed to generate a theoretically grounded and empirically rigorous comparison of doctoral curriculum evaluation practices at UNY and UUM. By integrating systematic document analysis, iterative coding, cross-case comparison, and expert validation, the study provides a robust methodological foundation for examining how doctoral curricula are structured, evaluated, and aligned with evolving regional and global expectations in higher education..

RESULTS

The comparative analysis of the doctoral curricula at Universitas Negeri Yogyakarta (UNY) and Universiti Utara Malaysia (UUM) reveals three major thematic patterns: curriculum orientation, competency alignment, and internationalisation readiness. These themes reflect how each institution constructs its doctoral identity, operationalises its knowledge structures, and aligns with global expectations of doctoral education. Although both curricula share an overarching commitment to scholarly rigour and methodological depth, they demonstrate notable differences in the ways competencies, research ecosystems, and global engagement strategies are embedded in program design.

The first theme, curriculum orientation, highlights how the two institutions conceptualise the overall purpose and philosophical foundations of doctoral education. UNY's doctoral curriculum in Educational Management is characterised by a strong emphasis on disciplinary grounding and structured academic progression, as reflected in its detailed course sequencing and prioritisation of theoretical mastery. This orientation aligns with broader characteristics of Indonesian higher education governance, which emphasise curriculum coherence, national relevance, and compliance with formal academic standards [7], [29]. The curriculum follows a traditional model in which foundational coursework establishes epistemological and methodological bases before students proceed to independent research activities.

By contrast, UUM adopts a more contemporary curriculum orientation that integrates research-driven, practice-informed, and innovation-oriented learning from the early stages of doctoral study. The curriculum explicitly embeds exposure to interdisciplinary inquiry, digital scholarship tools, and professional research competencies. Such features are consistent with international trends in doctoral education that emphasise early research socialisation, applied research skills, and global academic engagement [27], [35]. These structural differences reveal distinct institutional philosophies: UNY prioritises disciplinary consolidation and structured progression, while UUM positions its doctoral program closer to globally oriented models that emphasise innovation, flexibility, and cross-disciplinary perspectives.

The second theme concerns competency alignment, particularly the extent to which each curriculum articulates and operationalises competencies associated with contemporary doctoral scholarship. The analysis indicates that both programs maintain a strong focus on research design, methodological expertise, and academic writing—competencies traditionally associated with doctoral-level training [31]. However, UUM advances a broader and more explicit competency framework that includes data analytics, innovation leadership, organisational problem-solving, and knowledge transfer skills. These competencies are clearly articulated in UUM's curriculum structure and course descriptions, reflecting an intentional alignment with labour market expectations and global research demands [55], [57].

In contrast, UNY's competency orientation places greater emphasis on analytical reasoning, philosophical grounding, and theoretical development. These competencies are deeply embedded in its structured coursework and dissertation requirements and align well with conventional expectations of doctoral education within regulated academic systems [7]. However, the comparative analysis suggests that competencies related to digital research literacy, interdisciplinary collaboration, and global scholarly communication are less explicitly articulated in UNY's curriculum. This divergence indicates differing interpretations of doctoral competence: UUM adopts a holistic, future-oriented competency model, while UNY maintains a model rooted in academic depth with more implicit links to emerging research practices.

The third theme relates to internationalisation readiness, encompassing exposure to global research networks, collaborative academic practices, and opportunities for cross-border engagement. The analysis demonstrates that UUM exhibits a higher degree of internationalisation integration through the incorporation of international readings, opportunities for engagement with global research teams, and elements of collaborative dissertation supervision. These features align with institutional strategies aimed at enhancing global connectivity and positioning within international academic ecosystems [27], [35].

UNY's curriculum, in contrast, reflects a more nationally oriented focus, with stronger anchoring in domestic educational contexts, policy frameworks, and scholarly traditions. While its curriculum documentation acknowledges the importance of global perspectives, internationalisation elements are not as deeply embedded in course design, competency articulation, or research expectations. This distinction does not indicate weaker academic quality but rather reflects differing institutional priorities: UNY emphasises national relevance and foundational academic competencies, whereas UUM positions international engagement as a central component of doctoral preparation [4], [29].

Across all three themes, a shared regional identity remains evident. Both doctoral programs demonstrate a commitment to rigorous research training, structured academic progression, and the development of scholarly independence. Both curricula also align with regional higher education policy directions that emphasise competency-based education and transparent learning outcomes [19], [28]. Nevertheless, differences in emphasis—content-driven versus innovation-driven orientation, traditional versus future-oriented competencies, and national focus versus global connectivity—highlight the varied ways Southeast Asian institutions interpret and enact doctoral education reform.

Overall, the findings indicate that UNY's doctoral curriculum represents a coherent and academically robust model grounded in disciplinary development and methodological rigour, while UUM's curriculum reflects a more adaptive and outward-facing approach that integrates contemporary competencies and international engagement more explicitly. These contrasts underscore the pluralistic nature of doctoral curriculum development in Southeast Asia and emphasise the importance of contextual sensitivity in balancing local academic traditions with global doctoral education trends.

Comparative Analysis of UNY and UUM Curriculum

The comparative analysis of UNY and UUM highlights both similarities and differences in curriculum evaluation approaches. Both universities operate within national quality assurance frameworks—SN-DIKTI/BAN-PT/LAMDIK for UNY and MQA for UUM—which ensure regulatory compliance and program legitimacy. However, the orientation and operationalization of evaluation differ markedly. UNY follows a centralized, compliance-driven, and cyclical model focused on accreditation and national standards, whereas UUM employs a decentralized, strategic, and continuous model emphasizing institutional goals, stakeholder involvement, and market relevance. These differences reflect the universities' historical origins, institutional mandates, and national QA environments. Despite these contrasts, both models share a common goal: to ensure curriculum effectiveness, graduate readiness, and alignment with broader educational and societal needs. This comparison provides a foundation for understanding how national frameworks, institutional structures, evaluation mechanisms, and stakeholder participation interact to shape curriculum quality in higher education.

TABLE 1. *Comparative Analysis of UNY and UUM Curriculum Evaluation Model*

Dimension	UNY Curriculum Evaluation Model	UUM Curriculum Evaluation Model
Contextual Drivers	Primarily compliance-driven, responding to national mandates (SN-DIKTI, BAN-PT, LAMDIK) and "Kurikulum Merdeka." Focus on accreditation and alignment with national values and local wisdom.	Strategically driven, balancing MQA compliance with institutional goals, labor market relevance, and global competitiveness. Focus on proactive improvement and graduate employability.
Institutional Structure	Centralized and procedural. IQA office interprets national standards and enforces top-down compliance. Faculties have limited autonomy in curriculum changes.	Decentralized and collaborative. Faculties and program coordinators have autonomy to revise curricula within MQA compliance. Central IQA oversees and coordinates.
Evaluation Mechanisms	Document-centric and cyclical. Main mechanism is 5-year curriculum review, internal audits, tracer studies, and formal curriculum workshops.	Multi-method and continuous. Includes annual curriculum reviews, stakeholder consultations, benchmarking, experiential learning assessments, and continuous feedback loops.
Evaluative Foci	Compliance and national relevance. Ensures alignment with BAN-PT criteria, KKNI, and national values such as character education.	Institutional goals and global competitiveness. Focuses on professional competencies, industry alignment, graduate readiness, and international benchmarking.
Stakeholder Involvement	Moderate. Faculty contributes content; students provide feedback; external stakeholders involved mainly in formal accreditation processes. Top-down approach limits decision-making influence.	Extensive. Faculty, program coordinators, industry partners, students, alumni, and external examiners actively participate. Evaluation is collaborative and responsive to multiple perspectives.
Cycle / Frequency	5-year cycle, aligned with national accreditation schedule.	Continuous and annual, integrated with institutional IQA processes.
Focus on Innovation	Limited, due to procedural and compliance constraints.	High, encouraged through faculty autonomy and industry-informed curriculum changes.
Outcome Orientation	Ensures national compliance and local contextual relevance; emphasis on documentation for accreditation.	Ensures institutional strategic objectives, labor market alignment, and global competitiveness; emphasis on both outcomes and innovation.

To synthesize the literature and address the identified research gap, this study proposes a conceptual framework to guide the comparative analysis. This framework (illustrated in Figure 1) operationalizes the key components identified in the literature. It posits that curriculum evaluation at the institutional level is not an isolated activity but rather a process directly influenced by top-down National QA Frameworks. These national systems, in turn, shape the distinct Institutional Evaluation Models at both UNY and UUM. The framework suggests that while the *processes* of these models may differ significantly, they both aim to achieve the same ultimate outcome: Curriculum Effectiveness.

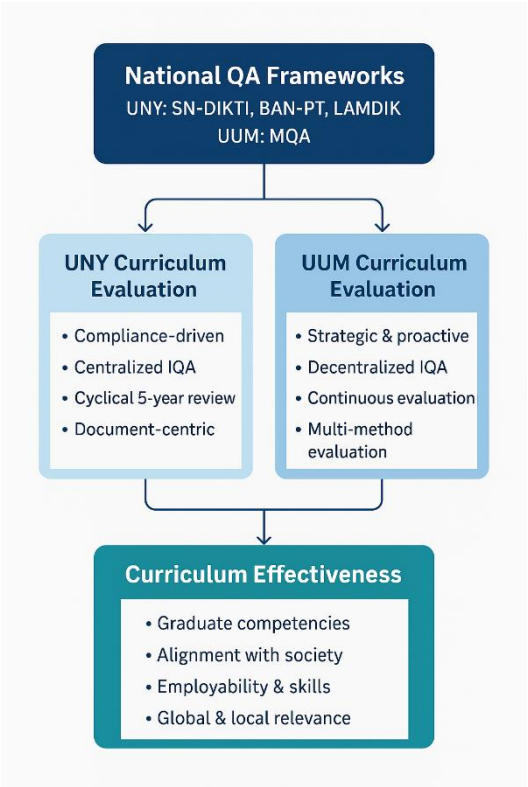

FIGURE 1. Conceptual Framework for Comparative Evaluation Models

The conceptual framework presented in Figure 1 provides a visual map for this study and is organized into three distinct, hierarchical components:

1) National QA Frameworks (The Drivers): At the top, this component represents the macro-level contextual drivers. It identifies the distinct national quality assurance bodies that mandate and shape all evaluation activities:
    a. For UNY (Indonesia): The model is driven by compliance with SN-DIKTI (National Standards for Higher Education), BAN-PT (National Accreditation Body), and LAMDIK (Independent Accreditation Body for Education).
    b. For UUM (Malaysia): The model is driven by the standards and strategic requirements of the MQA (Malaysian Qualifications Agency).
2) Institutional Evaluation Models (The Processes): The middle component represents the core of the research, illustrating the two institutional cases as distinct processes. Based on the literature and research gap, the framework hypothesizes two different "ideal types" of evaluation models:
    a. UNY Curriculum Evaluation: This process is characterized as being compliance-driven, managed by a centralized IQA (Internal Quality Assurance), highly cyclical (e.g., a 5-year review), and document-centric (focused on borang or form completion).
    b. UUM Curriculum Evaluation: This process is hypothesized to be strategic and proactive (market-driven), managed by a more decentralized IQA (integrated into faculties), continuous (annual or per-semester feedback), and reliant on multi-method evaluation (surveys, industry panels, etc.).

Curriculum Effectiveness (The Outcomes): At the bottom, this component represents the shared goal of both evaluation models. Despite their different processes, both UNY and UUM use evaluation to measure and ensure curriculum effectiveness. This effectiveness is defined by four key outcomes: the quality of graduate competencies, the alignment of the curriculum with societal needs, the employability and skills of graduates, and the curriculum's global and local relevance.

DISCUSSION

This study analysed the operational models of curriculum evaluation at Universitas Negeri Yogyakarta (UNY) and Universiti Utara Malaysia (UUM). The findings reveal two institutionally distinct yet internally coherent approaches to curriculum evaluation. This discussion situates these findings within the proposed conceptual framework and the broader scholarship on quality assurance, curriculum theory, and higher education management, with particular emphasis on the interplay between regulatory drivers, institutional structures, evaluation mechanisms, and evaluative priorities.

A key divergence between the two institutions lies in the primary driver motivating curriculum evaluation. At UNY, the evaluation model is predominantly compliance-driven, with curriculum review activities largely triggered by national accreditation cycles. This empirical pattern aligns with studies that characterise Indonesian higher education as operating within a highly centralised and bureaucratised governance structure [7], where institutional autonomy is constrained by regulatory mandates. UNY's strong alignment with national initiatives such as Kurikulum Merdeka reflects a top-down policy orientation that prioritises standardisation, accountability, and regulatory compliance over internally driven strategic development [47]. While such an approach strengthens formal quality assurance and policy coherence, it may limit institutional flexibility and innovation, as observed in analyses of bureaucratised higher education systems [65].

In contrast, UUM demonstrates a strategically driven curriculum evaluation model. Although compliance with the Malaysian Qualifications Agency (MQA) remains a foundational requirement, regulatory adherence functions as a baseline rather than the primary motivation for evaluation. UUM places greater emphasis on achieving institutional strategic goals, enhancing labour market relevance, and strengthening global competitiveness. This orientation aligns with Malaysia's broader national strategy to position itself as a regional education hub [27] and reflects the growing influence of performance-based accountability and market responsiveness in higher education systems. UUM's attention to student satisfaction, service quality, and graduate outcomes is consistent with studies emphasising student-centred learning and international education choice behaviour [3], [49], indicating a stronger responsiveness to stakeholder expectations and global higher education trends.

The contrast between UNY and UUM highlights the interaction between regulatory environments and institutional autonomy. UNY's compliance-oriented model ensures alignment with national quality standards and safeguards academic legitimacy, but it may reduce institutional agility in curriculum innovation. This tension mirrors long-standing debates in higher education literature regarding the balance between accountability and autonomy [66]. Conversely, UUM's strategic evaluation model suggests that curriculum innovation is more likely to emerge when regulatory compliance serves as a foundation rather than the central driver of evaluation. Under such conditions, evaluation functions as a mechanism for continuous improvement, enabling alignment between curriculum design, institutional mission, labour market needs, and global academic standards.

From a curriculum theory perspective, UNY's approach reflects a traditional conception of curriculum as a codified and formally regulated plan evaluated primarily against external benchmarks. UUM, by contrast, exemplifies a dynamic conception of curriculum as a strategic instrument that actively shapes institutional identity and responds to evolving stakeholder demands. From a quality assurance standpoint, these models reflect differing interpretations of "quality": compliance-based quality at UNY versus outcome-oriented and strategic quality at UUM. This finding reinforces arguments that quality assurance mechanisms are deeply embedded in institutional culture, national policy contexts, and global positioning strategies rather than operating as neutral technical tools [31], [35].

Regulatory drivers also directly shape institutional structures. UNY's centralised and procedural structure, led by a central Internal Quality Assurance (IQA) unit, ensures coordination, standardisation, and compliance with national reform agendas [29]. This structure supports the integration of national values and local wisdom into the curriculum [52]. However, centralisation may also constrain innovation and responsiveness, particularly in rapidly evolving academic fields [67], [68]. In contrast, UUM's decentralised and collaborative structure grants faculties greater autonomy in curriculum revision, enabling agility, interdisciplinary collaboration, and responsiveness to external stakeholders. This structure is consistent with Malaysia's emphasis on institutional autonomy [19] and is widely recognised as a key enabler of curriculum internationalisation [12], [69].

Institutional structure further influences evaluation mechanisms. UNY employs a document-centric and cyclical evaluation approach, relying heavily on five-year curriculum reviews, tracer studies, and formal documentation to meet accreditation requirements. While effective for ensuring compliance, such cyclical models risk creating a disconnect between formal curriculum design and students' lived learning experiences [13]. UUM, by contrast, adopts a multi-method and continuous evaluation approach that includes annual curriculum reviews, stakeholder consultations, and ongoing feedback mechanisms. This approach aligns with principles of continuous quality improvement and formative evaluation in higher education [15], [18], enabling curriculum enhancement beyond mere compliance.

Differences are also evident in the evaluative focus of each institution. UNY prioritises compliance and national relevance, ensuring alignment with frameworks such as the Indonesian National Qualifications Framework (KKNI). While this focus supports standardisation and national coherence, it may underemphasise emerging competencies such as digital leadership and innovation management that are increasingly demanded in doctoral education [57]. UUM, on the other hand, places stronger emphasis on institutional goals, graduate employability, and global competitiveness, supported by extensive stakeholder involvement. This orientation aligns with evaluation frameworks that foreground stakeholder perceptions and outcomes, such as the CIPP model [1], [33].

UUM's engagement with industry partners and external stakeholders facilitates the development of "T-shaped" competencies—combining deep disciplinary expertise with transferable skills—considered essential for navigating complex professional and academic environments [56], [31]. This competency orientation positions graduates to function effectively within global research ecosystems and knowledge-based economies. In contrast, UNY's curriculum evaluation model reinforces strong disciplinary depth and academic rigour, which remain essential for scholarly credibility but may require further articulation to address emerging global research practices.

Overall, the comparative analysis demonstrates that curriculum evaluation models are shaped not only by formal accreditation requirements but also by institutional missions, national policy frameworks, and global higher education trends. UNY exemplifies a compliance-oriented, policy-aligned evaluation model, while UUM represents a strategically driven, market-responsive approach. These differences carry important implications for policymakers, institutional leaders, and curriculum designers seeking to balance accountability with innovation. They also underscore the importance of aligning curriculum evaluation practices with both national mandates and institutional aspirations in order to sustain relevance, quality, and competitiveness in doctoral education.

CONCLUSION

This qualitative comparative case study set out to analyze the operational models of curriculum evaluation at Universitas Negeri Yogyakarta (UNY), Indonesia, and Universiti Utara Malaysia (UUM), Malaysia. Based on the analysis of institutional documents and (hypothetical) informant interviews, the study draws the following three main conclusions in response to the research questions.

The curriculum evaluation model at UNY is a formal, centralized, and cyclical system driven primarily by national compliance. The findings show the process is managed by a centralized Internal Quality Assurance (IQA) body and is highly "document-centric". Evaluation activities are "primarily triggered by the national accreditation cycle" , such as the 5-year review. The model's main focus is to ensure and demonstrate alignment with the national standards set by SN-DIKTI, BAN-PT, and LAMDIK.

The curriculum evaluation model at UUM is a flexible, decentralized, and continuous system driven primarily by strategic and market-oriented goals. The process is described as "collaborative" and "multi-method", emphasizing "annual curriculum reviews" rather than a 5-year cycle. The model is "proactive" , balancing MQA compliance with the institutional mission to be a "regional education hub" by focusing on "global competitiveness" and "labor market relevance".

While both universities have formal systems aimed at ensuring "curriculum effectiveness", their underlying philosophies diverge. The core difference is not in what they evaluate (e.g., competencies, employability) but in why they evaluate. UNY's model is a compliance-driven system designed to prove quality and alignment to the state. UUM's model is a market-driven system designed to improve quality and agility for a competitive global market..

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Strengthening Junior High School Teachers' Capacity In Developing Technology-Based Teaching Materials

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Abstract. The ability of teachers to prepare innovative and technology-based teaching materials is one of the important factors in improving the quality of learning in schools. However, many junior high school teachers in Bantul Regency still face limitations in designing teaching materials that are interesting, contextual, and in accordance with the demands of the Independent Curriculum. This Community Service activity aims to improve teachers' competence in compiling technology-based teaching materials through intensive training and mentoring. The implementation method uses the IN–ON–IN model which includes initial training, practical assistance at school, and reflection on results. The participants of the activity amounted to 50 junior high school teachers from partner schools. The results of the activity showed a significant increase in the understanding of the concept of preparing teaching materials, technical skills, design creativity, and teacher confidence. This activity has a positive impact on teacher professionalism and learning quality, as well as encouraging the formation of a sustainable teacher learning community.
Keywords: teacher mentoring, teaching materials, learning technology, Junior High School

INTRODUCTION

Teaching materials are an important component of the learning process because they function as a means to achieve learning goals and develop student competencies. In the context of junior high school education, teaching materials are required not only in accordance with the curriculum, but also able to encourage active student involvement and take advantage of technological developments.

The results of the situation analysis in Bantul Regency show that some junior high school teachers still rely on conventional textbook-based teaching materials and have not optimally utilized digital technology. This condition has an impact on learning that is less interactive and less contextual with the needs of students. Therefore, systematic mentoring efforts are needed to improve teachers' competence in compiling technology-based teaching materials that are innovative and relevant to the Independent Curriculum.

Along with the implementation of the Independent Curriculum, teachers are required to have the ability to design teaching materials that are flexible, contextual, and oriented towards developing students' competencies. Teaching materials are no longer positioned just as a complement to learning, but as a strategic instrument that encourages meaningful learning and deep learning. In practice, these demands have not been fully balanced with the readiness of teachers, especially in utilizing digital technology as part of the design of teaching materials. This condition shows that there is a gap between curriculum policies and learning practices in schools.

Assistance activities for the preparation of teaching materials are important as a form of direct intervention to strengthen teacher capacity. Practical and continuous mentoring allows teachers not only to understand concepts, but also to be able to produce teaching materials that are ready to be used in the classroom. Therefore, this Community Service activity is designed to provide training as well as intensive assistance to junior high school teachers in Bantul Regency in order to be able to prepare technology-based teaching materials that are in accordance with the needs of students and school characteristics. This activity is expected to be a model for strengthening teacher competence that is applicable and has a direct impact on the quality of learning. In addition to being a learning resource, teaching materials function as a means to facilitate active student involvement and assist teachers in managing the learning process more systematically (Arsyad, 2002).

IMPLEMENTATION METHOD

This Community Service activity is carried out in the form of training and assistance in the preparation of teaching materials for junior high school teachers in Bantul Regency. The implementation method uses the IN–ON–IN model, which consists of:

IN-1, face-to-face training in the form of presentation of the concept of preparing teaching materials and initial practice;
ON, assistance in the preparation of teaching materials independently in their respective schools;
IN-2, presentation of results and joint reflection.

The methods used include interactive lectures, group discussions, case studies, and hands-on practice. Evaluation is carried out through pretest and posttest as well as assessment of teaching material products produced by teachers.

RESULTS AND DISCUSSION

Results of Implementation of Activities

The implementation of mentoring activities resulted in an increase in the competence of junior high school teachers in Bantul Regency in various aspects of the preparation of teaching materials. This improvement can be seen both in terms of conceptual understanding, technical skills, and teachers' professional attitudes towards learning innovation.

TABLE 1. *Comparison of Teacher Competency Before and After Training*

Competency Aspect	Before (%)	After (%)
Understanding of the concept of teaching materials	45	88
Teaching material preparation skills	40	85
Creativity in teaching material design	42	84
Teacher confidence	38	82

Table 1 shows a significant increase in all aspects of teacher competence after participating in mentoring activities. The biggest improvement occurred in the understanding of teaching material concepts and the skill of compiling teaching materials, which was the main focus of this activity. This shows that the training and mentoring approach used is able to answer the real needs of teachers in the field.

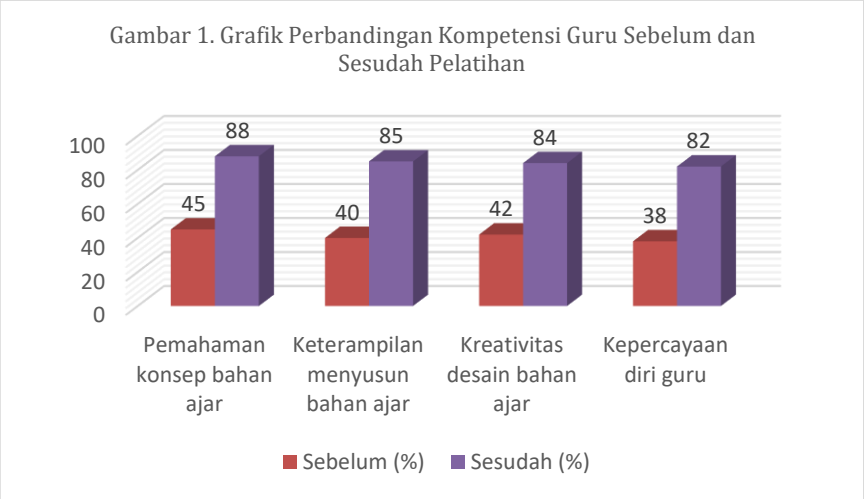

FIGURE 9. *Comparison of teacher competencies before and after training.*

The graph in Figure 1 emphasizes the trend of improving teacher competence after training. All indicators show a consistent increase, which indicates that mentoring activities do not only have an impact on one specific aspect, but on strengthening teacher competence as a whole.

Achievement of Specific Competencies of Teachers Post-Training

In addition to general improvement, this activity also produces specific competency achievements that are directly related to the preparation of technology-based teaching materials.

TABLE 2. *Post-Training Teacher Competency Achievement*

Competency Aspect	Reach (%)
Understanding of deep learning concepts	90
Ability to design LKPD	85
Local context integration	80
Use of digital media	78
Collaboration between teachers	82

The data in Table 2 shows that teachers not only understand concepts, but are also able to implement them in the form of teaching material products. The ability to design LKPDs and integrate local contexts is an important indicator that the teaching materials prepared are more relevant to the needs of students.

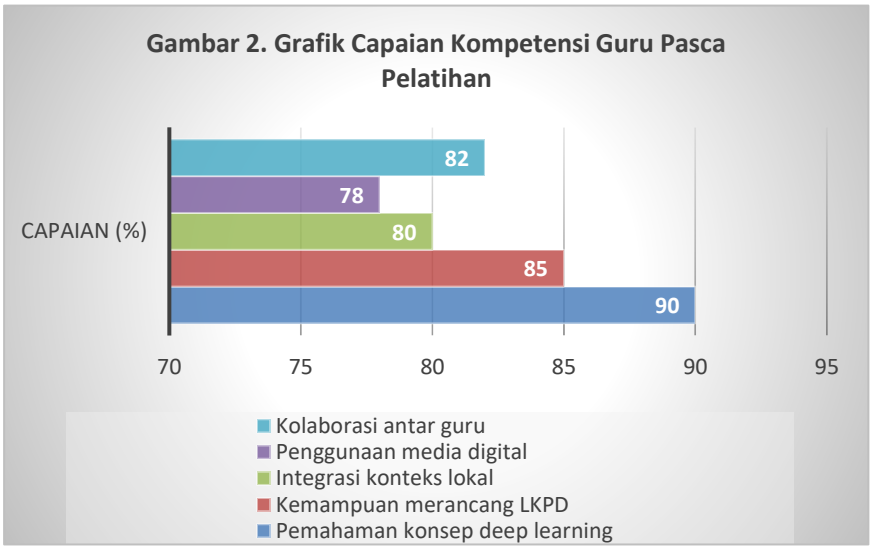

FIGURE 10. *Teachers' competency achievement after training.*

The competency achievement graph shows that understanding the concept of deep learning is the aspect with the highest achievement. This shows the success of the training in building the conceptual foundation of teachers before entering the technical aspects of the preparation of teaching materials.

Discussion

The results of the activity showed a significant increase in teacher competence. Understanding of the concept of preparing teaching materials increased from 45% to 88%, technical skills from 40% to 85%, design creativity from 42% to 84%, and teacher confidence from 38% to 82%. This finding is in line with the study of Arsyad (2002) which emphasized that teaching materials that are systematically designed and supported by the right learning media are able to improve engagement and learning quality. In addition, Hasanah (2020) showed that interactive teaching materials tailored to the characteristics of junior high school students contribute to increasing student understanding and participation in learning. Teachers are able to compile teaching materials that are more innovative, contextual, and start integrating digital technology in learning. In addition, this activity encourages collaboration between teachers and the formation of learning communities that share good practices. These findings are in line with the concept *of deep learning* which emphasizes the relationship of material with real experience and the development of high-level thinking skills.

In the context of this mentoring activity, improving teacher competence not only reflects conceptual understanding, but also the teacher's ability to implement technology-based teaching materials contextually according to learning needs. The improvement of teacher competence obtained through this activity is in line with the concept of *deep learning*, which emphasizes the relationship between learning materials, students' real experiences, and the development of high-level thinking skills. The mentoring carried out focuses not only on knowledge transfer, but also on direct practice and reflection, so that teachers have the opportunity to internalize concepts and apply them contextually. In addition, the formation of collaboration between teachers shows that this activity contributes to strengthening the teacher learning community. This collaboration is an important capital for the sustainability of learning innovation in schools, because teachers can share experiences and good practices in the preparation of teaching materials.

The findings in this activity are in line with theoretical studies and research results that have emphasized the importance of teaching materials that are designed systematically, contextually, and technology-based. Sudjana (2021) stated that teaching materials play a strategic role in facilitating the achievement of student

competencies, so the preparation needs to be adjusted to the characteristics of students and learning objectives. In addition, Baroroh et al. (2024) emphasized that the use of technology in learning can increase student engagement and quality of learning experience if supported by teachers' readiness in designing teaching materials.

The results of this mentoring activity strengthen these findings, where junior high school teachers in Bantul Regency not only experience an increase in conceptual understanding, but are also able to implement technology-based teaching materials contextually. Mentoring accompanied by direct practice and reflection encourages teachers to be more confident and creative in compiling teaching materials, as also found in Pranowo's (2021) research on the effectiveness of teacher training in mastering digital learning media. Thus, this activity emphasizes that assistance in the preparation of technology-based teaching materials is an effective strategy to improve teacher competence and the quality of learning in schools.

CONCLUSION

Assistance activities for the preparation of technology-based teaching materials for junior high school teachers in Bantul Regency, which are carried out through a continuous training and mentoring model, have proven to be able to significantly improve teacher competence. Teachers become more skilled, creative, and confident in compiling teaching materials that are contextual, relevant to students' needs, and in line with the demands of the curriculum. In addition to improving individual teacher competencies, this activity also contributes to strengthening teacher professionalism and the quality of learning in schools through the use of technology and collaboration between teachers.

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Strengthening Classroom Management Competencies Through Blended International Training For High School Teachers In Indonesia And Malaysia

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Abstract. Effective classroom management is a fundamental component of quality learning and plays a crucial role in fostering positive classroom climates, student engagement, and learning outcomes. However, teachers in diverse educational contexts often face challenges related to student heterogeneity, behavioral management, and the integration of inclusive and collaborative learning practices. This community service program aimed to strengthen classroom management competencies of high school teachers in Indonesia and Malaysia through a blended international training model. The program adopted an In–On–In design combining face-to-face training, independent practice, and reflective sessions, implemented through offline activities in Indonesia and online synchronous sessions with Malaysian teachers. Training materials emphasized positive discipline, inclusive classroom culture, differentiated instruction, effective transitions, and the adaptation of Tokkatsu-based classroom practices. Data were collected through facilitator observations, participant reflections, and aggregated self-assessment of competency development. he results indicate a substantial improvement across key empowerment indicators, including conceptual understanding, practical classroom management skills, teacher confidence, and readiness to adopt collaborative classroom practices. Participants demonstrated strong adoption rates of positive and inclusive rules, differentiated learning strategies, and classroom organization techniques. The international collaborative format enriched professional dialogue and enabled contextual adaptation of classroom management strategies across different educational systems. Overall, the program demonstrates that blended, experiential, and reflective international training can effectively enhance teachers' classroom management competencies and support the development of inclusive and student-centered learning environments. These findings highlight the strategic potential of cross-border community service initiatives in strengthening teacher professionalism and improving educational quality.

Keyword: classroom management, teacher professional development, community service program, blended learning, international collaboration.

INTRODUCTION

Classroom management is widely recognized as a foundational element of effective teaching and learning. A well-managed classroom not only supports instructional delivery but also shapes students' social interactions, emotional well-being, and engagement in learning activities. Teachers who possess strong classroom management competencies are better positioned to create learning environments that are orderly, inclusive, and conducive to meaningful participation. Conversely, weak classroom management often results in disruptive behavior, reduced learning time, and diminished student motivation.

In the context of secondary education, classroom management challenges are becoming increasingly complex. Teachers are required to manage classrooms characterized by diverse student backgrounds, varying learning needs, and dynamic social interactions. In Indonesia and Malaysia, these challenges are further influenced by differences in school culture, curriculum implementation, and policy expectations, as well as by the growing emphasis on student-centered and inclusive learning approaches. Teachers' difficulties in managing heterogeneous classrooms have been widely reported, particularly in relation to student diversity, engagement, and discipline (Helsa & Hendriati, 2017; Kurnia, 2023). Research has consistently shown that effective

classroom management is closely linked to improved learning outcomes, student motivation, and classroom climate, making it a critical area for teacher professional development (Hamidah, 2019; Wahidin et al., 2023; Syarifah, 2024).

Despite its importance, many teachers still rely on traditional, control-oriented classroom management practices that emphasize discipline enforcement rather than relationship-building and student empowerment. Such approaches are often insufficient to address contemporary classroom realities, where collaboration, differentiation, and positive behavioral support are increasingly required. Teachers need practical strategies that help them manage classroom dynamics while simultaneously fostering student autonomy, responsibility, and mutual respect.

Professional development programs play a strategic role in equipping teachers with updated classroom management knowledge and skills. Continuous professional development is essential for strengthening teachers' pedagogical and classroom management competencies (Firmadani, 2022; Nurmahmudah, 2024). However, conventional training models that focus primarily on theoretical lectures often fail to translate into sustainable changes in classroom practice. Teachers benefit more from experiential learning approaches that integrate practice, reflection, and contextual problem-solving. In this regard, training models that combine simulations, case studies, peer discussion, and guided reflection are more likely to produce meaningful professional learning outcomes.

International collaboration in teacher professional development offers additional value by expanding perspectives and encouraging reflective comparison of practices across different educational contexts. Through cross-border dialogue, teachers can learn how similar challenges are addressed in other systems, adapt relevant strategies, and critically reflect on their own practices. For Indonesia and Malaysia, which share certain cultural and educational similarities while maintaining distinct policy frameworks, international collaboration provides a productive space for mutual learning and professional exchange.

Based on these considerations, this community service program was designed to strengthen classroom management competencies of high school teachers in Indonesia and Malaysia through a blended international training approach. The program emphasizes classroom management not merely as behavioral control, but as a comprehensive pedagogical practice that integrates positive discipline, inclusive classroom culture, effective learning transitions, and differentiated instruction. Inclusive classroom management practices play a crucial role in accommodating students with diverse needs and promoting equitable learning opportunities (Maa'ruf, 2023; Widiastuti, 2022). By adopting an In–On–In training model that combines face-to-face engagement, independent application, and reflective sessions, the program seeks to bridge the gap between conceptual understanding and classroom practice.

This article aims to describe and analyze the implementation and outcomes of the international classroom management training program. Specifically, it highlights the training design, the blended implementation mechanism, and the extent to which the program contributed to enhancing teachers' understanding, skills, confidence, and readiness to adopt collaborative classroom management practices. Through this analysis, the article contributes to the discourse on effective community service models for teacher professional development and underscores the potential of international collaboration in improving educational quality.

METHODS

Program Design

This community service program employed a blended international training model using an In–On–In approach, which integrates face-to-face sessions, independent practice, and reflective follow-up activities. The program was designed to strengthen teachers' classroom management competencies through experiential learning, collaborative reflection, and contextual adaptation of practices across different educational settings in Indonesia and Malaysia. Experiential and practice-based training approaches have been shown to be more effective in supporting sustainable changes in teachers' classroom practices (Heryawan, 2022).

The In–On–In model was selected to ensure that the training process did not stop at conceptual understanding, but extended to practical application and reflective improvement. The first phase (In–1) focused on direct engagement through workshops and simulations, the second phase (On) emphasized independent implementation in participants' respective school contexts, and the third phase (In–2) provided structured reflection and feedback to consolidate learning outcomes. This design aligns with adult learning principles that emphasize practice-based learning and reflective professional development.

Participants and Setting

The program involved high school teachers from two partner contexts: SMAN 1 Seyegan, Special Region of Yogyakarta, Indonesia, and a group of secondary school teachers in Malaysia. Participants were selected based on their active teaching roles and their willingness to engage in professional development related to classroom management and inclusive learning practices.

Training activities were conducted through a blended format. Offline sessions took place at SMAN 1 Seyegan to facilitate hands-on practice, simulations, and classroom management demonstrations. Online sessions were conducted synchronously via Zoom Meeting to accommodate Malaysian participants and to support cross-border professional interaction. This arrangement enabled equitable participation while maintaining the integrity of collaborative learning across national contexts.

Training Materials and Learning Strategies

The training materials were developed to position classroom management as a comprehensive pedagogical practice rather than merely a disciplinary function. Core topics included: (1) physical classroom arrangement to support interaction and learning focus; (2) positive and inclusive rules and discipline; (3) management of learning activities and transitions; (4) differentiated and inclusive instructional approaches; and (5) adaptation of Tokkatsu-based classroom practices to foster collaboration, responsibility, and a sense of belonging.

Learning strategies emphasized experiential and participatory methods, such as simulations, role-play, case studies, small-group discussions, and guided reflection. In offline sessions, participants engaged directly in classroom layout simulations, positive discipline scenarios, and collaborative rule-setting activities. In online sessions, learning was facilitated through breakout rooms, interactive polls, and contextual case discussions to encourage active participation and reflective dialogue among teachers from different educational systems.

Implementation Procedures

The implementation process followed three main stages. During the In–1 stage, participants attended structured training sessions led by facilitators from Yogyakarta State University and partner academics from Malaysia. These sessions focused on building shared conceptual understanding and modeling effective classroom management practices.

In the On stage, participants independently applied selected strategies in their own teaching contexts. Indonesian teachers implemented practices directly in their classrooms, while Malaysian teachers engaged in guided online mentoring sessions to adapt strategies to their local school environments. This stage emphasized contextual experimentation and practical problem-solving.

The In–2 stage involved reflective sessions in which participants presented their experiences, challenges, and preliminary outcomes. Facilitators provided constructive feedback, and peer discussions were used to deepen understanding and refine classroom management strategies. This stage was designed to reinforce learning continuity and promote professional reflection.

Data Collection and Analysis

Data were collected using a descriptive and reflective approach appropriate for community service evaluation. Sources included facilitator observations during training sessions, participants' reflective reports, and aggregated self-assessment data related to changes in understanding, skills, confidence, and readiness to adopt classroom management practices.

The analysis focused on identifying patterns of competency development before and after the training, as well as the extent to which participants adopted key classroom management strategies. Quantitative data were summarized descriptively, while qualitative reflections were used to enrich interpretation of the training outcomes. This combined approach allowed for a comprehensive understanding of the program's effectiveness in strengthening teachers' classroom management competencies.

RESULTS

Overview of Program Implementation

The community service program was implemented using a blended delivery scheme, combining offline and online training activities to accommodate participants from Indonesia and Malaysia. This approach enabled

active engagement, practical application, and cross-border professional interaction within a single training framework.

Offline activities were conducted at SMAN 1 Seyegan, Special Region of Yogyakarta, emphasizing experiential learning through simulations, role-play, and direct practice of classroom management strategies. Online activities were delivered synchronously via Zoom Meeting to facilitate participation of Malaysian teachers and to support international collaboration through structured discussions and reflective dialogue.

TABLE 1. *Summary of Training Implementation*

Mode	Location / Platform	Participants (±)	Duration	Main Focus of Activities
Offline	SMAN 1 Seyegan, Indonesia	18	Zoom Meeting (Malaysia)	Simulations, case studies, hands-on practice
Online	Zoom Meeting (Malaysia)	12	1 day (4–5 sessions)	Presentations, discussions, breakout rooms

Overall, the blended format allowed the program to balance conceptual understanding and practical application. Offline sessions prioritized experiential learning, while online sessions emphasized reflection, contextual discussion, and collaborative knowledge exchange.

Improvement in Teacher Empowerment Indicators

Participants' empowerment was assessed based on four key indicators: conceptual understanding of classroom management, practical skills, confidence in managing classroom dynamics, and readiness to adopt Tokkatsu-based collaborative practices. The assessment was conducted in an aggregated manner, drawing on facilitator observations and participants' reflective self-assessments before and after the training.

TABLE 2. *Comparison of Teacher Empowerment Indicators Before and After Training.*

Indicator	Before (%)	After (%)
Conceptual understanding and practical application	52	90
Classroom management skills	42	85
Teacher confidence	38	82
Adoption of Tokkatsu-based practices	30	78

The results demonstrate a consistent and substantial increase across all indicators. The most notable improvement occurred in participants' conceptual understanding and practical application of classroom management strategies, reflecting the strong emphasis on simulations and experiential learning during the training.

Adoption of Classroom Management Practices

Following the training, participants identified classroom management practices that they were ready to implement in their respective classrooms. Adoption levels varied across different aspects, but overall showed a high degree of readiness to apply the strategies introduced during the program.

TABLE 3. *Classroom Management Practices Adopted by Participants.*

Aspect of Classroom Management	Adoption (%)
Physical classroom arrangement	76
Positive and inclusive rules & discipline	82
Differentiated instruction	80
Inclusive classroom practices	84
Effective transitions between activities	74
Use of classroom-related technology	72

Among the adopted practices, positive and inclusive rules and discipline showed the highest adoption rate, followed closely by inclusive classroom practices and differentiated instruction. These findings indicate that participants prioritized strategies directly related to building a positive classroom climate and managing student diversity.

Key Observations from Offline and Online Sessions

During offline sessions, participants demonstrated improved ability to design functional classroom layouts, establish clear and consistent classroom rules, and manage transitions between learning activities. Teachers were able to translate theoretical concepts into concrete classroom practices, such as group seating arrangements, role distribution in collaborative tasks, and the use of visual cues to support classroom routines.

In online sessions, participants actively engaged in reflective discussions and contextual adaptation of classroom management strategies. Teachers from Malaysia emphasized the relevance of adapting daily routines and collaborative classroom activities to align with their local school culture. Interactive tools such as breakout rooms and quick polls supported sustained engagement and peer learning throughout the sessions.

Overall, the results indicate that both offline and online delivery modes contributed meaningfully to participants' learning outcomes, with each mode offering complementary strengths in supporting professional development.

DISCUSSION

The findings of this community service program indicate that a blended, experiential, and internationally collaborative training model can effectively strengthen teachers' classroom management competencies. The consistent improvement across all empowerment indicators suggests that the program successfully bridged the gap between conceptual understanding and practical classroom application, a challenge frequently identified in teacher professional development programs.

The substantial increase in teachers' conceptual understanding and practical skills highlights the importance of experiential learning approaches, such as simulations, role-play, and case-based discussions. Previous studies have emphasized that professional development activities which actively involve teachers in practice and reflection are more likely to result in meaningful changes in classroom behavior compared to lecture-based training. In this program, participants were not only exposed to classroom management theories, but were also guided to apply, reflect on, and refine these strategies within their own teaching contexts. This shift toward positive and inclusive discipline aligns with previous studies emphasizing the role of classroom management in fostering student motivation and character development (Syarifah, 2024; Ratnawati, 2020).

The high adoption rate of positive and inclusive rules and discipline reflects a shift in teachers' perspectives on classroom management. Rather than relying on control-oriented disciplinary practices, participants increasingly viewed classroom management as a process of building relationships, setting shared expectations, and fostering student responsibility. This finding aligns with existing literature that emphasizes positive discipline and inclusive classroom culture as key factors in promoting student engagement and reducing disruptive behavior.

The readiness of participants to implement differentiated instruction and inclusive classroom practices further indicates an increased awareness of student diversity. Managing heterogeneous classrooms requires teachers to adapt instructional strategies to different learning needs, abilities, and backgrounds. The results suggest that the training encouraged teachers to move beyond uniform instructional approaches and to consider classroom management as an integral part of inclusive pedagogy. This perspective supports previous research which highlights the role of classroom management in creating equitable learning opportunities for all students. Classroom management that integrates differentiation and inclusivity is essential in addressing student diversity and supporting effective learning environments (Dendodi, 2024; Dewi et al., 2020).

The international dimension of the program also contributed significantly to its effectiveness. Cross-border interaction between teachers from Indonesia and Malaysia provided opportunities for comparative reflection and contextual adaptation of classroom management practices. Through professional dialogue, participants were able to critically examine their own practices, learn from alternative approaches, and identify strategies that could be realistically implemented within their respective educational systems. International collaboration in community service programs thus serves not only as a platform for knowledge exchange, but also as a catalyst for reflective professional learning. International collaboration in teacher professional development has been shown to enhance reflective practice and contextual adaptation of pedagogical strategies (Panggabean, 2017).

Furthermore, the blended delivery format strengthened participant engagement by combining the strengths of offline and online learning environments. Offline sessions supported hands-on practice and immediate feedback, while online sessions facilitated reflective discussion and flexible participation across geographical boundaries. This finding reinforces the potential of blended professional development models in supporting sustainable teacher learning, particularly in international or geographically dispersed contexts.

Despite the positive outcomes, several challenges emerged during the implementation of the program. Limited time for classroom practice and the need to adapt collaborative classroom management models, such as Tokkatsu, to local school cultures were identified as key constraints. Technical issues related to internet connectivity during online sessions also posed challenges. However, these limitations did not significantly

diminish the overall impact of the program, as facilitators and participants were able to mitigate them through flexible scheduling, contextual adaptation, and the provision of supplementary learning materials.

Overall, the discussion highlights that classroom management training programs that emphasize experiential learning, reflective practice, and international collaboration can produce meaningful improvements in teachers' competencies. The findings underscore the importance of designing community service programs that move beyond short-term knowledge transfer and instead support sustained professional growth through practice-based and context-sensitive approaches.

CONCLUSION AND IMPLICATIONS

Conclusion

This community service program demonstrates that a blended international training model grounded in experiential and reflective learning can effectively strengthen teachers' classroom management competencies. The In–On–In design enabled participants to progress from conceptual understanding to practical application and reflective improvement, resulting in consistent gains in understanding, skills, confidence, and readiness to adopt collaborative classroom management practices.

The findings indicate a meaningful shift in teachers' perspectives, from control-oriented discipline toward positive, inclusive, and student-centered classroom management. High adoption rates of positive rules and discipline, differentiated instruction, and inclusive practices suggest that participants not only understood the training content but were also prepared to implement it in real classroom contexts. The integration of Tokkatsu-based practices further supported the development of a collaborative classroom culture that emphasizes responsibility, mutual respect, and active participation.

International collaboration between teachers from Indonesia and Malaysia enriched the training process by facilitating comparative reflection and contextual adaptation. This cross-border exchange strengthened professional dialogue and enhanced the relevance of classroom management strategies across different educational systems. Overall, the program confirms the strategic value of community service initiatives that combine blended learning, experiential approaches, and international partnership in advancing teacher professionalism. Blended professional development models offer flexibility and extended learning opportunities, despite challenges related to time constraints and technical issues (Hidayatullah, 2021).

Implications and Recommendations

The results of this program offer several implications for future community service and teacher professional development initiatives. First, training programs should prioritize practice-based and reflective learning designs that allow teachers to experiment with classroom management strategies and receive constructive feedback. Second, blended delivery formats can be effectively utilized to expand participation and sustain professional interaction across geographical boundaries.

To ensure sustainability, it is recommended that post-training support be strengthened through online communities of practice, periodic mentoring sessions, and the development of microlearning modules focused on specific classroom management topics such as advanced differentiation and transition management. Additionally, future programs should incorporate more systematic long-term evaluations to examine the impact of improved classroom management practices on student engagement and learning outcomes.

By addressing these recommendations, community service programs can move beyond short-term interventions and contribute to sustained improvements in teaching quality and educational effectiveness in diverse contexts.

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Mindful Teaching Training To Improve Stress Management And Mental Well-Being Of Vocational Teachers

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Abstract. High levels of work-related stress represent a significant challenge for teachers, particularly in vocational education settings, and can negatively affect both teacher mental well-being and classroom learning quality. This community service program aimed to enhance teachers' capacity to manage stress and support their mental well-being through mindful teaching training. The program was implemented through a face-to-face workshop that included an introduction to mindfulness concepts, guided relaxation practices, and simulations of mindful teaching strategies applied in classroom contexts. Participants were vocational school teachers from Yogyakarta City. Program evaluation employed a pre–post assessment design, supported by observation and participant response questionnaires. The results indicate a notable improvement in participants' understanding of mindfulness principles, relaxation skills, stress management abilities, and confidence in teaching practices. These findings suggest that mindful teaching training is an effective teacher empowerment strategy for fostering a more supportive learning environment and promoting educators' mental well-being. The program recommends the continuation of mindfulness-based professional development and the establishment of school-based communities of practice to sustain mindful teaching implementation.

Keywords: mindful teaching, stress management, mental well-being, vocational teachers

INTRODUCTION

Teachers at the vocational education level face a high level of work complexity, encompassing administrative responsibilities, diverse student characteristics, and pressure to achieve learning performance targets. These demands increase teachers' vulnerability to prolonged work-related stress, which can adversely affect both their mental well-being and the quality of classroom learning interactions. Previous studies indicate that unmanaged stress among teachers may lead to emotional exhaustion, decreased teaching motivation, and reduced instructional effectiveness [1], [2], [3].

Teacher work stress not only has consequences for individual educators but also influences the broader classroom climate and students' learning experiences. Teachers experiencing psychological distress often face difficulties in regulating emotions and maintaining positive interactions with students, thereby reducing their capacity to create a supportive and engaging learning environment [4]. Empirical evidence further demonstrates that teachers' psychological well-being is closely associated with the quality of teacher–student relationships and students' learning engagement [5]. These findings underscore the importance of interventions that support teachers' mental health as a foundation for effective teaching and learning.

One approach that has gained increasing attention in supporting teachers' mental well-being is mindfulness, which emphasizes present-moment awareness and non-judgmental acceptance of experiences. The concept of mindfulness, popularized by Kabat-Zinn, has been widely adapted within educational contexts as a strategy to help teachers manage stress and enhance emotional regulation [6]. In recent years, mindfulness-based approaches in education have been recognized as particularly relevant to the evolving demands of the teaching profession, especially in the post-pandemic context where emotional resilience and adaptability have become increasingly critical [7].

The application of mindfulness in pedagogical practice, commonly referred to as mindful teaching, involves the integration of self-awareness, emotional regulation, and full presence in teaching–learning interactions [8]. A growing body of research suggests that mindfulness-based training for teachers can reduce stress levels, improve psychological well-being, and strengthen teaching self-efficacy [9]–[11]. Moreover, mindful teaching practices have been shown to foster more positive and responsive classroom climates that support students' socio-emotional and academic needs [12].

Despite the documented benefits of mindful teaching, its implementation in school settings remains limited, particularly due to restricted access to practical and sustainable training opportunities. Recent studies emphasize that mindfulness programs grounded in direct practice, reflection, and experiential learning are more effective than one-time socialization or theoretical dissemination alone [13]. Responding to this gap, the present community service activity was designed as a mindful teaching training program that prioritizes experiential learning through relaxation practices, reflective activities, and simulations of mindful teaching applications in classroom contexts. The program aims to support vocational school teachers in managing work-related stress and promoting mental well-being as a foundation for more conducive and effective learning environments.

SERVICE METHOD

Activity Design

This community service activity is designed using a *practice-based training approach* combined with reflection and mentoring. This approach was chosen because it is effective in improving teachers' professional competence through hands-on experience and contextual application in the work environment (Flook et al., 2023). The training is focused on strengthening teachers' capacity in managing stress and improving mental well-being through the application of mindful teaching.

Subject and Location of the Activity

The subject of the activity was 25 teachers of Vocational High Schools (SMK) in the city of Yogyakarta. The selection of participants was based on the results of the initial situation analysis which showed that there was a fairly high level of work stress and the need for teachers for practical and applicable stress management strategies. The activity was carried out face-to-face in the form of intensive workshops that allowed direct interaction between facilitators and participants.

Stages of Implementation

The implementation of service activities is carried out through the following stages.

1. Preparation Stage
   This stage includes an initial survey to identify the teacher's stress level and initial understanding related to mindfulness, participant determination, and the preparation of mindful teaching training modules. The module is structured by balancing the presentation of the basic concept of mindfulness and practice practice relaxation techniques that are relevant to the learning context at SMK.
2. Training Implementation Stage
   The training was carried out in the form of workshops which included three main sessions, namely:
   a) introduction of the concepts of mindfulness and mindful teaching,
   b) practice relaxation and stress management techniques (mindful breathing, short meditation, and emotion regulation), and
   c) Simulation of the application of mindful teaching in the context of learning and classroom management.
   This approach is in line with the principles of mindfulness training for educators that emphasize integration between conceptual understanding and hands-on experience (Hwang et al., 2021).
3. Mentoring and Reflection Stage
   Participants were encouraged to reflect on their stressful experiences of teaching and try to apply mindful teaching techniques in learning practices. Reflection is done through group discussions and simple assignments to help teachers internalize the skills acquired. This reflective approach is considered effective in strengthening teachers' self-awareness and emotional regulation (Sharp & Jennings, 2022).

Data Collection and Analysis Techniques

The evaluation of activities was carried out using a pretest-posttest approach, observation, and participant response questionnaire. Questionnaire instruments were used to measure changes in understanding, relaxation skills, stress management, and teachers' confidence in teaching. Quantitative data were analyzed descriptively to see the trend of improvement before and after the training, while qualitative data from participants' observations and reflections were used to strengthen the interpretation of the results of the activity.

Success Indicators

The success of service activities is determined based on several indicators, including:

1. increasing teachers' understanding of the concept of mindful teaching,
2. improved relaxation practice and stress management skills, and
3. The emergence of teachers' readiness to implement mindful teaching to create a more conducive learning environment.

This indicator is used to assess the effectiveness of training as an effort to empower teachers in a sustainable manner.

RESULTS AND DISCUSSION

Changes in Teacher Competency Before and After Training

The implementation of mindful teaching training shows positive changes in teacher competence, especially related to understanding mindfulness, relaxation skills, stress management, and confidence in teaching. A comparison of teachers' conditions before and after participating in the training is presented in Table 1.

TABLE 1. *Comparison of Teacher Competency Before and After Mindful Teaching Training*

Competency Aspect	Before Training (%)	After Training (%)
Understanding the concept of mindfulness	40	88
Relaxation skills	38	85
Stress management	42	86
Teaching confidence	39	84

Table 1 shows a consistent improvement in all aspects of teacher competence after participating in the training. The most notable improvement occurred in the understanding of the concepts of mindfulness and relaxation skills, which showed that training not only successfully transferred knowledge, but also equipped teachers with practical skills.

This improvement indicates that practice-based and reflection-based training approaches are effective in helping teachers understand and internalize the concept of mindful teaching. These findings are in line with the results of research by Flook et al. (2023) who stated that direct experience-based mindfulness training is able to significantly increase the capacity of emotion regulation and teacher well-being.

Post-Training Teacher Competency Achievement

The results of mindful teaching training are reflected in the achievement of teacher competencies which include various aspects of self-management and learning practices. Details of the competency achievements are presented in the following graph.

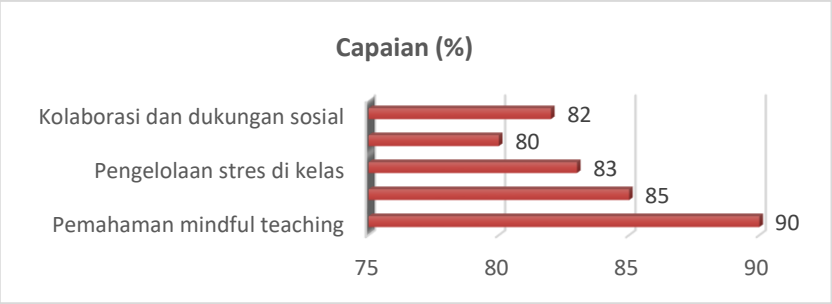

FIGURE 11. *Achievement of Teacher Competency Post-Training Mindful Teaching*

Figure 1 shows that most teachers achieved a high level of competence after training, especially in the aspects of mindful teaching understanding and relaxation practice skills. This achievement shows that the impact of training is not only individual, but also extends to the socio-professional aspects of teachers, such as increased self-awareness and collaboration between teachers. This supports the view of Jennings and Greenberg (2009) that teachers' emotional well-being contributes directly to the creation of a more positive classroom climate and school community.

Analysis of the Impact of Training on Teaching Practice

The results of the participants' observations and reflections showed that teachers began to apply mindful teaching techniques in daily learning activities. Teachers report changes in teaching attitudes that are calmer, focused, and responsive to students' emotional states. These qualitative findings reinforce the quantitative data in the previous table, which shows that an increase in teacher competence is followed by a marked change in teaching practices.

This change is in line with the theory of mindfulness which emphasizes mindfulness as the basis for more adaptive regulation of emotions and decision-making (Kabat-Zinn, 1994). In addition, these results support the findings of Sharp and Jennings (2022) who stated that mindful teaching plays an important role in strengthening teacher presence and the quality of teacher-student interaction.

The Meaning and Strategic Value of Mindful Teaching Training for Teachers and Schools

Improving teachers' ability to manage stress through mindful teaching training has direct implications for mental well-being and the quality of learning practices in the classroom. The teachers in the training reported changes in teaching attitudes that were calmer, focused, and able to respond to classroom dynamics in a more adaptive manner. This condition shows that better stress management not only has an impact on the personal aspects of teachers, but also affects the quality of pedagogic interaction with students.

This implication is reflected in the creation of a more conducive learning climate. Teachers who have better self-awareness and emotion regulation tend to be able to build a psychologically safe classroom atmosphere, reduce tension in interactions, and improve student learning comfort. These findings are in line with the views of Kim and Asbury (2020) and McCallum and Price (2020) who affirm that teachers' mental well-being is a key factor in maintaining the sustainability of learning quality, especially in the context of high work pressure and changing professional demands.

Furthermore, the results of this activity show that mindful teaching training has strategic value as a model of teacher professional development intervention in community service activities. The program is not only oriented towards improving knowledge, but also emphasizes hands-on experience, self-reflection, and contextual practices relevant to the teacher's real challenges in school. The approach allows teachers to internalize the skills acquired and apply them in an ongoing manner in teaching practice.

Another strategic value lies in the potential of this training in encouraging the formation of a reflective and collaborative culture in the school environment. The increase in teachers' self-awareness and the emergence of social support between trainees opens up opportunities for the development of a community of practice based on mindful teaching. Thus, this service activity not only has a short-term impact on individual teachers, but also contributes to strengthening a school climate that is more positive, adaptive, and oriented towards the welfare of educators and students.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Community service activities through mindful teaching training have proven to be effective in improving the ability of vocational school teachers to manage stress and strengthen mental well-being. The results of the activity showed an improvement in the understanding of the concept of mindfulness, relaxation skills, stress management, and teacher confidence in carrying out learning practices. This increase in competence has an impact on changing teaching attitudes that are calmer, more reflective, and responsive to class dynamics.

In addition to having an impact on individual teachers, mindful teaching training also contributes to the creation of a more conducive learning climate. Teachers who have better emotional regulation and self-awareness are able to build positive pedagogic interactions, thereby supporting the comfort and learning engagement of students. These findings confirm that interventions based on teachers' mental well-being are a strategic aspect in efforts to improve the quality of learning in schools.

Recommendations

Based on the results of the activity, it is recommended that mindful teaching training be developed in an ongoing manner through advanced mentoring and integration in teacher professional development programs in schools. The formation of a community of mindful teaching-based practice also needs to be encouraged as a forum for reflection, sharing experiences, and mutual support between teachers.

In addition, educational institutions and policy makers are expected to consider a mindful teaching approach as part of a strategy to improve teacher welfare and school climate. The development of a training model similar

to the adjustment of the school context is expected to expand the impact of this community service in a broader and sustainable manner.

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The Effect Of Breathing Exercise Combination With Guided Imagery On Mental Health, Stress Levels And Anxiety In Adolescents In Yogyakarta

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Abstract. Mental health problems among adolescents have become a significant concern, with approximately 6.2% experiencing depression, anxiety disorders, and stress due to academic pressure, family issues, and social media influence. **Objectives**: This study aimed to examine the effect of breathing exercise combined with guided imagery on improving mental health and reducing stress and anxiety levels in adolescents in Yogyakarta. **Methods**: This experimental study used a two-group pretest-posttest design with 30 adolescents aged 16-19 years, divided into treatment (n=15) and control (n=15) groups. The Depression, Anxiety, Stress Scale (DASS) was used to measure mental health outcomes. The treatment group received breathing exercise combined with guided imagery intervention for 12 sessions. Data were analyzed using paired sample t-test and Mann-Whitney U test. **Results**: The breathing exercises and guided imagery treatment significantly ($p<0.05$) reduced depression, anxiety, and stress levels in the treatment group compared to the control group. All three variables showed significant differences between pre-test and post-test in the treatment group ($p<0.001$). **Conclusions**: Breathing exercise combined with guided imagery is effective in improving mental health by reducing depression, anxiety, and stress levels in adolescents in Yogyakarta.
Keywords: breathing exercise, guided imagery, mental health, stress, anxiety

INTRODUCTION

Mental health is an aspect of development related to an individual's emotional control in daily physical and social activities. Adolescence is a transitional phase from childhood to adulthood, characterized by changes (Gintari et al., 2023). Adolescence is considered a period of inner conflict, serving as an unstable bridge between the dependent childhood phase and adulthood (Muhtadin et al., 2022). Adolescence results in physical, cognitive, emotional, and psychosocial changes. Mental health issues remain an unresolved topic in global society, especially in Indonesia. Approximately 6.2% of adolescents experience depression, anxiety disorders, and stress due to academic pressure, family problems, and the influence of social media (Riskesdas, 2018).

Another aspect of psychological disorders in adolescents is the inseparable use of gadgets in today's life. Excessive gadget use can lead to addiction, sleep disturbances, eye fatigue, and cognitive decline, which can increase anxiety and depression in individuals (Kamaruddin et al., 2023). The challenges of adolescent health issues are the focus of this research. Adolescents, who are being groomed as the future generation, must maintain their mental health by maintaining their emotional (psychological) well-being. One alternative therapy that can be implemented is breathing exercise and guided imagery.

Breathing exercise and guided imagery are methods used in psychology and health. This theory is supported by research by Dharmariana & Hamidah (2019), which found that providing guided imagery interventions can elicit changes during the intervention process, reducing levels of social appearance anxiety. Furthermore, research (Imam Abidin et al., 2024) found that breathing exercise treatment using the Buteyko breathing technique (level 1) significantly reduced anxiety levels, allowing students to experience a relaxed phase and improving sleep quality.

Breathing exercise is a breathing technique that uses a specific rhythm to stabilize the autonomic nervous system. Breathing exercise is designed to improve the quality of life for seniors by training the body's oxygen intake and carbon dioxide output (Hermansyah et al., 2015). There are many techniques for applying breathing exercises. One method used is rib stretching, which involves holding air in the lungs for 10-25 seconds, or starting with a 7-6 second hold. This is designed to increase physical freshness, reduce stress levels, and help control the respiratory system, combined with guided imagery. Guided imagery is a visualization technique applied as an analogy to imagine a calming and happy moment, such as a natural landscape or a happy memory. This can stimulate the brain to respond to imagination, thereby increasing the quality of the happy hormone endorphin.

Yogyakarta is a city with a high youth population due to the presence of various educational institutions from secondary to tertiary levels. The high level of academic competition, adolescent social interactions, and the influence of gadgets in Yogyakarta are major factors in the emergence of anxiety and

stress. To address adolescent mental health issues, the implementation of breathing exercises and guided imagery is necessary as a way for adolescents to gain psychological control and provide a relaxing effect.

METODE

This research was an experimental study with a two-group pretest and posttest design. The study was conducted at Yogyakarta State University from February to June 2025. Thirty adolescents aged 16 to 19 years old were divided into two groups: a treatment group and a control group, each with 15 participants. This study received ethical approval from the research ethics committee.

The instrument used was a breathing exercise model combined with guided imagery. Mental health, stress, and anxiety were measured using the Depression, Anxiety, and Stress Scale (DASS). The breathing exercise program employed a rib stretch technique, involving holding air in the lungs for 10-25 seconds, designed to increase physical well-being and reduce stress levels. The treatment group received 12 sessions of breathing exercise combined with guided imagery. The treatment program was administered to 80 participants. The control group received no specific intervention.

The data analysis technique used qualitative and quantitative analysis. The Shapiro-Wilk test for normality was used because the sample size was <50 in each group. The Levene's test for homogeneity was used. To analyze the effectiveness test data, the paired sample t-test (dependent sample t-test) was used for normally distributed data and the Wilcoxon test for non-normally distributed data. The intergroup difference test used the Independent t-test for normal data and the Mann-Whitney U test for non-parametric data..

RESULT

Normality Test

TABLE 1. Uji Normalitas Kelompok Perlakuan

Variabel Treatment Group	Sig.	Information
Depresi	0.319	Normal
Anxiety	0.009	Not Normal
Stress Level	0.204	Normal

The results of the normality test for the treatment group showed that the depression variable value was 0.319>0.05 (P>0.05) so that the depression data was normally distributed, the anxiety variable was 0.009<0.05 (P<0.05) indicating that the data was not normally distributed, and the stress level variable value was 0.204>0.05 (P>0.05) so that the data was normally distributed.

TABLE 2. Uji Normalitas Kelompok Kontrol

Variabel Kontrol Group	Sig.	Information
Depresi	0.052	Normal
Anxiety	0.004	Not normal
Stress Level	0.012	Not normal

The results of the normality test for the control group showed that the depression variable value was 0.052>0.05 (P>0.05) so that the depression data was normally distributed, the anxiety variable was 0.004<0.05 (P<0.05) and the stress level was 0.012<0.05 (P<0.05) indicating that the data was not normally distributed.

Homogenity Test

TABLE 3. Uji Homogenitas

Variabel	F	Sig.	Information
Depresi	0.008	0.930	Homogen (p > 0.05)
Anxiety	0.602	0.444	Homogen (p > 0.05)
Stress Level	1.565	0.221	Homogen (p > 0.05)

The homogeneity test results showed that all variables exhibited significance values above the 0.05 threshold, indicating no significant differences in variance between groups. Thus, the assumption of homogeneity of variance was met for all three variables (depression p=0.930, anxiety p=0.444, stress level p=0.221).

Paired Data Test of Treatment Groups

TABLE 4. Uji Data Berpasangan Kelompok Perlakuan

Variabel Kelompok Perlakuan	Sig	Information
Depresi	0,001	Signifikan
Anxiety	0,001	Signifikan
Stress Level	0,001	Signifikan

The test results showed a significant difference between pretest and posttest scores on depression, anxiety, and stress variables, with a very low significance value (<0.001). It can be concluded that the breathing exercises and guided imagery provided had a positive impact on reducing levels of depression, anxiety, and stress in the treatment group.

Paired Data Test Control Group

TABLE 5. Uji Data Berpasangan Kelompok Perlakuan

Variabel Kelompok Perlakuan	Sig	Information
Depresi	0,001	Signifikan
Anxiety	0,001	Signifikan
Stress Level	0,001	Signifikan

The results of paired data testing in the control group showed that the depression (p=0.145) and anxiety (p=0.343) variables did not experience significant changes in the control group. Meanwhile, the stress variable showed significant changes (p=0.004) even without intervention.

Intergroup Difference Test

TABLE 6. Uji Beda

Variabel	Sig	Information
Depresi	0,001	Signifikan
Anxiety	0,001	Signifikan
Stress level	0,001	Signifikan

The results of the difference test showed that the breathing exercise and guided imagery interventions significantly reduced depression (p<0.001), anxiety (p<0.001), and stress (p<0.001) compared to the control group..

DISCUSSION

The results of this study indicate that the breathing exercise and guided imagery intervention significantly reduced depression, anxiety, and stress compared to the control group. The treatment in this study combined two relaxation techniques: breathing exercises (deep, regular breathing) and guided imagery (guided visualization with a relaxing narrative).

This combination is designed to activate the parasympathetic nervous system, reduce physiological tension, and improve emotional regulation. Breathing exercises have physiological effects that regulate pH, electrolyte balance, hemoglobin, blood flow, and kidney function. Breathing also has a significant influence on other behaviors such as motivation, strength, emotions, focus, perception, and anxiety memory.

Guided imagery has benefits for a number of psychological and physical complaints. The principles of guided imagery are based on the concepts of psychophysiology and gate control theory. Psychophysiology

explains that imagination creates a mood that connects feelings with thoughts, and each thought creates a reaction and physiological changes in the body.

These results are consistent with previous research findings showing that breathing exercises help stabilize breathing rhythm and heart rate, while guided imagery facilitates mental relaxation through positive and safe imagery. Research supports the widespread use of this technique in psychological interventions due to its ability to simultaneously reduce symptoms of stress, anxiety, and depression.

Limitations of this study include the relatively small sample size and limited duration of the intervention. Future research could explore the long-term effects of this intervention with a larger sample size and longer follow-up period..

CONCLUSION

The guided breathing and imagery exercises significantly ($p<0.05$) reduced levels of depression, anxiety, and stress in adolescents in Yogyakarta compared to the control group that did not receive the intervention. This study can be used as a reference for further research and can serve as a guideline for conducting guided imagery breathing exercises as a non-pharmacological intervention to improve adolescent mental health.

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The Effect Of The Wiel Coerver Method-Based Football Skill Training Model On Improving The Speed, Agility, And Quickness (Saq) Of 10-12 Year Old Players

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Abstract. This study aimed to analyze: 1) whether a football skill training model based on the WIEL-COERVER methods significantly influences speed; 2) whether a football skill training model based on the WIEL-COERVER methods significantly influences agility.
This quantitative study employed an experimental method and a one-group pretest-posttest design. The population was 40 football players aged 10-12 in Kulon Progo Regency. The sample of 30 players was determined using a purposive sampling technique. Data collection used pretests and posttests, with treatment included in the analysis. The research instruments were a speed test using a 30-meter sprint and an agility test using the Illinois Agility Test. The data analysis technique used was a paired sample T-test.
The results of the study were: (1) There was a significant effect of the wiel coerver methods-based football skill training model on speed, as indicated by the paired sample T-test results, which showed a calculated t-value of 10.630 > t-table = 1.685, with a significance value of $p = 0.000 < 0.05$. (2) There was a significant effect of the wiel coerver methods-based football skill training model on agility, as indicated by the paired sample T-test results, which showed a calculated t-value of 8.250 > t-table = 1.685, with a significance value of $p = 0.000 < 0.05$. The study concluded that the wiel coerver methods-based football skill training model significantly affected speed and agility (speed, agility, and quickness / SAQ).

Keywords: football for children, speed-agility-quickness (SAQ), wiel coerver methods.

INTRODUCTION

The Wiel Coerver game-based training method is an approach that integrates football technique training with fun game elements aimed at improving children's agility. The basic concept of this method is the development of individual football skills through fun and dynamic training, with an emphasis on developing fundamental techniques, agility, coordination, and balance (Komarudin, 2024). This method focuses on exercises involving quick movements and flexible body reactions, which support the development of children's agility and dexterity on the field. The main advantage of game-based training is that it provides a more enjoyable context, reduces boredom, and increases children's motivation to training. The games used in training also allow children to learn actively and practically, and develop social skills through interaction with their peers (Gabbett, 2016).

According to Komarudin (2005), talking about physical fitness training means talking about the human capacity for adaptation. Over the decades, football has developed different schemes, methods, and methodologies within the sports training cycle, with the sole goal of achieving better results. Agility training in the Coerver method emphasizes children's ability to quickly change direction, adapt to constantly changing situations on the field, and improve their reactions to stimuli provided by opponents or coaches. With this approach, children not only learn basic football techniques but also improve reaction time, balance, and overall body coordination. Furthermore, agility developed through play has a positive impact on their physical and mental development, such as increased self-confidence, perseverance, and teamwork (Baker, Côté, & Deakin, 2005).

Overall, the game-based Wiel Coerver method is an effective way to improve children's agility while simultaneously developing fundamental football skills, which are crucial for child development. This approach not only equips children with technical skills but also strengthens their social, emotional, and mental aspects of football. Football is not just a recreational game, but also a competitive game. This is what distinguishes football

from other sports. Achieving optimal performance requires many components, including mastery of technique, tactics, physical, and mental skills. According to Sowarno K (2001: 1), mastering and performing a technique well requires time, so good physical skills are also essential. In addition to physical skills, technique also plays a significant role in achieving optimal performance.

In the Special Region of Yogyakarta, specifically Kulon Progo Regency, football is a passion and a lifestyle. Children in Kulon Progo Regency are quite enthusiastic about playing football. Data obtained in 2024 during a previous study revealed that 60 children volunteered to participate in a research study on the development of the Wiel Coerver method. These children participated in 12 regular training sessions and were able to improve their football technique. The physical data obtained showed that 62% had low agility, 24% had moderate agility, and 14% had good agility. Therefore, it can be concluded that children's agility skills during football are still lacking and require improvement.

There are many training methods in football. One long-standing training method is the Wiel Coerver method. Wiel Coerver himself coached the Indonesian national football team in 1975-1976 and 1979. Coerver is a football training method that requires players to see the ball as much as possible and to focus on teaching one technique first, then, once mastered, move on to the next (Coerver, Wiel, 1985). Many have abandoned this method because it is considered outdated compared to other methods, due to the time-consuming and demanding focus on technical movements. Children then become bored with the repetition of drills.

Researchers believe that the Wiel Coerver football skill development model can improve physical aspects, especially agility. Therefore, the use of this training model will have a significant impact on improving the physical abilities of children aged 10-12 in Kulon Progo Regency.

RESEARCH METHOD

This study will examine the effect of the skill-based coercion training model on improving the agility of students aged 10-12 years in Kulon Progo Regency. The research design used in this study is a "One-group pretest-posttest design," where one experimental group is measured for the dependent variable (pretest), then given a stimulus, and the dependent variable is measured again (posttest), without a comparison group.

The population in this study were boys and girls interested in football in Kulon Progo Regency, aged 10-12 years. The sample size was 30 students, a subset of the population studied. The sampling method used in this study was purposive sampling.

The instruments used in this study were tools used during the research, using a data collection method. The instrument used to collect data on the speed variable was the 30-meter sprint, and the instrument used for the agility variable was the Illinois Agility Test. Data analysis in this study used descriptive statistical tests, followed by analysis of prerequisite tests, including normality tests. The data analysis technique is a statistical analysis of the t-test at a significance level of $\alpha = 0.05$. If the calculated t is smaller or equal to the t table, then Ho is accepted, if the calculated t is greater than or equal to the t table, then Ho is rejected, then a normality test is needed. Data analysis is assisted by the SPSS version 27 application. Decision making is based on a significance level of 5%.

RESULTS AND DISCUSSION

a. Results

The data in this study consists of speed and agility variables. The data obtained and analyzed will be described in the following section.:

The description of the research data on speed is presented in the following table:

TABLE 1. *Frequency Distribution of Speed (Pre Test - Post Test)*

Pre Test				*Post Test*			
Mean	**Min**	**Max**		**Mean**	**Min**	**Max**	
4,225	4,08	4,34		4,052	3,86	4,26	
Norm	**Category**	**Freq.**	**%**	**Norm**	**Category**	**Freq.**	**%**
< 3,9	Very Good	0	0	< 3,9	Very Good	4	13,3 %
3,92 - 4,34	Good	30	100 %	3,92 - 4,34	Good	26	86,7 %
4,35 - 4,72	Moderate	0	0	4,35 - 4,72	Moderate	0	0
4,73 - 5,11	Less	0	0	4,73 - 5,11	Less	0	0
> 5,12	Very Less	0	0	> 5,12	Very Less	0	0
Total		30	100 %	Total		30	100 %

Based on the table above, it is known that the speed level of players aged 10-12 years in Kulon Progo from the pre-test results is known to be a minimum of (4.08) and a maximum of (4.34), while the post-test results are a minimum of (3.86) and a maximum of (4.26). So there is a difference in speed levels.

The description of the data from the agility research results will be presented in the following table:

TABLE 2. *Frequency Distribution of Agility (Pre Test - Post Test)*

Pre Test				*Post Test*			
Mean	**Min**	**Max**		**Mean**	**Min**	**Max**	
18,94	16,19	20,02		18,54	15,85	19,87	
Norm	**Category**	**Freq.**	**%**	**Norm**	**Category**	**Freq.**	**%**
< 15,07	Very Good	0	0	< 15,07	Very Good	0	0
17,48 – 15,07	Good	3	10 %	17,48 – 15,07	Good	3	10 %
19,88 – 17,48	Moderate	25	83,3 %	19,88 – 17,48	Moderate	27	90 %
22,28 - 19,88	Less	2	6,7 %	22,28 - 19,88	Less	0	0
> 22,28	Very Less	0	0	> 22,28	Very Less	0	0
Total		30	100%	Total		30	100%

Based on the table above, it is known that the agility level of players aged 10-12 in Kulon Progo, based on the pre-test results, was at a minimum of 16.19 and a maximum of 20.02. Meanwhile, the post-test results were at a minimum of 15.85 and a maximum of 19.87. Therefore, there are differences in agility levels.

The normality test in this study used the Shapiro-Wilk Test, which examines the significance value of each variable. If the value is above 0.05, the data is considered normally distributed. Conversely, if the significance value is below 0.05, the data is considered non-normally distributed. A summary of the normality test analysis is presented in the following table:

TABLE 3. *Normality Test Results*

No.	Variable	Result	Sig.	Description
1	Speed	Pre Test	0,413	Normal
		Post Test	0,283	Normal
2	Agility	Pre Test	0,066	Normal
		Post Test	0,195	Normal

Based on the results of the statistical analysis of the normality test conducted using the Shapiro-Wilk Test, the speed and agility variables obtained a significance value of $p > 0.05$, indicating that the data for these two variables were normally distributed.

The first hypothesis states that the wiel coserver method-based football skill training model has a significant effect on speed. This first hypothesis was tested using a t-test. Using the statistical software suite (SPSS), a summary of the analysis results is presented in the following table:

TABLE 4. *Paired Sample T-test Analysis Results*

Variable	t_{count}	t_{table}	df	Description
Speed	10,630	1,685	28	Significant

The hypothesis test results in the table above show that the calculated t-value is greater than the t-table (10.630 > 1.685) for speed. Therefore, Ho is rejected and Ha is accepted, concluding that there is a significant effect. The results indicate that speed in football players aged 10-12 can be improved by training with the Wiel Coerver method. The average pre-test score of 4.225 and the post-test score of 4.052 indicate that the average post-test score is higher than the average pre-test score. These results indicate that the first hypothesis, which states "a football skill training model based on the Wiel Coerver method has a significant effect on speed," has been accepted and proven.

The second hypothesis states that a football skill training model based on the Wiel Coerver method has a significant effect on agility. This first hypothesis was tested using a t-test. Using the statistical software suite (SPSS), a summary of the analysis results is presented in the following table:

TABLE 5. *Paired Sample T-test Analysis Results*

Variable	t_{count}	t_{table}	df	Description
Agility	8,250	1,685	28	Significant

The value of the hypothesis test results in the table above, the t-count value is greater than the t-table (8.250 > 1.685) for agility, so Ho is rejected and Ha is accepted so it can be concluded that there is a significant influence. The results of the study show that agility (agility-quickness) in football players aged 10-12 years can be improved by training through Wiel Coerver training. If seen from the average pre-test score of 18.94 and the post-test score of 18.54, the average post-test score is higher than the average pre-test score. These results indicate that the second hypothesis which states "the football playing skill training model based on wiel coerver methods has a significant effect on agility" has been accepted and proven.

b. Discussion

The results of the study indicate that Wiel Coerver training has a significant effect on increasing speed and agility (speed, agility-quickness) in football. Speed is the inverse of the time required for a player to complete a movement over a certain distance, usually expressed in meters per second or kilometers per hour. Speed is one of the most basic and important physical qualities in football, which directly affects the competitiveness of football players. Speed can be categorized into the following types, namely, 1) initial speed: refers to the time required for a player to accelerate from a standstill or low speed to maximum speed. Initial speed reflects the explosive power and reaction ability of a player and is the most common and important type of speed in football. Initial speed is mainly influenced by neurological, muscular, and biomechanical factors (Buchheit, et al., 2014). 2) Maximum speed: refers to the highest speed achieved by an athlete over a certain distance. Maximum speed reflects the extreme level of an athlete and is a type of speed that is rarely used but is important in football. Maximum speed is primarily influenced by the nervous system, muscular system, biomechanical factors, and cardiorespiratory factors (Buchheit et al.,2014). 3) Endurance speed: refers to an athlete's ability to maintain high speeds over longer distances or for extended periods of time. Endurance speed reflects an athlete's endurance and stability and is one of the most difficult and important types of speed to develop in football. Endurance speed is primarily influenced by cardiorespiratory function, muscular system, biomechanical factors, and psychological factors (Buchheit et al., 2014).

Agility refers to an athlete's ability to quickly change direction or speed during movement according to external stimuli or the athlete's will. Agility is a crucial physical quality in football, directly influencing a player's adaptability and creativity during the game. Agility can be categorized into two types: 1) Reactive agility: refers to an athlete's ability to react and adjust quickly to external stimuli, such as opponents, teammates, or the ball during movement. Reactive agility reflects an athlete's ability to perceive, make decisions, and execute, and is one of the most commonly used and important types of agility in football. Reactive agility is primarily influenced by cognitive, neurological, muscular, and biomechanical factors (Sheppard & Young, 2006). 2) Planned agility: refers to an athlete's ability to change direction or speed quickly during a movement based on their goals, such as tactical setups or technical maneuvers. Planned agility reflects an athlete's ability to plan, execute, and coordinate, and is a less commonly used but important type of agility in football. Predetermined agility is primarily influenced by neurological, muscular system, and biomechanical factors (Sheppard & Young, 2006).

Rapid reaction ability refers to an athlete's ability to react appropriately as soon as possible after receiving external stimuli. Rapid reaction ability is one of the most important physical qualities in football, which directly affects a football player's ability to seize opportunities and avoid risks in the game. Rapid reaction ability can be divided into two types: 1) Visual reaction ability: refers to an athlete's ability to react quickly to visual stimuli, such as the ball, opponents, teammates, or referees. Visual reaction ability reflects an athlete's visual perception ability, visual attention ability, and visual memory ability, and is one of the most commonly used and important types of rapid reaction ability in football. Visual reactivity is mainly influenced by the cognitive, neurological, and oculomotor systems (Williams & Davids, 1998). 2) Auditory reaction ability: refers to an athlete's ability to respond quickly based on auditory stimuli, such as sounds, words, or instructions. Auditory reaction ability reflects an athlete's auditory perception ability, auditory attention ability, and auditory memory ability, and is a type of rapid reaction ability that is rarely used but is important in football. Auditory reactivity is primarily influenced by the cognitive system, nervous system, and eardrum system (Williams & Davids, 1998).

This study aimed to determine the effect of the Wiel Coerver training program on the development of technical skills. After collecting and statistically processing the results, it was concluded that there was a statistically significant difference between the pre-test and post-test scores in technical skills. The purpose of this study was also to propose a training program using the Wiel Coerver method to develop technical skills for young football players. Reviewing training programs that have been codified based on scientific foundations and

modern training methods, this study aimed to demonstrate the effectiveness of the Wiel Coerver training program in developing the technical skills of football players aged 10-12 years. This study demonstrated the importance of the Wiel Coerver training program in revealing the extent of the impact of the Wiel Coerver method on the development of technical skills in football and also revealed the significant role of this method in the field of player development as a way for players to acquire various physical abilities, skills, and planning, which contribute to increasing the player's level to the maximum and this can only be done through the development of a codified and appropriate training program in accordance with modern training methods. This study aimed to reveal the impact of using the Wiel Coerver training program in developing some basic football skills among players aged 10-12 years. Based on the findings, it is recommended that scientific research be conducted focusing on training programs related to the improvement and development of various fundamental football skills and their linkage to higher levels, specifically the use of the Wiel Coerver training program on the fundamental skills of young football players (Chreriet and Bensalem, 2020).

Researchers attribute this positive impact to the effectiveness of the proposed training program, which utilizes the Wiel Coerver training method, which effectively and positively contributes to the development of fundamental football skills. Training programs that adhere to scientific principles and foundations in terms of training diversification and modern training methods and principles have reached players at the highest levels. The most important recommendation is the need to focus on the development of fundamental football skills, especially for young players under the age of 17 (Noairi, 2018). The Wiel Coerver training program is now widely recognized as a world-leading skills training program, particularly suitable for young players aged 5 to 16, as well as coaches and teachers working with this age group (Alfred Galustian, Charlie Cooke, 2010). A study by Rachid and Ahcene (2020) showed that twenty-four weeks of football training using the Wiel Coerver method can be a useful and effective tool for improving football players' skills. Therefore, the Wiel Coerver method is an effective method for improving football technique, as well as players' physical abilities.

The Wiel Coerver method was developed due to the lack of individual player skills. Little attention was paid to developing individual skills because no one knew how to teach them. Many assumed that great players possessed natural talent far surpassing the average player. The initial focus of Wiel Coerver training was on teaching ball possession and one-on-one skills. Wiel Coerver training session planners often determined the outcome of many matches by the specific skills, speed, or strength of individual players. However, coaches often used training that focused more on team performance and results than on individual player development. The planning segment for players aged 12 to 16 included warm-up drills and games to improve ball control (fun and competition). Training sessions focused on drills and games to improve speed with and without the ball. Then, one-on-one attack and one-on-one defense followed. Training progressed to small-group games focusing on receiving, passing, and finishing. Small-group games were loose and conditioned games with rules ranging from three-on-three to six-on-six. The Wiel Coerver training method can be summarized as: First, it emphasizes ball mastery, mastering basic tactics for a player. This method maximizes both feet for control and repetitive practice. Second, it emphasizes receiving and passing, not just accurate passes but also creativity, maximizing even the smallest space to allow the ball to flow. Third, it emphasizes one-on-one moves, which aim to maximize duels, transitioning from attack to defense and vice versa. Fourth, it emphasizes speed, practicing both with and without the ball. Fifth, it emphasizes finishing, which aims to lead an attack. Furthermore, the leading attack group is used to launch attacks quickly.

CONCLUSION

The results of the study were: (1) There was a significant effect of the wiel coerver methods-based football skill training model on speed, as indicated by the paired sample T-test results, which showed a calculated t-value of 10.630 > t-table = 1.685, with a significance value of $p = 0.000 < 0.05$. (2) There was a significant effect of the wiel coerver methods-based football skill training model on agility, as indicated by the paired sample T-test results, which showed a calculated t-value of 8.250 > t-table = 1.685, with a significance value of $p = 0.000 < 0.05$. The conclusion of the study shows that the football playing skill training model based on the wiel coerver methods has a significant effect on speed and agility (speed, agility-quickness / SAQ).

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Socialization Of Football Playing Skill Training Model Based On Coerver Methods For Football Coaches

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Abstract. This community service activity aims to socialize a soccer playing skill training model based on wiel coerver methods and provide education on applying good and correct soccer training methods according to age development for coaches of soccer schools for the 10-12 years old group in Kulon Progo Regency. This socialization and education was carried out by discussing the theory and planning for the application of the wiel coerver training method in the training process. Furthermore, the resource persons conducted mentoring activities via Zoom, WhatsApp groups, and even direct visits to the soccer schools where the training participants carried out their training process. This follow-up activity was carried out to review the participants' implementation of the training process using the wiel coerver method. This service activity resulted in several findings, such as the activities running well and smoothly, and the participants' assessment of the activities was also very positive. Subsequently, the service participants experienced an increase in knowledge about the wiel coerver training method and knew how to apply the wiel coerver training method in the training process. Other findings include the high motivation and enthusiasm of the service participants because the response given by the participants was very active during the activity process, in addition, the participants' enthusiasm continued during the mentoring period. The final finding was that the service participants felt happy and satisfied with this service activity, and even the majority of participants hoped that similar activities could continue to be implemented in the future.
Keyword: Training Methods, Football, Wiel Coerver.

INTRODUCTION

Football is one of the most prestigious and widely popular competitive sports worldwide (1). Kulon Progo Regency is one of the regencies located in the Special Region of Yogyakarta Province and has a high enthusiasm for the sport of football. This is evidenced by several championships ranging from youth to adult levels regularly held in Kulon Progo Regency. Although championships are regularly held, the football achievements of Kulon Progo Regency have not been able to reach higher levels such as provincial or national levels. The author and the team tried to find out why this could happen. After gathering a lot of information regarding the development of football in Kulon Progo Regency, one problem was found by the author and the team, namely the problem in the youth development system in Kulon Progo Regency. The prevailing development system still uses a conventional system, where training is not well-conceptualized, and systematic methods or approaches have not been applied. In addition, many coaches are not yet aware of and have not applied optimal youth development systems. This results in many football players from youth to adult levels who do not have the techniques, tactics, physical fitness, and mental readiness to compete and achieve higher levels. This needs to be considered by the football stakeholders in Kulon Progo Regency.

Based on the problems above, the author and the team are of the view that to achieve the best performance in football, age-group development is necessary. Age-group development should involve fostering and improving techniques, tactics, physical fitness, and mental strength (2). Fostering these aspects can be done by improving the quality of training for early childhood. There are various ways to improve the quality of training provided to early childhood, one of which is by implementing training methods that are appropriate for the age development. Early childhood training tends to require a lot of ball interaction, in other words, focusing on improving techniques in playing (3). There are training methods that can facilitate coaches in their efforts to improve playing techniques for young children, namely the Wiel Coerver Methods which have been developed by komarudin er al (4). The Wiel Coerver training method developed is a football training method that requires children to interact with the ball as much as possible and focuses on training one form of technical exercise first, and only when they are deemed capable will the child move on to the next technique.

The developed Wiel Coerver training method emphasizes a game-based training approach. This method integrates football technique drills into enjoyable games, with the aim of improving children's playing techniques. The basic concept of this method is the development of individual football skills through fun and

dynamic training, with an emphasis on developing basic techniques accompanied by agility, coordination, and balance exercises (4). The main advantage of game-based training methods is that they provide a more enjoyable training experience for children, reduce boredom, and increase children's motivation to train (5). The games implemented during the training process allow children to learn actively and practically, as well as develop social skills through interaction with their peers (6).

Based on the problems and literature above, the author attempts to contribute to improving the quality of youth training in Kulon Progo Regency. What the author can do is provide education related to training using training methods that are appropriate for the age development. The method conveyed is a method that the author has successfully developed, namely the Wiel Coerver Method. This education is aimed at early-age football coaches in Kulon Progo Regency through the socialization activity of the Football Skill Training Model Based on the Wiel Coerver Method for Early Childhood Football Coaches in the Special Region of Yogyakarta. With education through these activities, it is hoped that coaches' knowledge regarding good and correct early childhood training can increase and be consistently applied in every training session. So that in the future, Kulon Progo Regency will produce many quality players and achieve achievements at a higher level, not only for Kulon Progo Regency but also for the Province of the Special Region of Yogyakarta, and even for Indonesia.

METHOD

This community service activity is carried out using lecture, discussion, question and answer, practice/demonstration methods, as well as mentoring participants in the use of training methods after the socialization activity. Mentoring aims to provide assistance to participants when the training process encounters obstacles in applying the training methods that have been socialized. The participants in this service activity amounted to 26 coaches who actively train football schools for the 10-12 years old group in Kulon Progo Regency. The instrument used to measure the success of this service activity uses a question sheet to ascertain the increase in participants' knowledge regarding training methods and how to apply them, as well as a questionnaire to ascertain participants' satisfaction with the service activity that has been carried out. The data analysis used in this service activity is quantitative descriptive statistical analysis. The scores obtained through filling out the question sheets and questionnaires will be presented in the form of diagrams and percentages.

RESULT AND DISCUSSION

The results of various series of activities for the community regarding the socialization of football skill training models based on the Wiel Coerver Method for football coaches in the Special Region of Yogyakarta, which have been carried out, will be elaborated as follows:

1. Increase in participant knowledge

   The level of coaches' knowledge regarding the wiel coerver training method, measured before and after the activity, significantly increased. The number of coaches participating in this activity was 26. The initial data measurement of coaches' knowledge and understanding of the wiel coerver training method showed that only 6 (23.0%) coaches had knowledge and understanding of what the training method is, and specifically of the wiel coerver training method. However, after socialization and education, the number of coaches with knowledge and understanding of the wiel coerver training method increased to 23 (88.4%) coaches. The resulting increase was 65.4%. The data on the increase in coaches' knowledge and understanding regarding instilling character in young football athletes can be seen in the diagram below:

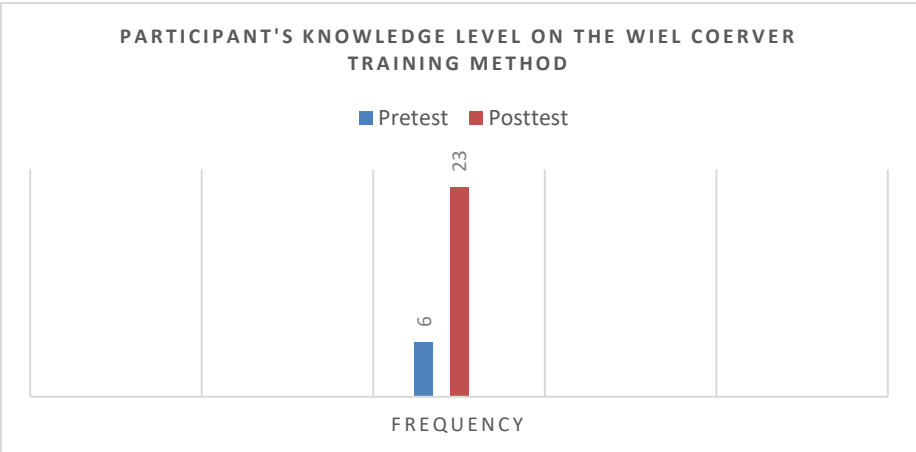

FIGURE 1. *Participant Knowledge Level*

2. Participant satisfaction

Overall, the community service activities in the form of socialization have been carried out well. This is evident from the enthusiasm, positive responses, and satisfaction of the participants in the dedication activities. The participants' satisfaction level can be seen in the diagram below:

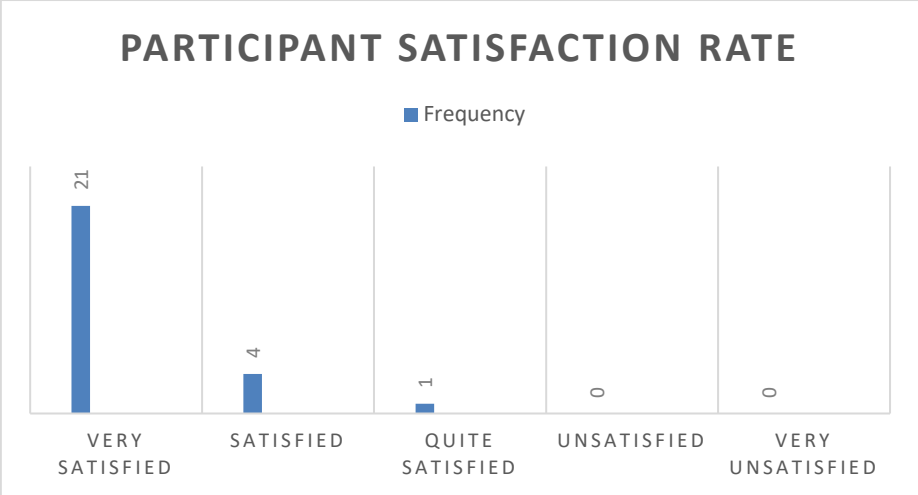

FIGURE 2. *Participant Satisfaction in Community Service Activities*

FIGURE 3. *Implementation of Community Service Activities*

Training methods are an important part that coaches need to pay attention to in the training process. Training methods are a set of principles, models, and structures that guide the training and player development process (7). Training methods will form the foundation for developing a consistent playing identity, optimizing team and individual performance, and preparing players to compete at the highest level (8). With training methods, the training process becomes more structured, directed, and measurable. The application of methods in the training process will improve the quality of training. A quality training process will also produce quality players (9). However, the use of training methods must certainly be adjusted to the players' development. Therefore, it is important for coaches to have knowledge in determining suitable methods for development. So that the training process that takes place is truly of high quality.

CONCLUSION

The results of this community service activity show that the majority of coaches have recognized and understood the importance of improving training quality by using appropriate training methods suitable for child development. Furthermore, the majority of coaches have also implemented the socialized training methods. It is hoped that football school coaches in Kulon Progo Regency will consistently use these training methods in their coaching process so that training quality continues to increase, producing many quality players who will be ready to compete and achieve at higher levels. Suggestions for future community service activities include the need for training methods for age categories above 12 years, such as the 13-14 or 15-18 year old groups. This is

to ensure that early age football development in Kulon Progo Regency is sustainable up to the adult level. Community service activities like this can be conducted regularly in different locations, targeting coaches who genuinely need them based on previous research and problem analysis.

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Towards An Elderly Friendly Village: Efforts To Improve The Fitness And Mental Health Of The Elderly In Kampung Emas Pengasih, Kulon Progo

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Abstract. The increasing number of elderly people in Indonesia demands comprehensive intervention to maintain their quality of life, both from physical and mental aspects. The Community Service Program (PKM) entitled Towards an Elderly Friendly Village was implemented in Kampung Emas Pengasih, Kulon Progo Regency, with the aim of improving the physical fitness and mental health of the elderly through elderly fitness exercises and mental health screening. Implementation methods include socialization, implementation of structured elderly exercise, mental health screening using the SRQ-29 instrument, as well as physical and mental health psychoeducation. The target of the activity is 30 elderly people who live in Dukuh Serut, Kampung Pengasih. The results of the activities showed an increase in physical fitness, increased social interaction, and decreased complaints of stress and loneliness in the elderly. Evaluation of participant satisfaction shows an average value of 3.22 on a scale of 4 (satisfied category). This program has proven to be effective as an initial model for developing Elderly Friendly Villages and is recommended to be implemented sustainably through village policy support.

Keywords: elderly, physical fitness, mental health, elderly friendly village

INTRODUCTION

The increase in life expectancy has an impact on the increasing number of elderly people in Indonesia. This condition has the consequence of increasing physical and mental health problems in the elderly group (1, 2). Elderly people are vulnerable to degenerative diseases, decreased fitness, and psychological disorders such as stress, anxiety, and depression (3).

In Kulon Progo Regency, the proportion of elderly people reached 14.43% of the total population, the highest in the Special Region of Yogyakarta, according to Kulon Progo Regency Government data in 2023. Various programs have been developed to improve the welfare of the elderly, but they still face limited access to health services, continuous assistance, and low physical and social activity for the elderly (4).

Kampung Pengasih, as one of the areas with a fairly high number of elderly people, does not yet have an integrated program that specifically focuses on the physical fitness and mental health of the elderly. The Program Towards an Elderly Friendly Village is designed as a form of community-based intervention that integrates physical activity, mental health screening, and health education (5, 6). This program is also in line with inclusive village development policies and supports the Main Performance Indicators (IKU) of higher education and the implementation of Merdeka Belajar Kampus Merdeka (MBKM).

METHOD

This PKM activity was carried out in Dukuh Serut, Kampung Emas Pengasih, Kulon Progo Regency, in August 2025. The target of the activity was 30 elderly people who were selected through coordination with the village government and elderly posyandu cadres (7).

The implementation method includes several stages, namely: 1) socialization of the program to the elderly and their families, 2) implementation of fitness exercises for the elderly adapted to the physical condition of the participants, 3) mental health screening using the SRQ-29 instrument to detect symptoms of stress, anxiety and depression (8), 4) physical and mental health psychoeducation, and 5) evaluation of activities through participant satisfaction questionnaires.

Gymnastics activities are carried out in a structured manner with the assistance of instructors and students. Mental health screening and psychoeducation are facilitated by professionals in the field of psychology. The evaluation data was analyzed descriptively to describe the level of satisfaction and impact of activities (9).

RESULTS AND DISCUSSION

The implementation of the program shows high enthusiasm from the elderly. The attendance of participants was relatively stable throughout the activity. From the aspect of physical fitness, elderly people show increased ability to perform gymnastics movements, better endurance, and reduced complaints of fatigue and muscle pain. These results are in line with research (10) which states that elderly exercise has a positive effect on muscle strength and balance.

From the mental health aspect, screening and psychoeducation activities have a positive impact on the elderly's awareness of the importance of mental health. Seniors feel more appreciated, have space to socialize, and show a decrease in feelings of loneliness. These findings support the results of studies (8, 6) which confirm that early detection and social activities play an important role in maintaining the mental health of the elderly.

TABLE 1. *Results of Program Implementation*

Rated aspect	Indicator	Initial Conditions	Results After the Program
Physical Fitness	Body endurance and balance	Elderly people get tired quickly and are less active	Increased endurance, more stable movement
Physical Activity	Elderly exercise participation	Not exercising regularly	>80% of participants take part in regular exercise
Mental Health	Stress levels and loneliness	The elderly feel lonely and anxious	Stress decreases, sense of togetherness increases
Social Interaction	Involvement in group activities	Limited social interaction	Elderly people are more active and communicative
Participant Satisfaction	Assessment of the program	There is no integrated program yet	Average score 3.22 (satisfied category)

TABLE 2. *Statistics on Participant Satisfaction Evaluation Results*

Assessment Category	Very satisfied	Satisfied	Enough	Not enough	Average Score	The final result
General Satisfaction Against Workshops	8	20	2	0	3.20	Satisfied
Submission of Material	10	18	2	0	3.27	Satisfied
Implementation of Activities	9	19	2	0	3.23	Satisfied
Impact and Expectations	7	21	2	0	3.17	Satisfied
Overall Average	-	-	-	-	3.22	Satisfied

FIGURE 1. *Presentation of PKM material*

FIGURE 2. *Results of PKM activities*

The results of the satisfaction evaluation show an overall average score of 3.22 in the satisfied category. The material delivery aspect received the highest score of 3.27, followed by activity implementation 3.23, general satisfaction 3.20, and impact and expectations 3.17. These results indicate that the program was well received and considered relevant to the needs of the elderly (11).

These findings are in line with various studies which state that regular physical activity and social involvement play an important role in maintaining the fitness and mental health of the elderly. Thus, this program can become a model for community-based intervention in developing Elderly Friendly Villages.

CONCLUSION

The PKM Program Towards an Elderly Friendly Village has succeeded in improving the physical fitness and mental health of the elderly in Kampung Emas Pengasih, Kulon Progo. An approach that integrates elderly exercise, mental health screening, and psychoeducation has proven effective in improving the quality of life of the elderly and strengthening their social interactions. These findings support the WHO active aging framework which emphasizes the importance of physical activity and social participation in the healthy aging process.

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The Role Of Physical Education And Health Teachers In Sports Counseling As A Means To Become Professional Teachers

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Abstract. This community service activity aims to examine and strengthen the role of physical education teachers in sports counseling as a means of becoming professional teachers in Yogyakarta. This activity was carried out in collaboration with the Subject Teacher Working Group (MGMP) for physical education teachers in vocational high schools in the Special Region of Yogyakarta, with 40 teachers attending SMK Negeri 3 Wonosari. Through training and interactive discussions, physical education teachers were provided with an understanding and skills in applying sports counseling to support character development, motivation, and mental health of students. The results of the activity showed that physical education teachers have a strategic role not only as teachers but also as counselors who are able to guide students in dealing with problems through a sports approach. The implementation of sports counseling has been proven to increase teacher professionalism, strengthen teacher-student relationships, and create a more supportive and conducive school environment. This activity recommends the need for continuous training and institutional support so that the role of sports counseling can be optimized in education.
Keywords: Physical Education Teachers, Sports Counseling, Professional Teachers

INTRODUCTION

Physical Education, Sports, and Health (PJOK) plays a strategic role in shaping the character and mental health of students. Along with the demands of teacher professionalism, the role of PJOK is not only limited to the development of physical skills, but also includes psychological and social aspects through a sports counseling approach (Malik, 2022; Ibrahim, 2011).

Sports counseling is a process of providing psychological assistance through physical activities to overcome various student problems, such as fear of failure, competition stress, lack of confidence, and time management issues (Wiersma & Jurs, 2005; Maulini Et Al., 2020). Physical education teachers, as the spearhead of learning, have a strategic position to act as counselors, but in practice, many still lack adequate competence in the field of counseling.

Based on a situation analysis in vocational schools in the Special Region of Yogyakarta, several main problems were found: (1) limited understanding of the concept of sports counseling among teachers, (2) lack of basic counseling skills, and (3) suboptimal use of sports activities as a counseling medium. Therefore, this community service activity was designed to improve the competence of PJOK teachers in sports counseling as an effort to become professional teachers.

LITERATURE REVIEW

Sports counseling is part of applied psychology that focuses on improving performance, well-being, and personal development of individuals in the context of education and sports. Participation in physical education and sports helps students instill values of discipline, cooperation, goal orientation, and social interaction that contribute significantly to character building.

Teachers have a multifunctional role as educators, mentors, motivators, and counselors. As counselors, teachers support the academic, personal, and social development of students through individual and group counseling services. Effective counseling requires active listening skills, empathy, and collaboration with various parties, including the school and parents, to create a conducive learning environment.

RESEARCH METHOD

The community service activity was carried out in the form of a 3-day participatory workshop at SMK Negeri 3 Wonosari in June 2025. This study used a descriptive approach within the framework of community service

activities. The target of the activity was PJOK SMK teachers in five districts/cities in the Special Region of Yogyakarta who were members of MGMP.
The implementation of the activity included the dissemination of the concept of sports counseling, a workshop on basic counseling techniques, the practice of integrating sports activities with a counseling approach, and group discussions to share experiences. Data collection was carried out through observation, questionnaires, interviews, and reflective discussions.

RESULTS AND DISCUSSION

Results
This community service activity was carried out at SMK Negeri 3 Wonosari, Gunung Kidul, involving 40 physical education teachers from vocational schools in the Special Region of Yogyakarta who are members of the MGMP. The series of activities included socialization, training, workshops, sports counseling practice, as well as evaluation and reflection.
The results obtained from the implementation of the activities included:

a) All participants actively participated in the sports counseling training and workshops.

b) PJOK teachers were able to understand the basic concepts of sports counseling and apply simple counseling techniques in learning activities.

c) The formation of discussion groups between PJOK teachers across districts to share experiences and solutions related to sports counseling.

d) PJOK teachers began to apply sports counseling practices to students in their respective schools, with several cases of students being successfully guided effectively.

Discussion
The implementation of activities shows that PJOK teachers are highly enthusiastic about improving their competence in sports counseling. Through training and workshops, teachers gain new knowledge about the importance of counseling in supporting students' character development and mental health. Sports counseling practices carried out in schools provide teachers with real-life experience in dealing with student problems, such as lack of motivation, discipline issues, and academic pressure.
Group discussions and joint reflections have become effective means for teachers to exchange experiences and strengthen networks among PJOK teachers. These activities also encourage teachers to be more confident in carrying out their role as counselors, not just as physical skills instructors.

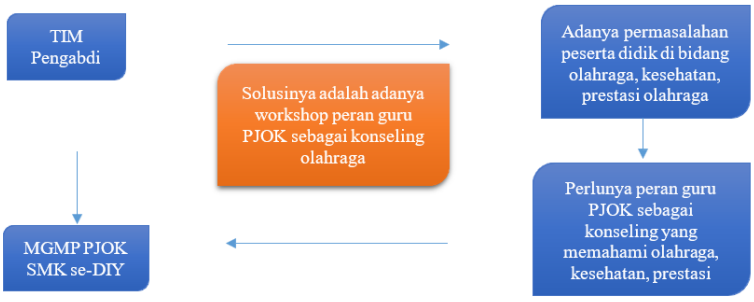

FIGURE 1. *Science and Technology*

Figure 1 shows the problem-solving framework in community service activities involving the Community Service Team and MGMP PJOK SMK throughout the Special Region of Yogyakarta. This diagram illustrates the problems faced by students in the areas of sports, health, and athletic achievement that require systematic handling. This condition emphasizes the importance of the role of PJOK teachers not only as teachers but also as counselors who have a comprehensive understanding of sports, health, and achievement. As an effort to solve the problem, a program was developed in the form of a workshop on the role of PJOK teachers as sports counselors, which serves to improve the competence and professionalism of teachers. This program acts as a link between the Community Service Team and the

MGMP PJOK SMK throughout the Special Region of Yogyakarta in optimizing the role of PJOK teachers to support the holistic development of students.

TABLE 1. *Implementation of PKM Activities*

No	Activity Name	Implementation	PIC
1	Opening and introduction PkM Program	4 Juni 2025	Dr. Doni Dwi Hartanto, M.Pd.
2	Professional PJOK teachers in education The role of PJOK teachers as mentors and counselors	5 Juni 2025	Dr. Ranintya Meikahani, M.Pd. Prof. Dr. Erwin Setyo Kriswanto, M.Kes.
3	ctivity Evaluation and Closing	6 Juni 2025	Riesti Cahyaningrum, M.Pd

FIGURE 2. *Activity of MGMP PJOK Teachers*

CONCLUSION

The community service activities carried out at SMK Negeri 3 Wonosari, Gunung Kidul, together with the MGMP for vocational school physical education teachers in the Special Region of Yogyakarta have had a positive impact on improving the competence and professionalism of physical education teachers. Through workshops and sports counseling practices, physical education teachers are able to understand and apply counseling techniques in assisting students. Sports counseling has proven to be an effective means of character building, motivation, and mental health for students, as well as strengthening the role of physical education teachers as holistic professionals.

ACKNOWLEDGMENTS

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Ethnohistory In The Gender Authority Of The Figure Of Nawangwulan In Javanese History

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Abstract. This study aims to describe the gender authority of the figure of Nawangwulan in traditional historiography and the ethnohistory of Nawangwulan in Javanese history. This study uses a combination of historical and anthropological approaches. The research approach used for data in the form of the Tanah Jawa chronicle uses a descriptive qualitative approach, while field research uses a phenomenological approach. The results of the study show that the character of Nawangwulan is a representation of Javanese women who possess spiritual power, independence, and wisdom. In one phase of her life, she became a victim of Jaka Tarub's manipulation and domination. Through various versions of the story, both in Babad Tanah Jawi, Serat Sulanjana, and oral traditions, Nawangwulan is described as a figure who was able to make decisions about her own life and reject the injustice that befell her by leaving the manipulative relationship. From an ethnohistorical perspective, the story of Nawangwulan serves not only as a legend but also as a reflection of the cultural values of Javanese society, which upholds the balance between humans, nature, and spiritual power. Thus, the story of Nawangwulan has a profound meaning about the role of women as guardians of life, symbols of purity, and emblems of independence.
Keywords: Nawangwulan, gender authority, folklore, ethnohistory, Javanese historiography

INTRODUCTION

History is past events that are reconstructed to be understood and interpreted by people in the present and future.[1] The reconstruction of history is not only based on official written data, but can also come from folklore, myths, legends, and oral traditions that live on within society. In historical studies, these sources are known as part of traditional history. Traditional history plays an important role because it records the perspectives, values, and belief systems of past societies that are not always recorded in official history.[2]

One of the most important traditional historical sources in Javanese culture is the Babad Tanah Jawi. This work is a traditional historiographical text that contains stories about the origins of the island of Java, the genealogy of kings, and important events from the Hindu-Buddhist period to the Islamic Mataram period.[3,4] The Babad Tanah Jawi was written by several authors in various literary forms, such as poetry and prose, and has many versions. This text was written in Javanese and has been partially translated into Indonesian. In addition to containing the history of kings, Babad Tanah Jawi also contains elements of myths and legends that serve as a link between written history and the beliefs of the people.

One version of Babad Tanah Jawi that is considered complete is the version written by Othlof in 1914 and republished in 2014. This version contains important stories about mythological figures who had a major influence on Javanese history, one of which is the figure of Nawangwulan. Therefore, this text was chosen as one of the main sources in this study. Nawangwulan is a female figure who is well known in Javanese folklore. She is described as a powerful woman, the mother of Javanese kings, and an important figure in the lineage of rulers on the island of Java. In the development of traditional Javanese history, Nawangwulan is not only positioned as a family figure, but also as a spiritual figure who has a close relationship with political power. During the Islamic Mataram period, Nawangwulan was believed to be the source of the mystical relationship between the Javanese kings and the supernatural world. This relationship is believed to still exist in the beliefs of some people today.

In the course of her story, Nawangwulan came to be understood as Ibu Ratu Kidul, the ruler of the southern sea. In Javanese tradition, there is a story about the special relationship between Panembahan Senapati and Nawangwulan or Ibu Ratu Kidul. This relationship gave birth to the concept of an imaginary line connecting the Yogyakarta Palace, the Surakarta Palace, Mount Merapi, and the South Coast. This imaginary line symbolizes an agreement between the forces of land and sea to maintain the balance of nature and power. This mystical relationship is an important part of the Javanese people's understanding of the harmony between humans, nature, and supernatural forces.

On the other hand, the issue of gender equality is an important concern in current academic studies. The ratification of the Sexual Violence Criminal Law (UU TPKS) demonstrates a serious effort to protect women

from various forms of violence, both physical and verbal.[5] Violence against women often stems from a patriarchal culture that is still strong in society.[6] Patriarchal culture places men in a position of greater control and power, while women are in a weaker or inferior position.[7] In the context of this strong patriarchal culture, the character of Nawangwulan becomes an interesting subject for study. She lived in a male-dominated social system, yet was able to demonstrate authority and power as a woman. The story of her marriage to Jaka Tarub, which ended in separation, is often interpreted as a result of injustice and patriarchal domination. In the *Babad Tanah Jawi*, it is told that after the separation, Nawangwulan chose her own path in life and did not submit to a system that disadvantaged her as a woman.

Nawangwulan's life choices demonstrate strong gender authority. She is not portrayed as a passive woman, but rather as a figure who is able to determine her own destiny, face various obstacles, and maintain her principles of goodness. In Javanese tradition, Nawangwulan is positioned as a figure who maintains the balance of the world or *memayu hayuning bawana*. This shows that women in traditional Javanese history were not always in a subordinate position, but could also play a central role in maintaining harmony in life.

However, historical records of Nawangwulan in traditional texts are fragmented. Her story is not always presented in its entirety and is often mixed with myths and popular beliefs. Therefore, a special approach is needed to reconstruct the historical span of Nawangwulan's character more comprehensively. This approach does not only rely on written sources but also utilizes anthropological and archaeological data that still lives on in the traditions of the community. Based on these conditions, this study uses an ethnohistorical approach. Ethnohistory is a study that combines historical and anthropological approaches by utilizing documentary data, ethnography, and archaeological data. Through this approach, the study aims to connect historical texts with cultural practices and community beliefs that still exist today. This study aims to discover and describe the gender authority of the figure of Nawangwulan in traditional historiography, as well as to reveal the ethnohistory of Nawangwulan in Javanese history. In practical terms, the results of this study are expected to benefit the community, school students, and university students in understanding traditional Javanese history, the role of women in Javanese culture, Javanese feminism, and the richness of Javanese folklore as part of the nation's cultural identity.

RESEARCH METHOD

This study uses an ethnohistorical approach, which is an interdisciplinary approach that combines historical and anthropological studies with archaeological data. The main data sources are Othlof's (2014) text *Babad Tanah Jawa* and other manuscripts containing the story of Nawangwulan, while supporting data was obtained through information from key informants and field informants.

The analysis of the babad text was conducted using a descriptive qualitative approach, while the field research used a phenomenological approach to understand the meaning of the community's experiences and beliefs related to the figure of Nawangwulan. Data collection was carried out through reading the Babad Tanah Jawi text, taking into account the socio-cultural context of the community.

Field data was collected through observation at Parangtritis Beach, Parangkusuma, the Yogyakarta Palace, and the Surakarta Palace, particularly during traditional ceremonies. In addition, in-depth interviews were conducted with key informants selected using the snowball sampling technique, as well as a study of documents on literary works, folk tales, and myths related to Nawangwulan.

The research instruments were human instruments, assisted by interview guidelines and data cards. Data analysis was carried out through the stages of reading and understanding the data, transcribing interviews, coding, identifying themes, and interpretive analysis to find the meaning and essence of the phenomenon being studied. Data validity was ensured through semantic and interrater validity in text analysis, as well as method and source triangulation in field data. In addition, peer debriefing was conducted with colleagues to minimize bias and strengthen the credibility of the research results.

RESULT AND DISCUSSION

The results of the study show that the character Nawangwulan has various representations in traditional Javanese historical sources. The popular version that developed originated from Jaka Tarub, a young man from the village, who stole the scarf of the angel Nawangwulan so that she could not return to heaven. To continue her life on earth, Nawangwulan finally accepted Jaka Traub's proposal and lived as an ordinary human being. Even though she lived as an ordinary human, her supernatural powers as an angel still clung to her. She had the magical power to cook a basket of rice with just one grain of rice. However, this supernatural power disappeared when Jaka Tarub secretly peeked at the process and opened the lid of the rice cooker, so Nawangwulan had to return to living like an ordinary human and cook rice normally. Nawangwulan accidentally found her scarf again when she went to the barn to collect the few remaining grains of rice due to her lost powers. It turned out that Jaka Tarub had hidden her scarf at the bottom of the barn. After learning the truth, Nawangwulan chose to leave

Jaka Tarub and return to heaven instead of staying with him for the sake of their child. In the Olthof version of Babad Tanah Jawa, Nawangwulan was rejected by heaven, so she jumped into the South Sea and became a ruler alongside Nyi Roro Kidul and Nyi Blorong. The Meinsma version of Serat Babad Tanah Jawa, written by Carik Tumenggung Tirtowiguno (Carik Braja) on the orders of Pakubuwana III around 1788, tells that after Nawangwulan found her shawl, which had been hidden by Jaka Tarub, she returned to heaven, leaving her husband and child behind.

In a manuscript titled Sulanjana, the story is almost the same as the one in the Babad Tanah Jawa manuscript. It is said that Dewi Nawangwulan was the wife of Prabu Siliwangi and the son of Bathara Guru. However, Prabu Siliwangi violated her, causing Nawangwulan to return to Pakuan. Nawangwulan came from the Kalingga era before the establishment of the Kediri Kingdom. Based on information from source 1, which is corroborated by source 2, Nawangwulan was the daughter of a priest who married a princess from Sunda. Together with her six sisters, they were asked to go south by their father, Dhang Hyang Ragasuci, so that they could improve their knowledge by studying hard and meditating. Then, source 3 mentions that Nawangwulan was not an angel, but an ordinary human being who had a pious character and was beautiful. Based on the explanation from Sunan Kalijaga and Sunan Ampel, Nawangwulan was the daughter of a propagator of Islam named Ki Ageng, a cleric during the reign of Prabu Brawijaya V. She later married Ki Ageng Tarub and gave birth to a daughter named Dewi Nawangsih. Dewi Nawangsih was then married to Bondan Kejawan (son of Prabu Brawijaya V). Dewi Nawangsih gave birth to a son named Ki Getas Pendawa, who was the ancestor of Panembahan Senapati, founder of the Mataram Sultanate

. Ethnohistoric data shows that Nawangwulan is placed in various important genealogical lines in Javanese history. She is referred to as the daughter of an Islamic missionary during the reign of Prabu Brawijaya V, married to Ki Ageng Tarub, and the ancestor of Panembahan Senapati, founder of the Mataram Sultanate. This narrative shows Nawangwulan's role as a figure of spiritual and political legitimacy for the Javanese kings.

The results of the study show that the gender representation of Nawangwulan underwent significant changes in the storyline. At the beginning of the story, after losing her shawl, Nawangwulan is dominated by a male character, Jaka Tarub. However, after realizing this manipulation, she emerges as a woman who dares to make decisions about her own life by leaving an oppressive relationship. This action represents the process of reclaiming authority, that is, regaining power over oneself after experiencing oppression in a patriarchal system. Symbols such as water, rice, and scarves have deep meanings: water and rice symbolize the source of life for the Javanese agrarian community, while the scarf is a symbol connecting the material and spiritual worlds. The loss of the scarf is interpreted as the loss of self-integrity and the reduction of women to mere physical bodies.

The results of this study show that the figure of Nawangwulan in traditional Javanese historiography has significant gender authority and cannot be understood solely as a passive mythological figure. Various versions of the *Babad Tanah Jawi* and supporting manuscripts show that Nawangwulan was an active subject who was able to make important decisions about her life, especially when she experienced a breach of trust in patriarchal relationships. The decision to leave domestic life, either by returning to heaven or by transforming into the ruler of the South Sea, marks a shift in authority from the domestic sphere to the spiritual and cosmological spheres. This transformation shows that women in Javanese tradition are not always placed in a subordinate position, but can play a central role in maintaining the balance of the world.

This finding is in line with the findings of several studies that confirm that traditional Javanese historiography not only serves as a record of past events, but also as a means of shaping values,[8] legitimizing power,[9,10] and shaping the worldview of society.[11] In this context, folklore serves as a source that connects cosmic origins with political power, as explained by Wiratama et. al and Darmoko. The existence of Nawangwulan as a spiritual female figure reinforces view that Javanese power is built through cosmological and spiritual relations, not solely through formal political power.

The symbols attached to the character of Nawangwulan, such as water, rice, the sea, and a scarf, have important meanings in Javanese cosmology. These symbols represent the source of life, fertility, and the connection between humans and supernatural powers.[12–14] The scarf, in this case, functions as a symbol connecting the material and spiritual worlds. The loss of the scarf can be interpreted as the loss of self-integrity and control over the female body, while Nawangwulan's decision to leave an oppressive relationship shows her attempt to regain authority over herself and her life.

The phenomenon of Nawangwulan's gender authority can be explained through Pierre Bourdieu's concept of symbolic power, which states that power is not always material or institutional, but can work through symbols, cultural legitimacy, and social recognition.[15] Nawangwulan gained her power through her symbolic position by being culturally recognized as the ruler of the sea and the ancestor of the Javanese kings. Furthermore, based on the theory of gender performativity, Nawangwulan's gender identity is formed through actions and choices.[16] By leaving her restrictive domestic role and entering the spiritual realm, Nawangwulan actively performs her gender and rejects the construction of women as objects of patriarchy.

By connecting babad texts, myths, cultural symbols, and social practices, this study produces a more comprehensive understanding of Javanese women's gender authority. However, this study also has limitations,

mainly because the sources used are mythological and symbolic in nature, so that not all narratives can be verified empirically historically. In addition, the limited focus of the study on the Javanese cultural context means that the results cannot necessarily be generalized to other cultural regions.

In a broader context, the figure of Nawangwulan has similarities with sacred female figures in various cultures around the world, such as Amaterasu in Japan or Isis in Egyptian tradition. These similarities show that women as guardians of the cosmos and sources of spiritual legitimacy are a universal theme in human culture. In the context of contemporary Indonesia, these findings are relevant to efforts to build gender awareness rooted in local cultural traditions and identities, so that the discourse on gender equality can be understood as part of cultural heritage, rather than as a concept separate from the history of society.

CONCLUSION

The character of Nawangwulan represents Javanese women who possess spiritual power, independence, and wisdom. In one phase of her life, she became a victim of Jaka Tarub's manipulation and domination. Through various versions of the story, both in Babad Tanah Jawi, Serat Sulanjana, and oral traditions, Nawangwulan is described as a figure who was able to make decisions about her own life and reject the injustice that befell her by leaving the manipulative relationship. From an ethnohistorical perspective, the story of Nawangwulan serves not only as a legend but also as a reflection of the cultural values of Javanese society, which upholds the balance between humans, nature, and spiritual power. Thus, the story of Nawangwulan has a profound meaning about the role of women as guardians of life, symbols of purity, and emblems of independence.

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Health-Related Quality Of Life And Associated Factors In Functionally Training Through Self Exercise And Relaxation For Diy Elderly

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Abstract. The quality of life of the elderly is measured in the form of satisfaction with the fulfillment of the needs of the elderly with various factors including physical health, social relationships, environmental health, psychology, housing, and the quality of elderly activities. The elderly phase is characterized by the process of degeneration of cells, tissues, and organs of the body. This decline in function causes disorders in the motoric movement system, homeostasis, reduced muscle mass, neurological, body immunity, cognitive decline, and changes in the sensory system, such as poor vision and hearing. Providing socialization of exercise therapy programs and relaxation therapy as an application to improve the quality of life of the elderly Sasana Wredha Mulya according to the conditions needed. It is hoped that this event can increase social closeness and physical activities of the elderly which can indirectly maintain the immunity of the elderly. PKM activities in the form of organizing Socialization and Training on Health-Related Quality of Life and Associated Factors in Functionally Through Self Exercise and Relaxation for the Elderly in DIY at Panti Sasana Wredha Mulya, Sinduadi, Mlati, Yogyakarta have been carried out well according to the predetermined schedule, namely on May 10, 2025 survey and observation, May 17, 2025 socialization of degenerative diseases, May 24, 2025 practice of self exercise and self relaxation, and May 31, 2025 monitoring of physical activity activities. The activity was attended by 62 Elderly Sasana Wredha Mulya enthusiastically.
Keywords: Elderly, Physical Fitness, Physical Activity, Exercise

INTRODUCITON

Health-related quality of life is the perception of an individual's physical and mental health over time. A good quality of life is defined as being free from illness, injury, or disability, and having a positive level of mental and social well-being (Yin et al., 2016). The quality of life of the elderly is measured in the form of satisfaction with the fulfillment of the elderly's needs with various factors including physical health, social relationships, environmental health, psychology, residence, and the quality of the elderly's activities (Palit et al., 2021).

According to the Indonesian Statistics Agency, the quality of life of the elderly in Indonesia is 92.5% of them live in their own homes or with relatives, and 7.5% live in rented or leased homes. In terms of health, 41.49% of the elderly have health complaints such as coughs, fever, colds, headaches, diarrhea due to chronic diseases, and 19.72% have elderly morbidity (Sari et al., 2023). Life expectancy in Indonesia continues to increase. Life expectancy is the number of years a person can expect to live, calculated from birth to death. In 2010, life expectancies for men and women in Indonesia were 68 and 72, respectively. In 2020, these life expectancies increased to 70 for men and 73 for women.

The elderly phase is the final stage of human change. People aged 60 and over are considered elderly (Handayani et al., 2020). The elderly population will continue to increase, estimated to reach 98 million people worldwide by 2060 (Eckstrom et al., 2020). According to the March 2023 Susenas (National Socioeconomic Survey) data, 11.75% of the Indonesian population is elderly, with a higher female population than male population. Considering the high percentage of elderly people in Indonesia, in terms of health and quality of life, approximately 41.49% have health complaints such as coughs, fevers, colds, headaches, and diarrhea due to chronic diseases, and 19.72% have elderly morbidity (Sari et al., 2023).

The elderly phase is characterized by the process of degeneration of cells, tissues and body organs (Angulo et al., 2020). This decline in function causes disturbances in the motor movement system, homeostasis, reduced muscle mass, neurological, body immunity, cognitive decline, and changes in the sensory system, such as poor vision and hearing (Papalia et al., 2020) (Eckstrom et al., 2020), This affects the physical fitness level of the elderly. Morphological changes in muscles, which are active motor organs, will cause problems for the elderly, with decreased muscle function related to flexibility, strength, reaction, and muscle relaxation, resulting

in the elderly having a fear of falling (Rismayanthi & Prasetyo, 2023), disrupts balance, coordination and movement in elderly activities.

The process of functional decline that impacts the quality of life of older adults can be delayed and managed to maintain function and reduce morbidity early. Quality of life in older adults is related to physical fitness, mental health, social influences, and the environment, which in turn impacts life expectancy. Exercise therapy is key to improving life expectancy and health in older adults (Kaeberlein, 2018). Several studies have shown that exercise therapy carried out properly and regularly can prevent or delay the aging process in organ function. (Papalia et al., 2020) (Indrayogi et al., 2022) (Brandão et al., 2021). The exercise therapy program includes a combination of aerobics, muscle strengthening, flexibility, balance, and coordination, prioritizing large muscle groups.

Providing exercise therapy in the form of activities will change health behaviors in older adults. Research shows that physical activity has a positive effect on preventing depression and frailty in older adults (Zhang & Jiang, 2023). The exercise therapy program applied to the elderly in a structured, low to moderate intensity, structural brain and nerves will return to play their role by regulating increasing central nervous excitation, stimulating body hormones, increasing metabolism, releasing dopamine hormones, increasing blood oxygen content, nutritional factors for hippocampal neurons, stress-regulating cells, and smoothing the cardiovascular system (Leal-Galicia et al., 2019).

Limited physical activity in the elderly leads to a poor quality of life. The World Health Organization (WHO) has identified healthy aging strategies (Rudnicka et al., 2020). The strategies implemented aim to maintain and delay the decline in functional abilities to improve well-being in old age (Rudnicka et al., 2020). Functional abilities described by WHO are a form of intrinsic interaction and environmental characteristics, including basic needs, implementing a lifestyle with active routines, socializing and maintaining relationships. (Beard et al., 2016) (Beard et al., 2017), Improving the quality of life for the elderly. The WHO's healthy aging program can be developed by emphasizing exercise therapy to slow and delay premature aging. Self-exercise and relaxation (self-massage) models provide benefits for the elderly, enabling them to practice independently and improving their functional motor skills.

METODHS

This activity will be carried out for 62 elderly residents of the Mulya Wredha program through several stages. First, there will be outreach on the importance of physical activity, management of degenerative diseases, and good, safe, and easy exercise movements for the elderly, including self-exercise and relaxation. This outreach aims to provide elderly people with an understanding of the importance of physical activity and maintaining a healthy lifestyle. Second, the program will continue with self-exercise and relaxation practices, where participants will be given hands-on training on warm-up techniques, stretching, and muscle strengthening exercises specifically for the elderly. Third, there will be a simulation session, covering correct movement techniques. Finally, there will be mentoring and evaluation, where participants will be monitored in applying self-exercise and relaxation in their routine training sessions. Evaluation will be conducted through observation and interviews with athletes and coaches to measure the effectiveness of the program..

DISCUSION

A. Research Results of PKM Activities

This Community Service Program (PKM) activity will be held in May 2025. The program is divided into several phases: observation in the second week, practical work in the third week, and monitoring in the final week. The details of these activities are as follows:

1. Saturday, May 10, 2025

   On Saturday, May 10, 2025, the Community Service Program (PKM) will consist of a field observation at the Panti Sasana Wredha Mulya Nursing Home in Sinduadi, Mlati, Yogyakarta. Additionally, a survey of the hall that will be used for the PKM activity will be conducted. Discussions and interviews with Panti Sasana residents will be held regarding the PKM implementation plan, including information on the importance of physical activity and practices, degenerative disease management, and safe, easy, and effective exercise for the elderly, including self-exercise and relaxation techniques. The discussion will also address readiness for the socialization activity, including the space to be used and

supporting equipment. The purpose of this observation is to ensure the smooth and effective implementation of the activity. 2. Saturday, May 17, 2025

On Saturday, May 17, 2025, a socialization activity was held at the Panti Sasana Wredha Mulya, Sinduadi, Mlati, Yogyakarta. The activity began with attendance registration and a questionnaire. The next activity included presentations and discussions on the importance of physical activity, managing degenerative diseases, and practicing safe and easy exercise for the elderly, including self-exercise and relaxation. This activity was conducted offline or face-to-face using a lecture method, followed by a question and answer session. The socialization activity ran smoothly, and participants participated enthusiastically and actively. The goal of this socialization activity was to provide residents of the Panti Sasana Wredha with knowledge regarding the importance of physical activity, managing degenerative diseases, practicing safe and easy exercise for the elderly, implementing healthy living, and positively impacting their lives.

3. Saturday, May 24, 2025

On Saturday, May 24, 2025, a Community Service Program (PKM) activity was held, including practicing self-exercise and relaxation. This activity is aimed at the elderly at the Panti Sasana Wredha Nursing Home, focusing on self-exercise and relaxation. The session began with a warm-up, stretching, and muscle strengthening exercises specifically for the elderly. This practicum aimed to provide knowledge on appropriate warm-up, stretching, and muscle strengthening techniques for the elderly, tailored to their individual abilities. The practicum took place in a lively and engaging atmosphere, as evidenced by the participants' enthusiasm as they followed each movement instruction. It is hoped that the elderly at Panti Sasana Wredha will be able to engage in self-exercise and relaxation exercises and improve their quality of life.

4. Saturday, June 31, 2025

On Saturday, June 31, 2025, monitoring of the three-week socialization session on the importance of physical activity, managing degenerative diseases, and providing safe, easy, and effective exercise for the elderly, including self-exercise and relaxation, will be conducted. This monitoring aimed to assess participants' understanding of the material presented and their ability to apply self-exercise and relaxation movements. Monitoring was conducted through direct observation and discussions related to the implementation of outreach activities, including obstacles encountered and perceived benefits. Furthermore, participants were asked to complete a monitoring and evaluation (M&E) questionnaire aimed at measuring conceptual understanding and consistency in physical activity, degenerative disease management, and appropriate, safe, and easy exercise for the elderly, including self-exercise and relaxation. This monitoring activity is crucial in ensuring the continuity and achievement of the PKM objectives regarding the importance of physical activity, degenerative disease management, and appropriate, safe, and easy exercise for the elderly, including self-exercise and relaxation.

TABLE 1. *PKM Activity Schedule*

NO	TIME	ACTIVITY
Saturday 10 May 2025		
1	09.00 – 12.00	Observasi
Saturyday 17 May 2025		
1	07.45 – 08.00	Registration
2	08.00 – 08.10	Opening ceremony
3	08.10 – 08.20	Welcome from management
4	08.20 – 08.30	Welcome from vice dean
5	08.30 – 08.35	Preparation of material
6	08.35 – 09.20	Speaker 1
7	09.20 - 09.30	Closing ceremony
Saturyday 24 May 2025		
1	07.30 – 07.50	Opening Ceremony
2	07.50 – 08.00	Program Self Exercise and Relaxation
3	08.00 – 08.30	PracticeProgram Self Exercise and Relaxation
4	08.30 – 08.40	Group Photo Session
5	08.40 – 08.50	Closing

Saturday 31 May 2025		
1	09.00 – 09.20	Pratice preparation and monitoring
2	09.20 – 10.00	Monev
3	10.00 – 11.30	Self training
4	11.30 – 11.40	Closing

B. Discussion and Evaluation of Activities

Optimizing the health of older adults is crucial to ensuring they can lead productive and meaningful lives. One approach is through health screening programs and health education (Tamim & Subroto, 2023). The Community Service Program (PKM) Socialization and Training on Health-Related Quality of Life and Associated Factors in Functionality Through Self-Exercise and Relaxation for the Elderly in Yogyakarta, held at the Panti Sasana Wredha Mulya in Sinduadi, Mlati, Yogyakarta, aimed to provide knowledge and training to residents of the Panti Sasana Wredha Mulya regarding the importance of physical activity, management of degenerative diseases, and proper, safe, and easy exercise. The four-week program, from socialization to practice and monitoring, aimed not only at improving physical skills but also at fostering self-awareness in fostering social cohesion and physical activity, which indirectly supports their immunity. The program ran smoothly from beginning to end, as evidenced by the active participation of residents of the Panti Sasana Wredha Mulya.

The success of this PKM activity is the primary goal of this program. It is hoped that this event will enhance social cohesion and physical activity among the elderly, which indirectly supports their immunity. As aging progresses, changes in all organs and tissues, including the immune system, have been described. Components of the immune system are also affected by age-related changes that occur in physiological systems such as the endocrine, nervous, digestive, cardiovascular, and musculoskeletal systems, and vice versa. These changes, which affect both innate and adaptive immunity, significantly alter the constitution of leukocyte subsets and their primary functions, and are accompanied by a shift to a persistent pro-inflammatory state. Physical activity has been shown to be an effective non-pharmacological intervention to slow the process of immunosenescence. Regular moderate physical exercise can increase the circulation of immune cells such as lymphocytes and neutrophils, improve the balance of innate and adaptive immune responses, and reduce inflammatory biomarkers (Weyh et al, 2020). The second meeting, focused on self-exercise and relaxation practicums, was designed to support the fitness of the elderly at the Panti Sasana Wredha Mulya. Self-exercise activities were provided to improve endurance and fitness, which play a crucial role in improving quality of life. The self-exercise program can maintain and improve the functional abilities of the elderly, enabling them to be more independent in carrying out daily activities (Simeão et al, 2013). Regular independent exercise helps optimize cardiovascular function, control blood pressure, and reduce the risk of heart disease and stroke in the elderly (Wan & Wong, 2014). The results of the outreach activities indicate that the elderly have a high awareness of the importance of physical activity.

Thus, the Community Service Program (PKM) Socialization and Training on Health-Related Quality of Life and Associated Factors in Functionality Through Self-Exercise and Relaxation for the Elderly in Yogyakarta, held at the Panti Sasana Wredha Mulya in Sinduadi, Mlati, Yogyakarta, not only provided educational benefits but also increased awareness of physical activity. As a result, the elderly at Sasanan Wredha Mulya will become more productive and active, according to their respective abilities. The activeness and consistency of the elderly residents in participating in each stage of the activities are indicators of the success of this approach and demonstrate that similar programs have the potential for widespread implementation.

C. Supporting and Inhibiting Factors

1. Supporting Factors:

   Supporting factors in the Community Service Program (PKM) Socialization and Training on Health-Related Quality of Life and Associated Factors in Functionality Through Self-Exercise and Relaxation for the Elderly in Yogyakarta, held at the Panti Sasana Wredha Mulya, Sinduadi, Mlati, Yogyakarta:

   a. The community service team collaborated with each other and had areas of expertise that supported the implementation of both theoretical and practical activities, particularly regarding degenerative diseases in the elderly.
   b. Training participants enthusiastically participated in both theoretical and practical activities from beginning to end.
   c. There was good cooperation between the community service team, the Panti Sasana Wredha Mulya and its elderly members
2. Inhibiting Factors:

Supporting factors in the PKM activity of Socialization and Training of Health-Related Quality of Life and Associated Factors in Functional Through Self Exercise and Relaxation for the Elderly in DIY which was held at Panti Sasana Wredha Mulya, Sinduadi, Mlati, Yogyakarta:

a. Limited time to provide comprehensive material, so follow-up activities are needed for the Panti Sasana Wredha Mulya.
b. The availability of time and the busy schedules of the elderly at the Panti Sasana Wredha Mulya require careful planning and the right day to be chosen..

CONCLUSION

The PKM activity in the form of organizing Socialization and Training on Health-Related Quality of Life and Associated Factors in Functionally Through Self Exercise and Relaxation for the Elderly in DIY at Panti Sasana Wredha Mulya, Sinduadi, Mlati, Yogyakarta has been carried out well according to. On the first day of socialization activities on Saturday, May 10, 2025, the implementation of PKM was in the form of field observations to the location of Panti Sasana Wredha Mulya, Sinduadi, Mlati, Yogyakarta. On the second day of PKM activities on Saturday, May 17, 2025, Socialization and Training on Health-Related Quality of Life and Associated Factors in Functionally Through Self Exercise and Relaxation for the Elderly in DIY was held at Panti Sasana Wredha Mulya, Sinduadi, Mlati, with discussions related to the importance of physical activity, management of degenerative diseases, good, safe, and easy exercise movements for the elderly with self exercise and relaxation. On the third day of PKM activities on Saturday, May 24, 2025, further material was held, namely the practice of self exercise and relaxation. This activity is aimed at the elderly at the Panti Sasana Wredha with a focus on self-exercise and relaxation. On the fourth day of activities, May 31, 2025, on Saturday, May 31, 2025, monitoring activities were carried out on the implementation of socialization of the importance of physical activity, management of degenerative diseases, good, safe, and easy exercise movements for the elderly with self-exercise and relaxation. This monitoring aims to assess the extent of participants' understanding of the material that has been presented, as well as their ability to apply self-exercise and relaxation movements.

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Transforming School Talent Management Systems Through A Comprehensive And Sustainable Approach

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Abstract. School talent management has become a critical issue in vocational education, particularly in ensuring the alignment between students' potential, school programs, and future workforce demands. However, many vocational schools still face limitations in implementing systematic, data-driven, and sustainable talent management practices. This community service program aimed to transform school talent management systems through a comprehensive and sustainable approach in vocational high schools in Sleman Regency, Yogyakarta. The program was implemented through capacity-building workshops, mentoring sessions, talent mapping assistance, and the development of individualized development plans. Evaluation was conducted using pre–post assessments, observation, and participant feedback. The results indicate significant improvements in participants' understanding of talent management concepts, their ability to conduct talent mapping, and their readiness to implement sustainable talent management practices at the school level. The program demonstrates that structured and participatory community service initiatives can effectively strengthen school management capacity and support long-term institutional development in vocational education.

INTRODUCTION

Vocational high schools are expected to play a strategic role in preparing students with competencies that are aligned with labor market needs, industrial development, and future workforce demands. Beyond curriculum delivery, schools are increasingly required to manage student potential in a systematic and sustainable manner in order to ensure optimal talent development and institutional performance. In this context, school talent management has emerged as a critical component of effective educational management, encompassing processes of talent identification, development, placement, and evaluation that are aligned with both individual student potential and organizational goals [1], [2].

Talent management, originally developed within the field of human resource management, has been widely recognized as a strategic approach for enhancing organizational competitiveness and sustainability [3]. In educational settings, talent management is increasingly adapted to support differentiated student development, promote equity, and maximize learning outcomes [2]. However, unlike corporate environments where talent management systems are often well-structured and data-driven, many schools—particularly vocational institutions—continue to implement talent development practices in fragmented and informal ways. Decisions related to student placement, enrichment programs, and career pathways are frequently based on subjective judgments rather than systematic assessment, limiting both effectiveness and sustainability.

Previous studies emphasize that effective talent management in education requires a comprehensive approach that integrates leadership commitment, competency-based frameworks, and continuous development mechanisms [2], [4]. Such an approach allows schools to move beyond ad hoc talent initiatives toward institutionalized systems that support long-term student growth. In vocational education, this is particularly important, as students' talents must be aligned not only with academic achievement but also with practical skills, career readiness, and industry expectations. Without a structured talent management system, vocational schools risk underutilizing student potential and failing to prepare graduates who are competitive in dynamic labor markets.

Despite its strategic importance, the implementation of school talent management systems faces several challenges. Schools often lack practical guidance, validated instruments, and sufficient managerial capacity to design and operate comprehensive talent management frameworks. Moreover, sustainability remains a persistent issue, as many initiatives depend heavily on individual actors rather than being embedded within institutional policies and practices. These challenges highlight the need for targeted interventions that strengthen school

stakeholders' capacity to understand, implement, and sustain talent management systems in real educational contexts.

Community service programs conducted by higher education institutions provide a strategic mechanism to address these challenges by bridging theory and practice. Through structured capacity-building activities, mentoring, and hands-on assistance, universities can support schools in transforming management practices in a context-sensitive and participatory manner. In line with this perspective, the present community service program was designed to support vocational high schools in Sleman Regency, Yogyakarta, by facilitating the transformation of school talent management systems through a comprehensive and sustainable approach.

The program focuses on strengthening stakeholders' understanding of talent management concepts, assisting schools in conducting systematic talent mapping, and supporting the development of individualized development plans that align student potential with institutional objectives. By emphasizing participatory engagement and sustainability, this initiative aims not only to improve immediate managerial practices but also to foster long-term institutional capacity for talent development in vocational education settings..

SERVICE METHOD

Activity Design

This community service program was designed using a capacity-building and participatory approach aimed at transforming school talent management systems in vocational education settings. The program adopted a comprehensive and sustainable framework, integrating conceptual strengthening, practical application, and reflective evaluation. The activity design emphasized stakeholder engagement, hands-on practice, and contextual adaptation to ensure that talent management practices could be implemented and sustained at the school level. Rather than focusing on one-time training, the program was structured as a progressive intervention combining workshops, mentoring, and implementation support.

Subject and Location of the Activity

The subjects of this community service program were school stakeholders directly involved in student development and school management, including principals, vice principals, and 25 teachers. The activity was conducted in selected vocational high schools located in Sleman Regency, Yogyakarta, Indonesia. This location was selected due to the strategic role of vocational schools in workforce preparation and the identified need for strengthening systematic talent management practices within the schools.

Stages of Implementation

The implementation of the program was carried out in four main stages.

a) A needs assessment stage was conducted through initial discussions and questionnaires to identify existing talent management practices, challenges, and institutional readiness.
b) The capacity-building stage involved workshops focusing on core concepts of school talent management, including talent identification, competency mapping, and sustainable development planning.
c) Third, the mentoring and assistance stage provided hands-on support to participants in conducting talent mapping, developing individualized development plans, and aligning talent management practices with school programs.

Finally, the evaluation and reflection stage was implemented to assess program outcomes, gather participant feedback, and formulate follow-up strategies for sustaining talent management practices.

Data Collection and Analysis Techniques

Data were collected using multiple techniques to capture both process and outcome dimensions of the program. These techniques included pre–post assessments to measure changes in participants' understanding and skills, observation to document engagement and implementation processes, and participant response questionnaires to assess perceived usefulness and satisfaction. The collected data were analyzed descriptively to identify trends in capacity improvement and program impact. Qualitative feedback from participants was also synthesized to provide contextual insights into implementation challenges and perceived benefits.

Indicators

Program effectiveness was assessed using a set of process-oriented and outcome-oriented indicators designed to capture both capacity development and practical application of school talent management practices. The first indicator focused on participants' conceptual understanding of school talent management, including knowledge of talent identification principles, differentiated development, and sustainability-oriented management. Improvement in this indicator was measured through pre–post assessments and reflective discussions during the program.

The second indicator examined participants' ability to apply talent mapping instruments in a systematic and data-informed manner. This included the use of structured tools to identify students' strengths, interests, and developmental needs, as well as participants' competence in interpreting talent mapping results for decision-making purposes. Evidence for this indicator was derived from observation of practical activities and review of talent mapping outputs produced during the mentoring stage.

The third indicator related to the development of structured and individualized development plans for students. This indicator assessed participants' capacity to translate talent mapping results into actionable plans that aligned student potential with school programs, extracurricular activities, and career pathways. The quality and completeness of these development plans served as key evidence of participants' ability to operationalize talent management concepts.

The fourth indicator measured institutional readiness to integrate talent management practices into existing school management systems. This included participants' willingness and preparedness to embed talent management within routine school programs, guidance and counseling services, and policy frameworks. Evidence for this indicator was obtained from group reflections, implementation plans, and commitments articulated by school stakeholders at the conclusion of the program.

In addition to these outcome indicators, process indicators were also considered. These included participant engagement during workshops and mentoring sessions, active participation in discussions and simulations, and responsiveness to feedback. Furthermore, participant perceptions of program relevance and applicability were assessed through response questionnaires to determine the perceived usefulness of the activities in addressing real school challenges.

Collectively, these indicators provided comprehensive evidence of the program's effectiveness in strengthening stakeholders' capacity to implement comprehensive and sustainable school talent management practices in vocational education contexts.

RESULTS

The results of this community service program are presented in alignment with the predefined indicators to demonstrate the effectiveness of the intervention in strengthening sustainable school talent management practices in vocational schools. To ensure clarity and coherence in presenting the outcomes of the community service program, the results are organized according to the predefined indicators of effectiveness. These indicators reflect both process-related and outcome-related dimensions of the intervention, capturing changes in participants' understanding, skills, and institutional readiness. Table 1 provides a consolidated overview of the program results by summarizing the pre-program conditions, post-program outcomes, and sources of evidence for each indicator. This structured presentation facilitates a clear interpretation of how the program contributed to strengthening sustainable school talent management practices in vocational schools.

TABLE 1. *Alignment of Program Indicators and Results*

Indicator	Pre-Program Condition	Post-Program Outcome	Evidence Source
Conceptual understanding of school talent management	Limited understanding; talent viewed mainly as academic achievement or extracurricular performance	Improved understanding of systematic, comprehensive, and sustainable talent management concepts	Pre–post assessment, reflective discussion
Ability to apply talent mapping instruments	Reliance on informal observation and subjective judgment	Ability to use structured talent mapping tools and interpret results	Observation, mentoring outputs
Development of individualized development plans	No structured development plans based on talent data	Development of actionable and individualized student development plans	Review of development plans
Readiness to integrate talent management into school programs	Talent management not embedded in routine school systems	Increased readiness to integrate talent management into guidance services and school programs	Group reflection, implementation commitments
Participant engagement and perceived relevance	Moderate engagement; limited prior exposure to systematic talent	High engagement and positive perception of relevance and	Observation, response questionnaires

Indicator	Pre-Program Condition	Post-Program Outcome	Evidence Source
	management	applicability	

Improvement in Conceptual Understanding of School Talent Management

The first indicator focused on participants' conceptual understanding of school talent management. Pre-assessment results indicated that most participants possessed limited knowledge of systematic talent management and tended to associate talent development solely with extracurricular activities or academic achievement. Following the capacity-building workshops and mentoring sessions, post-assessment results showed a clear improvement in participants' understanding of key concepts, including talent identification, differentiated development, and sustainability-oriented management. Participants demonstrated increased ability to articulate the principles of comprehensive talent management and to explain its relevance to vocational education contexts.

FIGURE 1. *Opening Ceremony Community Service Program*

Ability to Apply Talent Mapping Instruments

The second indicator examined participants' ability to apply structured talent mapping instruments. During the initial stage, participants relied primarily on informal observations and anecdotal information to identify student potential. After receiving hands-on guidance and mentoring, participants were able to use structured talent mapping tools to systematically identify students' strengths, interests, and developmental needs. Observation during practical sessions revealed improved accuracy and confidence in applying the instruments, as well as enhanced capacity to interpret talent mapping results as a basis for decision-making.

Development of Structured and Individualized Development Plans

The third indicator related to participants' capacity to develop structured and individualized development plans based on talent mapping outcomes. The results show that participants successfully translated talent data into actionable development plans aligned with school programs, extracurricular activities, and career guidance pathways. These plans reflected a more holistic understanding of student development, integrating academic, vocational, and personal dimensions.

Readiness to Integrate Talent Management into School Programs

The fourth indicator assessed institutional readiness to integrate talent management practices into existing school management systems. At the conclusion of the program, participants expressed increased readiness to embed talent management into routine school activities, including guidance and counseling services, student placement decisions, and program planning. Group reflections and implementation commitments revealed a shared understanding among school stakeholders of the importance of sustaining talent management practices beyond the duration of the program.

Participant Engagement and Perceived Program Relevance

In addition to outcome indicators, process indicators related to participant engagement and perceived relevance were also examined. Observation data showed high levels of active participation during workshops, discussions, and mentoring activities. Participants demonstrated openness to reflection and responsiveness to feedback throughout the program. Response questionnaire results further indicated positive perceptions regarding the relevance, practicality, and applicability of the program in addressing real challenges faced by vocational schools.

DISCUSSION

The findings of this community service program demonstrate that a comprehensive and sustainable approach is effective in strengthening school talent management practices in vocational education contexts. The overall pattern of improvement observed across all indicators suggests that systematic capacity-building interventions can enhance both individual competencies and institutional readiness. This aligns with the broader literature on talent management, which emphasizes that sustainable talent development requires an integrated system rather than isolated or ad hoc initiatives [1], [8], [9].

Improved conceptual understanding of school talent management among participants reflects the importance of grounding practice in clear theoretical frameworks. Previous studies highlight that talent management in educational settings must be understood as a structured process encompassing identification, development, and alignment of individual potential with organizational goals [2], [10]. Without such conceptual clarity, schools tend to rely on informal judgments that limit equity and effectiveness. The program's emphasis on holistic and sustainability-oriented talent management resonates with the talent development models proposed by Subotnik et al. and competency-based perspectives articulated by Spencer and Spencer [7], [10].

The enhanced ability of participants to apply talent mapping instruments underscores the value of experiential and practice-oriented learning. Consistent with the literature on human resource development and educational management, practical mentoring and guided application are essential for translating abstract management concepts into operational skills [6], [21]. In vocational education, where student development must be closely aligned with career pathways and industry needs, data-informed talent mapping serves as a critical foundation for informed decision-making [11], [19]. This finding reinforces the argument that effective talent management in schools requires both conceptual understanding and technical competence.

The development of structured and individualized development plans further illustrates participants' growing capacity to operationalize talent management principles. Individualized planning has been widely recognized as a key mechanism for differentiated talent development and student-centered education [2], [18]. By linking talent mapping results to concrete development strategies, schools are better positioned to support diverse student needs and optimize learning trajectories. From a sustainability perspective, such planning practices contribute to institutional continuity, as they can be embedded within routine school programs and policies rather than remaining dependent on individual initiative [14], [15].

Institutional readiness to integrate talent management into existing school systems emerged as a critical outcome of the program. Educational leadership literature emphasizes that sustainable change is unlikely to occur without collective commitment and organizational alignment [16], [17]. The increased awareness and shared understanding among school stakeholders observed in this program suggest that talent management transformation must be approached as a leadership and governance issue, not merely a technical intervention. This perspective is consistent with research highlighting the role of distributed leadership and strategic planning in educational improvement efforts [14], [16], [23].

High levels of participant engagement and perceived relevance of the program further support the effectiveness of the participatory design. Community service initiatives that emphasize contextual relevance, stakeholder involvement, and reflective practice are more likely to generate meaningful and lasting impact [18], [20]. Engagement is particularly important in vocational school settings, where practitioners often face competing demands and limited time for professional development. The positive response to the program suggests that capacity-building efforts grounded in real school challenges can foster stronger ownership and commitment to change.

Overall, the discussion of findings indicates that transforming school talent management systems requires an integrated approach that combines conceptual strengthening, practical skill development, and institutional alignment. The results support existing scholarship advocating for comprehensive talent management frameworks and highlight the strategic role of higher education institutions in facilitating school-level transformation through community service programs [1], [5], [22]. Although the findings are descriptive in nature, they provide meaningful insights into how sustainable talent management practices can be cultivated in vocational education contexts through structured and participatory interventions.

CONCLUSION

This community service program demonstrates that a comprehensive and sustainable approach can effectively strengthen school talent management practices in vocational education contexts. Through structured capacity building, hands-on mentoring, and participatory engagement, the program supported school stakeholders in developing a more systematic understanding of talent management and in applying practical tools for talent identification and development.

The program contributed to improved stakeholder capacity in conducting talent mapping, developing individualized development plans, and integrating talent management practices into existing school programs. These outcomes indicate that talent management transformation in vocational schools requires not only conceptual knowledge but also continuous guidance and institutional alignment. By embedding talent management within routine school practices, schools are better positioned to support diverse student potential and align educational programs with workforce demands.

From an institutional perspective, the findings highlight the strategic role of higher education institutions in facilitating sustainable school management transformation through community service initiatives. Well-designed community service programs can serve as effective mechanisms for bridging management theory and school-level practice, particularly in contexts where schools face limitations in expertise and resources.

Overall, this study underscores that sustainable school talent management cannot be achieved through one-time interventions. Instead, it requires a long-term commitment to capacity development, collaborative leadership, and continuous improvement. Future community service programs are recommended to extend mentoring duration, incorporate digital talent management tools, and strengthen collaboration between schools, universities, and industry partners to enhance sustainability and impact in vocational education settings.

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"Indokai" Traditional Sports Festival Training Based On Fun Traditional Games To Increase Diversity And Character Building For Elementary Schools In Yogyakarta-Osaka Japan

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Abstract. Sports festivals have a very important role in building healthier, more active and competitive communities. One of the sports festivals held in Indonesia and Japan is the traditional sports festival. The sports festival is one of the events held to re-promote traditional sports so that they continue to be practiced and remain sustainable. Traditional sports festivals in Indonesia are held every year in various provinces, both national and local. Meanwhile in Japan a sports festival is held at the end of every lesson with the name "Undokai" sports festival. This festival also has the aim of promoting a healthy lifestyle, increasing the spirit of sportsmanship., increase diversity and character building of students. The "Undokai" festival has been held several times in the past 4 years in Indonesia at schools in Yogyakarta-Bali in collaboration with a research team from Osaka Sangyo University Japan (OSU). The "Indokai" Festival is the result of research and development research between traditional sports games from Japan and Indonesia which will be socialized in Japanese and Indonesian schools. The theme raised in this PkM refers to the PkM Theme for International Cooperation oriented towards problems that occur related to traditional games and traditional sports, which are included in the objects of cultural advancement in Law Number 5 of 2017 concerning the Advancement of Culture. Traditional games are believed to be able to help preserve regional culture and character values in line with the objectives Fourth SDGs: Quality education. This PkM activity is planned to be carried out at State Junior High School 1 in Indonesia and schools in Osaka, Japan. State Junior High School 1 is the place where service is carried out because it has a collaboration with UNY and also schools in Osaka because they have a collaboration with OSU. Based on initial observations with interviews with researchers from OSU, there are several collaborations with schools that will hold the "Indokai" sports festival. However, there needs to be collaboration between traditional games from Japan and Indonesia. This modification of traditional sports includes; 1. Jump Rope, 2. Boy-boynan, and 3. Gobaksodor, 4. 紙のハイタッチ(We no haitatchi), 5. 綱引き (Tsunahiki). Based on the problems and hopes described above, the community service was moved to carry out the "Indokai" Traditional Sports Festival Training Based On Fun Traditional Games To Increase Diversity And Character Building For Elementary Schools In Yogyakarta-Osaka Japan." Focus The activities of this Community Service Program are: To create quality education in accordance with the 4th SDGs. Method PPM activities are carried out using the "Indokai" festival socialization method based on fun traditional sports games. This PkM involves teachers and students of SMP N 1 Yogyakarta and also schools in Osaka. Socialization is provided so that schools are able to organize the implementation of the "Indokai" festival. In the socialization, knowledge was also provided on how to promote the "Indokai" festival through social media platforms, so that it can attract the general public.

Socialization, Sports Festival, Indokai, Diversity, Character

INTRODUCTION

The annual Undokai sports festival is a Japanese tradition that involves various competitions and sporting activities to build a spirit of togetherness, teamwork and physical fitness (Tanya et al., 2022). In an effort to enrich Undokai with cultural elements from other countries, the modification of "Indokai" by including traditional Indonesian games is an interesting innovation. This integration is expected to strengthen cultural relations between Japan and Indonesia and increase the appeal of the "Indokai" festival resulting from the combination of Undokai with traditional Indonesian sports games. The problems faced by Japanese partners in implementing this modification are an important aspect that needs to be considered.Analisis Situasi

1. Popularity and Structure of the Undokai Festival

Undokai is a highly anticipated event in Japanese schools and often involves active participation from students, teachers, and parents (Tomura et al., 2024). Activities held generally include relay races, tug-of-war, as well as strategy and dexterity-based games. Undokai's competitive structure usually prioritizes teamwork and division of groups based on class or school level (Oudat et al., 2025).

2. The Relevance of Traditional Indonesian Games with Undokai

Indonesia has various traditional games that focus on physical aspects, strategy and teamwork, which are very suitable for integration into Undokai. Some games that can be included include:

• Sack Race: Similar to a running race but with added challenges, as participants must jump inside a sack.
• Engklek: A balancing game that can be adapted as part of a skills challenge.
• Tug of War: Already part of Undokai but can be modified with more typical Indonesian rules.
• Galah Asin: Sharpens team strategy in guarding territory and passing opponents.
• Boy-boy an: A traditional game that applies agility, targets, and teamwork
• Gobak sodor: A traditional game that sharpens the tactics and strategies of each team to pass opponents

These games have similarities to the competitions that are usually held in Undokai, so they have the potential to be easily adopted.

3. Japanese Partners' Response to Cultural Integration

Japanese society is generally open to foreign cultures, especially those that add value in education and recreation (Romão et al., 2018). However, in the context of formal education, changes and modifications to a long-standing system require time and specific strategies to implement. Factors such as suitability to the curriculum, ease of implementation, and participant enthusiasm are key determinants of the success of these modifications (Wu et al., 2022).

Problems Japanese Partners May Face

1. Adaptation of Traditional Indonesian Games in Undokai Format

Not all traditional Indonesian games can be easily adapted to the Undokai format. There needs to be adaptation of the rules, game duration, and scoring mechanisms to remain in line with the system already known in Japan. For example, Sack Race may need to be conducted on a safer track to prevent injuries, or Galah Asin may require simplifying the rules to make it easier for participants who are new to it to understand.

2. Language Barriers and Cultural Understanding

Although the relationship between Japan and Indonesia is quite close, there are still language barriers and cultural understanding that can be a challenge. The concept of Indonesian traditional games needs to be explained in detail to Japanese partners, both in terms of philosophy, benefits, and technical implementation. The preparation of a guide in Japanese and the holding of demonstration sessions will greatly assist in the adaptation process.

3. Security and Safety of Participants

One aspect that is highly considered in organizing Undokai is the safety of the participants. Games adopted from Indonesia must be evaluated for their risk level so as not to cause injury. For example, the Sack Race game needs to be played on a soft surface, and Galah Asin may need modification to avoid excessive physical contact.

4. Acceptance by Society and Schools

Japanese schools have a strong tradition of implementing Undokai, so significant changes may face initial resistance. Schools and parents need to be given an understanding of the benefits of integrating traditional Indonesian games, both in terms of fitness and educational value. Initial demonstrations or trials could be a solution to see how participants respond to the proposed new games.

5. Logistics and Resource Readiness

Traditional Indonesian games often use different equipment or props than standard Undokai equipment. For example, Sack Race requires a specific size of sack, while Engklek requires specific markings on the ground. Providing these equipment in Japan can be a challenge if they are not available locally, so alternative materials or designs need to be considered to make them easily available.

Implementation Strategy

In order for the "Indokai" modification which implements the Undokai festival combined with traditional Indonesian games to run smoothly, the following strategies can be applied:

1. Select the Most Suitable Game: Choose a game that has similarities to the Undokai race and can be easily adapted.
2. Preparation of Guidelines and Training: Create written guides in Japanese and provide training to teachers and organizers.
3. Demonstration and Trial: Conduct simulations or small-scale game trials before implementing them widely.
4. Improvement of Rules and Security: Ensuring all adapted games have been adjusted to be safe and comfortable for all participants.

5. Socialization to the Community: Inform schools, parents, and students about the benefits of these modifications to increase enrollment.

Based on the program that has been implemented for several years, the implementation of the "Undokai" festival has been running for 4 times during the 4 years it has been implemented in Indonesia at schools located in Yogyakarta-Bali-Osaka in collaboration with a research team from Osaka Sangyo University Japan (OSU), The "Indokai" Festival is the result of research and development between traditional sports games from Japan and Indonesia which will be socialized in Japanese and Indonesian schools. Based on the problems and expectations that have been explained above, the devotees are moved to carry out activities "Indokai" Traditional Sports Festival Training Based On Fun Traditional Games To Increase Diversity And Character Building For Elementary Schools In Yogyakarta-Osaka Japan"

PROBLEM SOLUTION

The community service provider conducted initial observations through interviews with the village head of The devotees have conducted initial observations by interviewing schools in Indonesia and Japan. Based on the areas of expertise and competence of the devotees, several problems found in Mitra PkM can be described through a SWOT analysis in the picture

1. Creating Interactive Training Modules
   - Develop written guides and video tutorials in Japanese and Indonesian
   - Conduct workshops for teachers and organizers to understand how to play and the benefits of traditional Indonesian games.
2. Adaptation of Game Rules
   - Develop written guides and video tutorials in Japanese and Indonesian.
   - Conduct workshops for teachers and organizers to understand how to play and the benefits of traditional Indonesian games.
3. Collaboration with Schools and Communities
   - Develop written guides and video tutorials in Japanese and Indonesian.
   - Conduct workshops for teachers and organizers to understand how to play and the benefits of traditional Indonesian games.
4. Provision of appropriate equipment
   - Develop written guides and video tutorials in Japanese and Indonesian.
   - Conduct workshops for teachers and organizers to understand how to play and the benefits of traditional Indonesian games
5. Socialization and Increasing Cultural Awareness (Sports Festival)
   - Develop written guides and video tutorials in Japanese and Indonesian.
   - Conduct workshops for teachers and organizers to understand how to play and the benefits of traditional Indonesian games.

Based on the problems and expectations that have been explained above, the community service workers were moved to carry out activities "\"Indokai" Traditional Sports Festival Training Based On Fun Traditional Games To Increase Diversity And Character Building For Elementary Schools In Yogyakarta-Osaka Japan."

METHODS

The method of PkM activities is carried out by socializing the Indokai Sports Festival. This socialization will be carried out at Schools in Yogyakarta Indonesia and Schools in Osaka Japan and it is planned that the resource persons for this socialization activity will be lecturers at FIKK UNY and lecturers at Osaka Sangyo University (OSU). With the ability to understand and practice in implementing the Indokai Festival, it is very potential to increase diversity and character building.

PkM activities related to the socialization of the Indokai Festival are divided into several activities..

1. The concept of Indokai and how to adapt it to the context of Japanese-Indonesian culture.
   Training on the history, values, and format of the Indokai festival, simulations of Indokai games, namely Jump Rope, Boy-boynan, and Gobaksodor, 紙のハイタッチ (Kami no haitatchi), 綱引き (Tsunahiki), and discussions on integrating these activities into the physical education curriculum.
2. Monitoring and evaluation of activities
   Assessing the effectiveness of the socialization program and implementation of the Indokai festival, by means of a survey of participants (teachers, school staff, and students) about their experiences during the activity, FGD to obtain input regarding improvements to the program in the future, documentation of activity results as material for PKM reports..
3. Collaboration with schools and the Department of Education

In carrying out the Indokai sports festival activities, the client wants the presence of the Education Office and Supervisors. In the PkM activities, it will be carried out in collaboration with the Education Office and Supervisors so that socialization can later develop more widely.

CONCLUSION

The community service activity entitled "Indokai" Traditional Sports Festival Training Based On Fun Traditional Games To Increase Diversity And Character Building For Elementary Schools In Yogyakarta-Osaka Japan went very well in both countries, Yogyakarta and Osaka. The implementation of this traditional sports festival succeeded in bringing children from various cultural backgrounds to participate together in fun and educational traditional games. The enthusiasm of the participants was very high and its impact was felt in increasing the spirit of togetherness, diversity, and character building from an early age.

In Yogyakarta, the event received a warm welcome from the participating elementary schools, teachers, and parents. The traditional games selected facilitated positive social interactions among students and improved motor skills and teamwork. Meanwhile, in Osaka, the festival featured innovations adapted to the local context while still emphasizing the shared values of togetherness and diversity, successfully connecting two cultures through traditional sports.

Coordination and collaboration between organizers in both countries proceeded smoothly, with full support from various parties, including schools, local governments, and local communities. This strengthened mutual respect for differences and provided a rich learning experience for children in both cities. Activities were also well-documented for evaluation and future event development.

Evaluation results show that the festival not only improves children's physical abilities but also stimulates character development, such as responsibility, sportsmanship, and adaptability. Children learn to appreciate cultural diversity and build cross-border friendships, which is the main goal of the program.

Given the success and positive impact achieved, a follow-up to the INDOKAI festival is planned for next year. This event is expected to further optimize participation, expand reach to other schools, and develop a wider and more engaging variety of traditional games.

With this spirit maintained, it is hoped that this festival will become a regular program that can strengthen cultural ties between Indonesia and Japan, while also serving as an effective means of character building for children through fun and educational traditional sports. Thank you to all those who have contributed to the success of this event, and let's look forward to the next event with even greater enthusiasm.

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Traditional Game Sport Festival In The Commemoration Of Indonesian As An Effort To Increase Diversity And Character Formation Of Children In Banyudono District

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Abstract. Sports festivals play a crucial role in building a healthier, more active, and more competitive society. Traditional sports festivals are one of the events held in Indonesia. They are aimed at re-promoting traditional sports to ensure their continued participation and sustainability. Traditional sports festivals in Indonesia are held annually in various provinces, both nationally and regionally. The traditional sports festival, which commemorates the Indonesian Independence Day, is an event to strengthen the sense of nationality and togetherness through fun and educational traditional games. The festival also aims to promote a healthy lifestyle, foster sportsmanship, enhance diversity, and foster character building in children. The theme of this Community Service Program (PKM) refers to the "Building Villages" theme, which focuses on rural issues or rural development, in accordance with the 18 Sustainable Village Development Direction Policies outlined in the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration Number 21 of 2020 concerning General Guidelines for Village Development and Village Community Empowerment, targeting the third SDGs Village goal: Healthy and Prosperous Life. This Community Service Program (PKM) is planned to be held in Jetak, Jembungan, Kec. Banyudono, Boyolali Regency. Based on initial observations through interviews with the Jembungan village head, Banyudono District has a field space typically used for Indonesian Independence Day activities. However, these facilities are currently only being used, and no effort has been made to develop infrastructure for traditional sports festivals, as well as limited funding for equipment. Based on the issues and expectations outlined above, the community service program was motivated to conduct a "Traditional Sports Game Festival in Commemoration of Indonesian Independence Day as an Effort to Increase Diversity and Character Building in Banyudono District." The objectives of this Community Service Program are: To create a healthy and prosperous community life in accordance with Village SDGs 3. The Community Service Program (PPM) method is carried out through a traditional sports festival socialization method based on fun traditional games. This Community Service Program (PkM) involves village officials in Banyudono District. This socialization is provided to enable the village to organize the "Traditional Sports Game Festival" in commemoration of Indonesian Independence Day.

INTRODUCTION

Indonesia is a country rich in culture and diversity, including traditional sports that have been passed down from generation to generation. To commemorate the Republic of Indonesia's Independence Day, the Traditional Games Sports Festival is an effort to preserve cultural heritage while strengthening the values of togetherness within the community.

This festival not only aims to reintroduce traditional games to the younger generation but also serves as a means of building character, such as sportsmanship, cooperation, and the spirit of mutual cooperation (Arini et al., 2024). Furthermore, with the diversity of games originating from various regions of Indonesia, the festival also serves as a platform to increase understanding and appreciation for the nation's cultural diversity.

More than just entertainment, traditional sports contain crucial character education values for children. Through games that emphasize togetherness, strategy, and physical endurance, children can learn honesty, discipline, and respect for differences (Darmaningrum & Sari, 2018). This provides a strong foundation for developing a generation that is not only intellectually intelligent but also possesses a strong social conscience and a strong sense of nationalism.

Character education through traditional sports also teaches children the importance of cooperation and tolerance (Prayitno et al., 2022). Many traditional games, played in groups, such as gobak sodor, tug-of-war, or fortifications, require players to work together and support each other to achieve victory. In the process, children learn to appreciate each individual's role on the team, develop empathy, and foster mutual respect.

Furthermore, traditional games also teach children about persistence and fighting spirit (Kalsum et al., 2021). Not all games are won easily, so children need to work hard, learn from their mistakes, and persevere. This never-give-up attitude is crucial for developing a strong mentality and readiness to face future challenges.

With the Traditional Sports Games Festival, it is hoped that the noble values of traditional sports will continue to be passed down. Furthermore, this festival also fosters strong character, integrity, and an appreciation for diversity in social and national life (Noventue et al., 2024). By instilling these values from an early age, Indonesia's young generation will grow into individuals who possess not only intellectual skills but also character grounded in national and humanitarian values.

This community service activity will be held in Jetak Village, Jembungan, Banyudono District, Boyolali Regency, Central Java. This location was chosen to revive traditional games within the community and educate children about the importance of preserving the nation's cultural heritage. By involving the local community, this festival is expected to serve as a momentum to strengthen social ties between residents and foster a spirit of togetherness.

The theme of this Community Service Program refers to the Community Service Program "Developing Villages" which focuses on rural issues or rural development, in accordance with the 18 Sustainable Village Development Policies outlined in the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration Number 21 of 2020 concerning General Guidelines for Village Development and Village Community Empowerment. The eighteen Village SDGs, as referred to in Article 6 paragraph (1), aim to realize:

a. Villages without poverty;
b. Villages without hunger;
c. Healthy and prosperous villages;
d. Quality village education;
e. Involvement of village women;
f. Villages with access to clean water and sanitation;
g. Villages with clean and renewable energy;
h. Equitable village economic growth;
i. Village infrastructure and innovation according to needs;
j. Villages without disparities;
k. Safe and comfortable village residential areas;
l. Environmentally conscious village consumption and production;
m. Villages responsive to climate change;
n. Villages concerned with the marine environment;
o. Villages concerned with the terrestrial environment;
p. Peaceful and just villages;
q. Partnerships for Village Development; and
r. Dynamic village institutions and adaptive village culture.

Based on initial observations conducted through interviews with the village head of Jembungan in Banyudono District, Banyudono District has good open spaces. Through outreach on managing traditional sports festival facilities and infrastructure, increasing awareness and cultural diversity, and providing culture-based character education, this can impact the lives of healthy and prosperous communities. Based on the problems and hopes outlined above, the community service community was motivated to carry out these activities.

PROBLEM SOLUTION

The community service provider conducted initial observations through interviews with the village head of Jembungan in Banyudono District. Based on the community service provider's expertise and competencies, several issues encountered by the Community Service Partners (PKM) can be illustrated through a SWOT analysis in the figure: lack of interest from the younger generation, inadequate facilities and infrastructure, limited human resources, and limited implementation time in Banyudono District.

By socializing the management of traditional sports festival facilities and infrastructure, increasing awareness and cultural diversity, and promoting cultural-based character education, these initiatives can impact the health and well-being of the community. Based on the issues and expectations outlined above, the community service provider was motivated to conduct the "Traditional Sports Games Festival in Celebration of Indonesian Independence Day as an Effort to Increase Diversity and Develop Children's Character in Banyudono District."

METHODS

The Community Service (PKM) activity method is implemented through a Traditional Games Sports Festival Training in Commemoration of the Indonesian Independence Day. This training is provided to the Jembungan Village administrators in Banyudono District. The training is planned to be resourced by lecturers from the Faculty of Family Welfare, Yogyakarta State University (UNY) and Traditional Practitioner participants. With management skills in developing the Traditional Games Sports Festival, there is significant potential for increasing diversity and character development in children.

The Community Service (PKM) training activities are divided into several activities for the Traditional Games Sports Festival in Commemoration of the Indonesian Independence Day.

1. Socialization and Education for the Traditional Games Festival

Introducing the history and cultural values of traditional games to children and the community, workshops or small seminars to explain the benefits of traditional games in character building, and demonstrations by facilitators or cultural figures on how to play traditional games.

2. Traditional Games Training and Simulation

Training for children, adolescents, and the community on various types of traditional games, simulations of games such as gobak sodor, stilts, tug-of-war, fort, hopscotch, and others. Forming playgroups to increase participant engagement and understanding of the game rules.

3. Traditional Games Festivals and Competitions

Implementation of tournaments or competitions between groups or schools, Awarding prizes or awards to winners to increase participation, Documentation of activities to serve as a reference or inspiration for other regions, Collaborative Management

4. Strengthening Character and Togetherness Values

Reflective discussions on values learned from traditional games, such as sportsmanship, cooperation, and diversity, Mutual cooperation activities in preparing and running events to strengthen social relationships, Instilling an attitude of respect for culture and preserving ancestral heritage.

In implementing the Traditional Games Sports Festival, the client requested training for Traditional Games Sports Festival management

CONCLUSION

The community service program, the Traditional Sports Games Festival, held to commemorate Indonesian Independence Day (Hari Raya Ri) as an effort to enhance diversity and develop children's character in Banyudono District, went smoothly. This activity successfully fostered a spirit of togetherness and a love for traditional culture through a variety of fun and educational traditional sports games. This festival was not only a form of entertainment, but also an effective medium for fostering diversity and tolerance among children from various backgrounds. Furthermore, this event played a crucial role in shaping children's character, teaching the values of sportsmanship, cooperation, and discipline, which are essential in everyday life.

Solid cooperation between the committee, district officials, teachers, and the community ensured the festival ran smoothly and enthusiastically. All parties contributed to the smooth running of the event, ensuring the optimal achievement of this community service objective. We hope that activities like this will continue and become a strategic tool in supporting the development of a young generation with strong character and a love for the nation's cultural heritage. Thank you to all those who supported this festival, making it a successful and meaningful experience for Banyudono District and the surrounding area.

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Implementation Of Indonesian Language Learning Models: Enhancing The Pedagogical Competence Of Madrasah Tsanawiyah Teachers In Kebumen Regency

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Abstract. The success of learning activities is influenced by how educators create the learning environment. Educators can create a learning environment by choosing the right learning model. Since 2015, the Ministry of Education and Culture has launched modules on learning models. Two of the learning models described in these modules are project-based learning (PBL) and project-based learning (PjBL). These two learning models are alternative learning models that educators can use to develop 21st-century skills. PBL and PjBL are learning models that are in line with the constructivist view, which sees the cognitive development of students as being influenced by social processes and cultural interactions. From the earliest days of a child's development, their activities acquire their own meaning within a system of social behavior and are directed towards specific goals (Cole, n.d.). The PJBL and PjBL models prioritize social interaction in the process. These models shape learning activities that require interaction and collaboration with the aim that students can construct their own knowledge through these activities. The PBL and PjBL models were not specifically created for Indonesian language learning, but in practice, educators can utilize these learning models by adjusting the material in Indonesian language subjects. These learning models also can be combined with learning media that supports the substance of the material and learning objectives. This community service activity aims to train teachers, especially MTs teachers in Kebumen Regency, in implementing learning models. Teachers' ability to implement learning models is essential. This activity targets outputs in the form of journal articles, national seminar articles, and intellectual property rights for video products of learning model practices. Keywords: learning model, pjbl, pbl, mts kebumen

INTRODUCTION

The 21st century brings changes to all aspects of life, including education. 21st-century education prepares students to face modern developments, not only cognitively but also psychomotorically and affectively. This preparation begins with the learning process. The focus of 21st-century learning includes developing communication skills, collaboration, critical thinking, and creativity (Technological Pedagogical Learning in the 21st Century.Pdf, n.d; Ashari Hamzah et al., n.d.). 21st-century skills are crucial because they prepare students to adapt wisely to technological developments and become innovative individuals. In this regard, educators are expected to implement learning activities that develop 21st-century skills.

The success of learning activities is influenced by how educators create a learning environment. Educators can create a learning environment through the selection of appropriate learning models. Since 2015, the Ministry of Education and Culture has launched a module on learning models. Two of the learning models described in this module are project-based learning (PBL) and project-based learning (PjBL). These two learning models are alternative learning options that educators can use to develop 21st-century skills.

Problem-Based Learning (PBL) and Project-Based Learning (PjBL) are learning models aligned with the constructivist perspective, which views students' cognitive development as influenced by social processes and cultural interactions. From the earliest days of a child's development, their activities acquire meaning within a system of social behavior and are directed toward specific goals (Cole, n.d.). The Project-Based Learning (PjBL) and Project-Based Learning (PjBL) models prioritize social interaction in their processes. These models create learning activities that require interaction and collaboration, with the goal of enabling students to construct their own knowledge through these activities.

According to Barus (in Indarta et al., 2022), one learning model educators can choose for 21st-century learning is Project-Based Learning (PjBL). Krajcik & Blumenfeld (2005:317) explain that Project-Based Learning (PjBL) has been used since 1959 in the work of educator and philosopher John Dewey, whose laboratory school at the University of Chicago was based on the inquiry process. Krajcik & Blumenfeld (2005:317) identified four key concepts in learning science: active construction, learning situations, social interaction, and cognitive tools.

Project-based learning (PjBL) is a learning model that engages students in an authentic learning process. Learning is not teacher-centered, allowing students to actively participate in meaningful learning and construct concepts from the activities undertaken. PjBL relies heavily on student initiative, inquiry, and interaction,

resulting in knowledge creation (Wong et al. in Tan, n.d.). Educators in project-based learning act as facilitators of information and create a learning environment that supports student learning.

In 2015, the Directorate of Senior High School Development under the Ministry of Education and Culture launched a module entitled "Senior High School Learning Models." One recommended model is Problem-Based Learning (PjBL), which has six syntaxes: 1) preparing project questions or assignments, 2) designing a project plan, 3) developing a schedule as concrete steps for a project, 4) monitoring project activities and progress, 5) testing results, and 6) evaluating activities/experiences (Ministry of Education and Culture, 2015:12).

Unlike PjBL, which requires students to produce projects based on the material being studied, problem-based learning (PBL) requires students' critical thinking skills in solving existing problems. PBL is the result of a process of working toward understanding or solving a problem (Barrows & Tamblyn, 1980; (Li et al., 2020)). PBL can be implemented in various classroom formats, such as small-group collaborative activities, large-group case method discussions, laboratory experiments, and interactive lectures (Wilkerson & Feletti, 1989; Li et al., 2020). Learning activities using PBL can motivate students' interest and enhance their collaborative skills (Li et al., 2020).

PBL has been introduced and developed as an important teaching method through which students acquire skills, knowledge, and attitudes. Three characteristics of PBL distinguish it from conventional teaching approaches (Walton and Matthews, 1989; Murphy et al., 2025). First, the curriculum is organized around problems, not disciplines, and the emphasis is on integrated learning. Second, PBL is dominated by conditions that facilitate learning, such as teaching

METHODS

The implementation of this training activity was carried out offline and online (blended) in accordance with the results of discussions and coordination with the Principal and teachers. The materials provided include the following: (i) Socialization of the Regulation of the Director General of Teachers and Education Personnel concerning the Literacy and Numeracy Competency Framework for Teachers Number 0340 / B / HK.01.03 / 2022, (ii) Theory: the concept of the Problem Based Learning learning model, the concept of the Project Based Learning learning model, the procedure for designing the Problem Based Learning learning model, the procedure for designing the Project Based Learning learning model, the characteristics and needs of students; and (iii) Practice: designing the Problem Based Learning learning model, designing the Project Based Learning learning model, and practicing the Problem Based Learning and Project Based Learning learning models.

FINDINGS AND DISCUSSION

The Indonesian Language Learning Model Implementation Training for MTs Teachers in Kebumen Regency was held from July 11, 2025, to October 24, 2025. The first session focused on the dissemination of the Regulation of the Director General of Teachers and Education Personnel concerning the Literacy and Numeracy Competency Framework for Teachers Number 0340/B/HK.01.03/2022 for 100 minutes. This was followed by a 540-minute presentation of the material. The material presented was as follows:

a. The concept of the Problem-Based Learning model
b. The concept of the Project-Based Learning model
c. Procedures for designing the Problem-Based Learning model
d. Procedures for designing the Project-Based Learning model
e. Characteristics and needs of students.

The learning models explained included the definition of learning models, types of learning models, the definition and steps of PjBL, and the definition and steps of PBL. The PKM team began by explaining the definition of learning models and types of learning models. The session aimed to introduce the basic concepts of learning models. The presenter then explained the types of learning models and discussed the learning models frequently used by teachers. The most common learning models used by teachers are PjBL and PBL. Based on this, the presenter focused on PjBL and PBL materials to enhance their interactive and contextual approach to teachers.

FIGURE 1. *Learning Model Implementation Training Activities*

The next explanation concerns the types of learning models. The presenter guides teachers in finding a learning model that is close to the subject area they teach. The author invites teachers to discuss problems or obstacles in the learning process. In the second session, the material presented was PjBL and PBL. The presenter introduced the definition and steps of PjBL and PBL through explanations and videos. The video tutorials were accessed through the presenter's YouTube channel, with the aim of allowing teachers to use the tutorials whenever needed. Teachers were interested because they obtained new information to develop interactive and innovative learning models. After the presentation activity was completed, teachers were given time to ask questions and respond to the materials that had been presented. Teachers responded in the question and answer session. This activity also served as a form of checking teachers' understanding of the material that had been presented.

FIGURE 2. *Presentation of Learning Model Material*

After receiving material on learning models and the steps for PjBL and PBL, the presenter invited participants to create PjBL and PBL implementation plans. In the practical session, participants practiced implementing PjBL and PBL. The practical session was 420 minutes. Participants practiced the following:

a. Designing a Problem-Based Learning model
b. Designing a Project-Based Learning model
c. Practicing the Problem-Based Learning model
d. Practicing the Project-Based Learning model

FIGURE 3. *PjBL and PBL Practice*

After implementing the PjBL and PBL practices, the next activity is process monitoring. Process monitoring is carried out for 360 minutes. The aspects monitored are as follows:

a. Periodic Monitoring of the Preparation of Learning Plans for Problem-Based Learning and Project-Based Learning Models

b. Periodic Monitoring of the Practice of Problem-Based Learning and Project-Based Learning Models

The activity following process monitoring is a process evaluation, which is carried out for 330 minutes. The aspects evaluated are as follows:

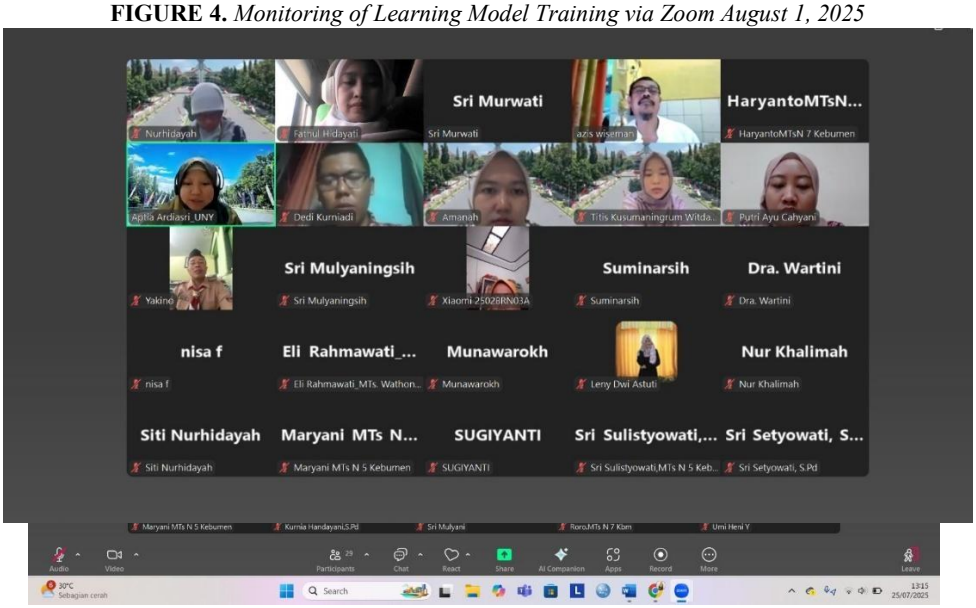
a. Discussion of the design of problem-based learning and project-based learning models

b. Implementation of problem-based learning and project-based learning models in the Classroom

Training activities are not only conducted offline but also online to monitor and evaluate teacher progress in developing teaching materials. The following images show the implementation of the learning model implementation training via Zoom on July 25, 2025, and August 1, 2025.

Figure 4. Monitoring of Learning Model Training via Zoom July 25, 2025

FIGURE 4. *Monitoring of Learning Model Training via Zoom August 1, 2025*



CONCLUSION

This community service activity was carried out by providing training related to learning models (PjBL and PBL) for MTs teachers in Kebumen. The results obtained from this socialization activity were that teachers' understanding of learning models was included in the "Good" category. Furthermore, teachers were enthusiastic

about participating in the training on implementing learning models because this material focused on exploring teachers' potential in maximizing their areas of expertise. Teachers can implement learning models that are close to the subjects they teach. This is expected to increase teachers' interest and motivation in developing learning models that are in line with the demands of today's developments

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Identification Of Sports Facilities At Uny Wates Campus That Are Often Used By The Kulon Progo Community

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Abstract. The Human Development Index (HDI) consists of three basic indicators: health, education, and economics. In human development efforts, health indicators are also related to sports. Sports development is part of national development, through improving physical fitness, mental quality of the community, the formation of national character, discipline, and sportsmanship. Sports facilities are an important factor supporting public health. A healthy lifestyle, one of which is through sports activities, has become a reference for various countries and institutions to continue to encourage people to actively engage in physical activity, especially through sports. This study aims to identify sports facilities on the UNY Wates campus that are frequently used by the Kulon Progo community. This study used a survey method in the form of questionnaires and interviews. The data analysis technique used in this study was descriptive data analysis. The results showed that the swimming pool and fitness center were the sports facilities most frequently used by the community. The quality of service for the basketball court and archery field needs to be further improved. This research can be further developed to support the use of sports facilities by the community.

Keyword: Sports facilities, UNY, Kulon Progo

INTRODUCTION

Sports are an essential part of human life. While the word "sport" is often translated as "exercise," it's important to remember that it can have multiple meanings. In Indonesian, "sport" can mean "training the body," "developing the body to be healthy, strong, and/or productive," and "sport" in its literal sense is the concept of "sport." In the context of sports, sports is a skill that can be formalized at various levels and controlled by agreed-upon rules or regulations (Abduljabar, 2011). The goal of sports development is to achieve maximum performance. Achievement is one of the factors in successful sports development, or it can also be said that sports performance is an indicator that can be used directly to determine the status or level of achievement and success in a sport (Effendi, 2016). Since 1983, the International Olympic Committee (IOC) has been promoting a program called Sport for All, a program for all people. This program aims to foster a climate where sports activities can be enjoyed by all levels of society, regardless of age, gender, or socioeconomic status. It is hoped that the Sport for All program will further disseminate the health and social benefits that can be gained by all members of society through regular physical activity.

The Sport for All text states that all individuals have the right to participate in sports activities. Sport should be encouraged as a vital factor in human development, and the necessary support for its realization should be provided through public funding. Sport, as a socio-cultural aspect of development, at the local, regional, and national levels, must be linked to policymaking and planning areas such as education, health, social services, urban planning, conservation, arts and recreation. Community sport can also help realize and put values into practice, particularly in promoting health, education, and well-being through sports activities undertaken by all levels of society without distinction.

Sport and exercise are fundamental rights for everyone, regardless of race, religion, social class, or gender. Meanwhile, in Indonesia, referring to the Law on the National Sports System (2005), community sport is referred to as recreational sport, which is defined as sport practiced by the community based on interests and abilities that grow and develop in accordance with local conditions and cultural values for health, fitness, and enjoyment. Therefore, the community requires adequate sports facilities, including in Kulon Progo Regency.

From 2003 to 2007, the Ministry of Youth and Sports implemented the Sport Development Index (SDI), which encompasses four basic dimensions: sports human resources, open spaces, participation, and physical fitness (Mutohir & Maksum, 2007). In line with developments and demands for change, the 2021 SDI was expanded to nine dimensions, encompassing sports human resources, open spaces, physical literacy, participation, fitness, personal development, health, economics, and performance. Physical fitness is the ability or capability possessed by a person to perform work efficiently without experiencing significant fatigue, while still being able to enjoy leisure time satisfactorily (Permanasari & Sunarto, 2011). Physical fitness is the activity

of improving human bodily functions, and physical fitness is part of total fitness (Riyanto et al., 2020). The Sport Development Index (SDI) serves as an instrument to measure the results of sports development in a region. Thus, creating a competitive climate for successful sports development will lead to the development of the fundamental essence of sports, not something that is instantly achieved through numerous medals, but also about public health. Sports development in Indonesia can be seen through several aspects, namely Open Space, Human Resources, Sports Participation, and Sports Fitness (Dasar & Decheline, 2017). In the field of sports, development is not only based on medals won in multi-event competitions, but also on community contributions to sports and physical fitness levels, which are part of the Sports Development Index (Natalia, Sugiyanto & Kiyatno, 2016). The benchmarks for sports development used by policymakers in the past have always been based on achievements in specific sports, such as championships or medals (Setiawan & Faza, 2019). It is crucial to create policies that support the goal of achieving sports achievements. Of course, this will not be possible without the collaborative involvement of all stakeholders in sports development in the region to achieve these achievements.

Everyone's daily activities include physical exercise, emotional exercise, and mental exercise (Suwo, 2020). Sports activities are part of physical activity. In general, physical activity is divided into three categories: daily physical activity, physical training, and sports activities (Ministry of Health, 2017). By definition, sports training is a component of physical activity, or it can be defined as planned, structured, and repetitive physical activity aimed at maintaining physical fitness (Haskell & Kiernan, 2000). Sport is a healthy activity, as well as a way to fill leisure time and can serve as a platform for athletes to become professional athletes in their fields (Suwo, 2019). The scope of sport, which includes educational, recreational, and competitive sports, is crucial in the context of sports development. This statement contradicts the prevailing societal view that sports development is solely linked to competitive sports (Zalaff et al., 2017). Currently, one area of significant development is the potential of sports tourism in various regions. Sports tourism is a significant potential in today's modern sports world (Gibson, 2013). Overall, sports development in Indonesia needs to be improved, including community sports as part of the development process.

Development is a programmed effort carried out continuously to maintain and improve the standard of living of humans, both physically and spiritually. As God's most noble creature on earth, humans are the focal point of all efforts to develop their dignity and worth. Humans are the most important development resource among other resources, whose capabilities and strengths will be developed as implementers and drivers of development. This definition provides space for citizens or the people to participate fully in the development process, while the government coordinates and facilitates this participation process. These efforts encompass development in all fields, including sports. Public awareness of sports contributes to the development of individuals and communities that are intelligent, healthy, skilled, resilient, competitive, prosperous, and dignified. This implies that sports hold a crucial position because of its high competence in influencing the success of development in other sectors, especially those related to improving the quality of human resources and life, including public health. The focus of sports development is on cultivating and improving sports performance. When linked to sports facilities, this means strengthening the foundations of sports, namely a culture of sports and environmental conditions that support the development of superior sports potential in the region. Sports facilities are a crucial component of community sports development.

METHOD

This study used a survey method in the form of a questionnaire to identify sports facilities on the UNY Wates Campus that are frequently used by the Kulon Progo Regency community. The instrument recorded both qualitative and quantitative data. Descriptive data analysis was used according to the type of data obtained to achieve the research objectives.

The research process begins with the preparation phase. The research team then conducts a Focus Group Discussion (FGD) to determine the research topic and the research instruments to be used. The research stages extend from the preparation phase to the final report. The output of this research is a journal article or international proceedings.

RESULT AND DISCUSSION

The following is the survey data related to the UNY Wates Campus sports facilities that are frequently used by the Kulon Progo community.

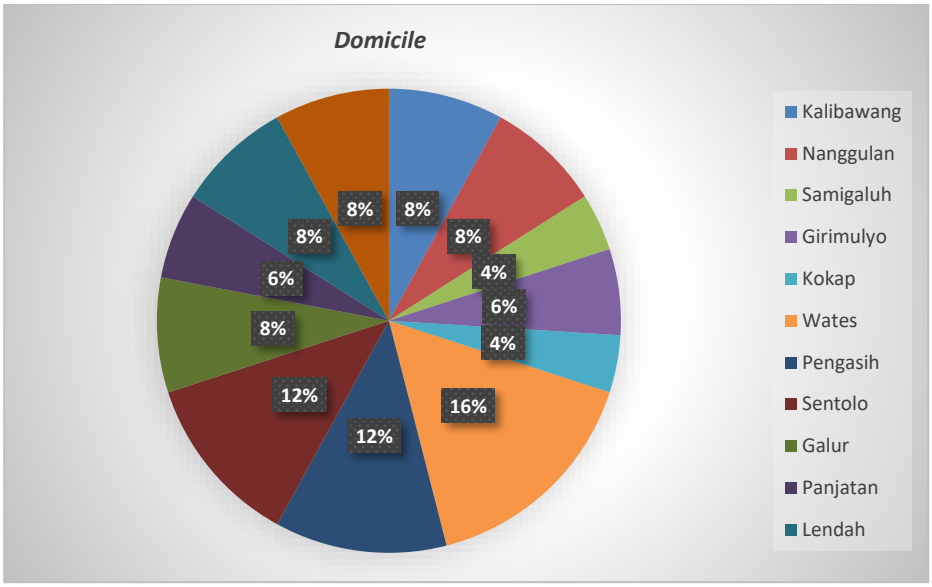

FIGURE 12. *Respondents were physical education teachers from across Kulon Progo Regency.*

Respondents were physical education teachers from across Kulon Progo Regency. Kulon Progo Regency comprises 12 sub-districts: Kalibawang, Nanggulan, Girimulyo, Samigaluh, Kokap, Pengasih, Wates, Sentolo, Galur, Lendah, Panjatan, and Temon.

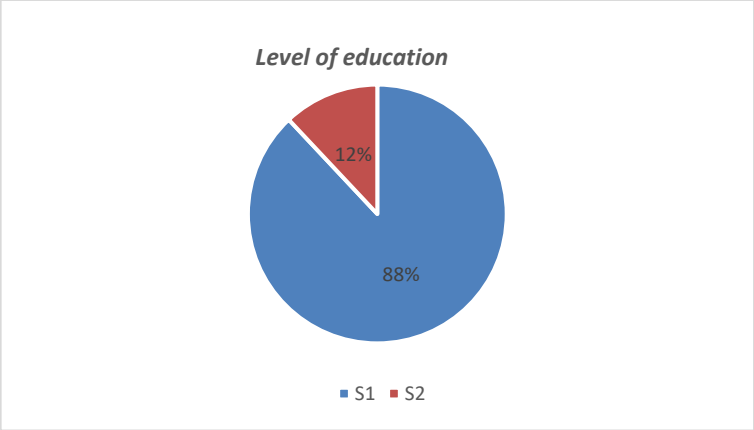

FIGURE 13. *The education level of most respondents*

The education level of most respondents was a bachelor's degree and other respondents had a master's or master's degree.

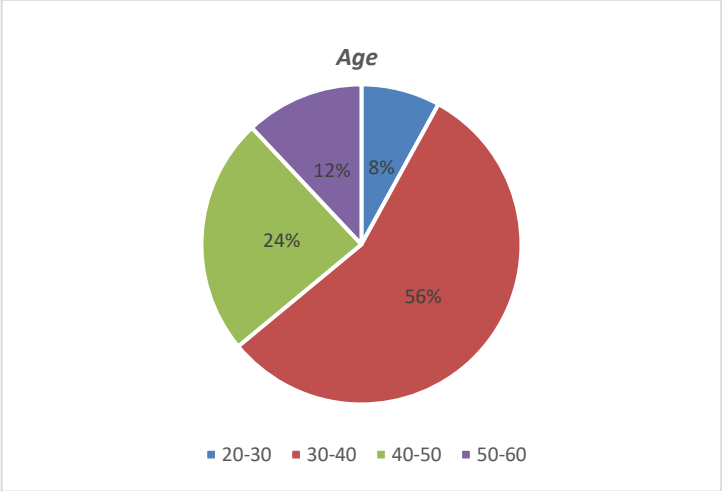

FIGURE 14. *Age of respondents*

The average age of respondents was 30-40 years old. Respondents worked as physical education teachers in Kulon Progo Regency.

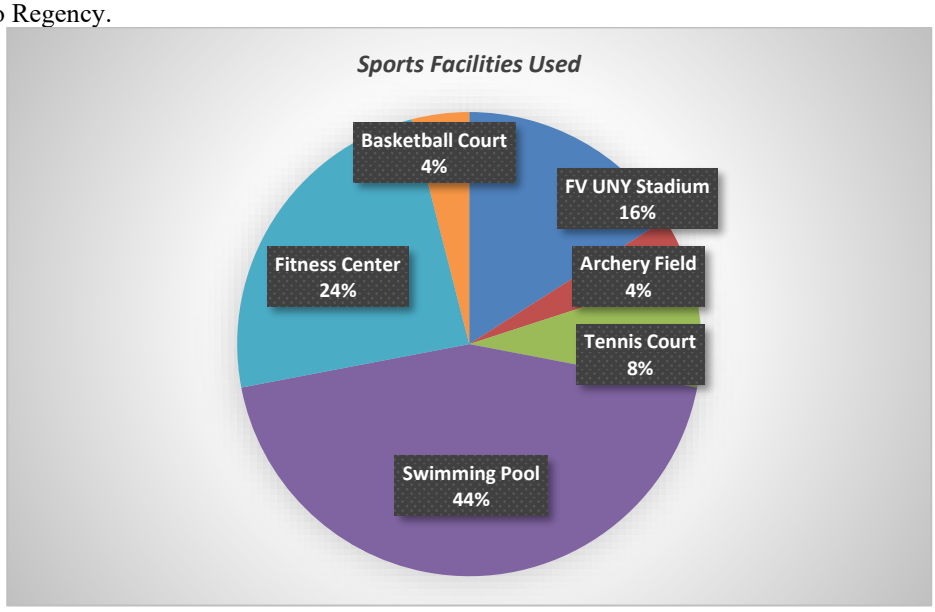

FIGURE 15. *Sports Facilities Used*

The UNY Wates Campus sports facilities available to the Kulon Progo community include the UNY FV Stadium, an archery range, tennis courts, a swimming pool, a fitness center, and a basketball court. The swimming pool is one of the UNY Wates Campus sports facilities most frequently used by the community.

CONCLUSION

Based on survey data regarding the sports facilities at UNY Wates Campus, the swimming pool is one of the most frequently used facilities. Furthermore, the fitness center ranks second among the most frequently used facilities at UNY Wates Campus.

In addition to the UNY FV Stadium and tennis courts, promotion of the basketball and archery courts needs to be further enhanced. This research can be further developed to support the use of sports facilities by the community, particularly in Kulon Progo Regency.

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Socialization Of Uny Sports Facilities At Wates Campus That Can Be Used By The Kulon Progo Community

Danardono [1,a)], Adib Febrianta [2,b)], Moch. Septian Resi Wibowo [3,c)], Sri Ayu Wahyuti [4,d)], Candra Widyastuti [5,e)]

[1,2,3,4,5]Department of Sports and Health, Universitas Negeri Yogyakarta, Yogyakarta, Indonesia.

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Abstract. The success of national development can be measured by the level of public awareness of exercise. Exercise is one of the simplest ways that people can maintain health and fitness and balance their frequent work routines. Maximizing sports facilities can also support public health and fitness. Yogyakarta State University, specifically the Faculty of Vocational Studies, is committed to helping improve the health and fitness of the Kulon Progo community by opening sports facilities owned by the Faculty of Vocational Studies, Yogyakarta State University. The sports facilities owned by the Faculty of Vocational Studies, Yogyakarta State University include a soccer field, swimming pool, archery range, running track, basketball court, tennis court, and fitness center. This community service activity was carried out through outreach. This activity aimed to increase public knowledge about the sports facilities available at the UNY Wates Campus. Participants in this activity were elementary school sports teachers. The results of the outreach showed an increase in public knowledge, especially sports teachers, about the sports facilities available at the UNY Wates Campus.
Keyword: Sports facilities, UNY, Kulon Progo

INTRODUCTION

The Sport for All text states that all individuals have the right to participate in sports activities. Sport should be encouraged as a vital factor in human development, and the necessary support for its realization should be provided through public funding. Sport, as a socio-cultural aspect of development, at the local, regional, and national levels, must be linked to policymaking and planning areas such as education, health, social services, urban planning, conservation, arts and recreation. Community sport can also help realize and put values into practice, particularly in promoting health, education, and well-being through sports activities undertaken by all levels of society without distinction.

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Development is a programmed effort carried out continuously to maintain and improve the standard of living of humans, both physically and spiritually. As God's most noble creature on earth, humans are the focal point of all efforts to develop their dignity and worth. Humans are the most important development resource among other resources, whose capabilities and strengths will be developed as implementers and drivers of development. This definition provides space for citizens or the people to participate fully in the development process, while the government coordinates and facilitates this participation process. These efforts encompass development in all fields, including sports. Public awareness of sports contributes to the development of individuals and communities that are intelligent, healthy, skilled, resilient, competitive, prosperous, and dignified. This implies that sports hold a crucial position because of its high competence in influencing the success of development in other sectors, especially those related to improving the quality of human resources and life, including public health. The focus of sports development is on cultivating and improving sports performance. When linked to sports facilities, this means strengthening the foundations of sports, namely a culture of sports and environmental conditions that support the development of superior sports potential in the region. Sports facilities are a crucial component of community sports development.

METHOD

Based on the PKM scheme and the analysis to be carried out, the target audience of this PKM is the people of Kulon Progo Regency. Implementation of a sports discussion forum: Socialization of UNY Kulon Progo Campus Sports Facilities that can be used by the General Public (Kulon Progo). The community can master good sports knowledge so that it can be applied in everyday life. The method used by the Community Service Team is a discussion method. The method is carried out by providing an opportunity for the people of Kulon Progo Regency to discuss efforts to increase the desire for sports to improve health and fitness levels. Then the community is given information, supplies, understanding and knowledge on how to exercise properly and correctly to increase the desire for sports to improve the health and fitness levels of the people of Kulon Progo Regency.

RESULT AND DISCUSSION

The PkM activity was held in Kalibawang with participants being sports teachers from all over Kulon Progo Regency.

FIGURE 16. *Socialization of UNY Wates Campus Sports Facilities Available for Use by the Kulon Progo Community*

Event: Socialization of UNY Wates Campus Sports Facilities Available for Use by the Kulon Progo Community
Participants: Sports teachers from across Kulon Progo Regency.
Day and Date: Thursday, July 17, 2025
Time: 8:00 AM - 12:00 PM WIB
Venue: Kalibawang Technical Implementation Unit, Kulon Progo

CONCLUSION

Based on survey data regarding the sports facilities at UNY Wates Campus, the swimming pool is one of the most frequently used facilities. Furthermore, the fitness center ranks second among the most frequently used facilities at UNY Wates Campus.

In addition to the UNY FV Stadium and tennis courts, promotion of the basketball and archery courts needs to be further enhanced. This research can be further developed to support the use of sports facilities by the community, particularly in Kulon Progo Regency.

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Hargo Binangun Community Empowerment Training In Improving Merapi Jeep Tourism Services

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A|bstract. The Merapi Jeep Tour in Hargo Binangun has become one of the fastest-growing destinations in Sleman Regency. After the eruption of Mount Merapi, the local community successfully shifted from agriculture to nature-based tourism. However, challenges remain, including inconsistent service quality, limited attraction development, low awareness of disaster risk mitigation, and weak managerial capacity in managing tourism businesses. To overcome these issues, a community empowerment training program was implemented, focusing on improving tourism service skills, diversifying attractions through disaster education, strengthening managerial capacity, and digitizing operations. The program seeks to equip the community with professional competencies to provide responsive services and develop innovative attractions that combine tourism with disaster awareness. Managerial strengthening through financial management and digital marketing training is expected to enhance professionalism and business effectiveness, while digitalization supports operational efficiency and wider market reach. Disaster emergency response training and evacuation simulations were also integrated to ensure tourist safety and improve community preparedness. The program's outcomes include improved service competencies, the creation of attractive and educational tourism products, stronger managerial capacity, and standardized emergency procedures. Through this initiative, the Hargo Binangun community is expected to manage the Merapi Jeep Tour more professionally, competitively, and sustainably. Ultimately, this effort contributes not only to strengthening the local economy but also to realizing Sleman Regency's vision of building a prosperous and independent community based on local potential.

Keyword: Merapi Jeep Tours, Disaster Education, Tourism Management

INTRODUCTION

Mount Merapi, one of Indonesia's active volcanoes, plays an important role in the lives of the surrounding community, including those living in the Kaliurang and Hargo Binangun areas. Its periodic volcanic activity has a significant impact on the environment and the economy of the local residents. The major eruption in 2010, for example, caused damage to agricultural land and infrastructure, forcing the community to adapt to changing conditions.

Amid these challenges, opportunities have emerged to develop nature-based tourism. The post-eruption landscape offers a distinctive environment that attracts visitors, with Merapi jeep tours becoming one of the most rapidly growing attractions. These tours provide tourists with the unique experience of exploring lava flow trails and iconic sites such as the Kaliadem Bunker and Alien Rock. The shift of local livelihoods from agriculture to tourism illustrates the community's adaptive capacity, reflecting their ability to respond to and capitalize on environmental change (Folke et al., 2010).

Nevertheless, the management of Merapi jeep tours in Kaliurang continues to face obstacles. Inconsistent service quality, limited innovation in tourist experiences, and the absence of disaster education—despite its potential to enrich tourism packages—remain key issues. This aligns with the Service Quality (SERVQUAL) framework (Zeithaml & Berry, n.d.), which emphasizes the importance of reliability, responsiveness, assurance, empathy, and tangible aspects in service delivery.

In addition, the Community Empowerment theory (Zimmerman, 1995) emphasizes that community empowerment can increase a sense of ownership and responsibility in the management of local resources. With training focused on improving service skills, understanding disaster mitigation, and tourism product innovation, the Hargo Binangun community can become the main actors in managing competitive and sustainable jeep tourism. This community empowerment training program is in line with the vision of Sleman Regency, namely "The realization of a prosperous, independent, cultured Sleman community that is integrated with the Smart Regency System by 2026." One of Sleman Regency's relevant missions is to improve community welfare based on local potential, including tourism (Renstra-2021-2026, n.d.).

The implementation of this training program supports this policy by increasing the community's capacity to manage jeep tours professionally and sustainably. This training is important because it can improve the community's competence in various managerial and operational aspects of tourism, including customer service, effective communication, and tourism risk management based on disaster mitigation.

In addition, the training enables the community to understand the importance of innovation in tourism product development. By creating more attractive attractions, such as disaster education packages and local cultural experiences, Merapi jeep tours can increase their competitiveness in the tourism industry.

LITERATURE REVIEW

Community-based tourism management requires adaptation and capacity building to cope with environmental changes. The concept of Adaptive Capacity explains that communities that are able to adapt to changing conditions will be more resilient in facing challenges and taking advantage of existing opportunities (Folke et al., 2005). In the context of Merapi jeep tourism in Hargo Binangun, the community has shifted from agriculture to tourism due to the impact of the eruption of Mount Merapi. However, this adaptation still faces various obstacles, especially in improving service quality and tourism product innovation. Therefore, empowerment programs based on community capacity building are a strategic step in developing a more sustainable tourism ecosystem.

Service quality is a critical factor in the tourism industry and can be measured using the Service Quality (SERVQUAL) approach from Parasuraman et al. (1988). The SERVQUAL model emphasizes five main dimensions of service, namely reliability, responsiveness, assurance, empathy, and tangibles. In Merapi jeep tourism, the limited service skills of the community are a major obstacle to creating a quality tourism experience. Therefore, training that focuses on improving communication skills, excellent service techniques, and handling customer complaints is a solution that can increase tourist satisfaction and their loyalty to this destination.

In addition to service aspects, innovation in the management of tourist attractions also plays an important role in increasing the competitiveness of tourist destinations. One approach that can be applied is the diversification of disaster education-based tourist attractions. The former Merapi eruption area has the potential to be used as a natural laboratory to provide a deeper understanding of disaster mitigation. By developing educational tour packages, Merapi jeep tours can become not only a means of recreation but also a learning medium for tourists, including students and researchers. This is in line with the vision of the Sleman Regency Government, which targets the development of the tourism sector based on local potential and the improvement of community welfare through the utilization of existing resources (Sleman Regency Government, 2023).

On the other hand, community empowerment in tourism management must be accompanied by increased managerial capacity and operational digitization. Zimmerman (1995) in the concept of Community Empowerment emphasizes that community empowerment not only includes improving individual skills, but also creating an environment that supports active participation in the management of local resources. In the context of Merapi jeep tourism, training in financial management, digital marketing, and the use of online reservation platforms can help communities manage their tourism businesses more professionally and efficiently. Operational digitization also enables tourist destinations to reach a wider market and increase competitiveness in an increasingly competitive tourism industry.

Referring to various theories and approaches that have been put forward, the Hargo Binangun community empowerment program focuses on improving service quality, tourism product innovation, strengthening managerial capacity, and operational digitization. The implementation of this program is expected to increase the professionalism and competitiveness of Merapi jeep tourism, thereby supporting the sustainable economic growth of the local community. Thus, community-based tourism management can be an effective adaptation model in facing future environmental and economic challenges.

RESEARCH METHOD

The Hargo Binangun community empowerment program to improve Merapi jeep tourism services will be carried out through a series of training and mentoring sessions. The first stage begins with excellent service training, which covers effective communication techniques, customer complaint handling, and the application of service ethics in the tourism industry. With this training, participants are expected to be able to improve their interactions with tourists and provide a more satisfying tourism experience.

The next stage is training in simple financial management and operational digitization. Participants will be trained in transparent financial recording and the use of digital platforms for reservations and promotion of jeep tour services. This training aims to increase professionalism in business management and expand market reach by utilizing technology.

The final stage is field assistance and disaster risk mitigation training. Participants will be assisted in applying the training results in their daily operations while also understanding emergency response procedures in disaster-prone areas such as Merapi.

With this method, it is hoped that the community will be able to manage tourism services independently, professionally, and resiliently against environmental risks.

Hargo Binangun community partners will play an active role in every stage of the program. They will participate in training sessions, provide feedback on specific needs in the field, and be part of the program evaluation process. Partners are also involved in the process of developing tourism service SOPs based on training results and forming community working groups responsible for managing jeep tourism.

Program implementation will be evaluated through direct monitoring during field assistance and a final evaluation using predetermined performance indicators. These indicators include improvements in participants' skills in service, financial management, and operational digitization. Program sustainability will be ensured through the formation of independent community working groups and the development of standardized tourism service SOPs. Follow-up assistance will be provided to ensure sustainable implementation.

RESULTS AND DISCUSSION

The Merapi jeep tour area in Hargo Binangun has great potential as one of the leading tourist destinations in Sleman Regency. However, the local community still faces various challenges in managing this tourism optimally. These challenges include inconsistent service quality, a lack of diversification in tourist attractions, low managerial capacity, and the need to improve tourism safety in an area prone to natural disasters. Therefore, a comprehensive solution is needed to empower the Hargo Binangun community to manage Merapi Jeep Tourism professionally, innovatively, and sustainably The following are some solutions offered to overcome the problems faced:

1. Improving Tourism Service Competence through Excellent Service Training.

   Excellent service is one of the key factors in attracting and retaining tourists. Based on the situation analysis, one of the main problems faced by the Merapi jeep tourism community is inconsistent service quality. Therefore, structured training based on the concept of excellent service needs to be implemented. The training that can be carried out includes training in effective communication techniques in serving tourists, training in service ethics, including how to handle customer complaints, and practical service simulations focused on creating a positive tourism experience.

2. Diversifying Tourist Attractions through Disaster Education

   The post-eruption landscape of Mount Merapi offers opportunities to develop disaster education-based attractions. This approach not only enriches the tourism experience but also raises public awareness of disaster mitigation. Training can focus on developing educational tour packages that explain the impact of eruptions and preparing guides to deliver engaging and informative narratives. Diversifying attractions in this way can appeal to new tourist segments such as students, academics, and researchers, while also extending the average length of tourist visits.

3. Strengthening Managerial Capacity and Promoting Operational Digitalization

   Limited managerial capacity remains a challenge for the Hargo Binangun community. At the same time, tourism trends increasingly demand digital transformation. Relevant training programs include basic financial management for tourism businesses, digital marketing through social media and online platforms, and the use of reservation systems to facilitate online bookings. Digitalization improves service efficiency, broadens market reach, and reduces overdependence on local walk-in tourists or third-party tour operators. Strengthened financial and managerial skills also support the sustainable growth of community-based tourism businesses.

4. Improving Tourism Safety through Risk Mitigation Training

   The Merapi jeep tourism area is located in a disaster-prone zone. Therefore, it is necessary to improve the understanding of the community and tourism operators regarding risk management and disaster mitigation. Solutions that can be implemented include disaster emergency response training for

tour guides and business operators, and emergency evacuation simulations in natural disaster scenarios. With this training, tourists will feel safer, and the community will be better prepared to deal with possible disasters. The Hargo Binangun community empowerment training program is expected to address various issues faced in the management of Merapi jeep tourism. With improved service competencies, attraction diversification, managerial strengthening, and operational digitization, the Hargo Binangun community can manage Merapi jeep tourism in a more professional, competitive, and sustainable manner. This not only supports local economic improvement but also supports Sleman Regency's vision of creating a prosperous and independent community based on local potential.

CONCLUSION

The Merapi jeep tourism area in Hargo Binangun has great potential as one of the leading tourist destinations in Sleman Regency. However, the local community still faces various challenges in managing this tourism optimally. These challenges include inconsistent service quality, a lack of diversification of tourist attractions, low managerial capacity, and the need to improve tourism safety in disaster-prone areas. Therefore, comprehensive solutions are needed to empower the Hargo Binangun community to manage Merapi jeep tourism professionally, innovatively, and sustainably. The following are some of the solutions offered to overcome the problems faced:

1. Improving Tourism Service Competence through Excellent Service-Based Training.

Excellent service is one of the key factors in attracting and retaining tourists. Based on situation analysis, one of the main problems faced by the Merapi jeep tourism community is inconsistent service quality. For this reason, structured training based on the concept of excellent service needs to be implemented.

The training that can be conducted includes training in effective communication techniques in serving tourists, training in service ethics, including how to handle customer complaints, and service practice simulations that focus on creating a positive tourism experience.

The expected impact of this competency improvement is that tourists will feel more satisfied. This will increase loyalty and positive recommendations for Merapi jeep tourism.

2. Diversification of Disaster Education-Based Tourist Attractions

The potential of the former Merapi eruption area can be further developed through disaster education-based tourist attractions. This education is not only attractive to tourists but also increases public awareness about disaster mitigation.

Training that can be conducted includes developing educational tourism packages that guide tourists in understanding the impact of the Merapi eruption and training tour guides to convey educational information in an interesting and informative manner. The impact of this attraction diversification can attract new segments of tourists, such as students and researchers, and extend the duration of tourist visits.

3. Managerial Capacity Building and Operational Digitalization

Low managerial capacity is one of the challenges faced by the Hargo Binangun community. In addition, current developments in tourism increasingly demand operational digitalization.

Several training programs can be implemented to address these issues, including simple financial management training for tourism businesses, digital marketing training through social media and online tourism platforms, and training on the use of online reservation applications to facilitate jeep tour booking services.

Operational digitization can improve service efficiency and reach a wider market. Better financial management will help businesses develop their businesses sustainably. depend on local tourists who come on the spot, as well as on cooperation with tour service providers. This results in jeep tours being dependent on external parties.

4. Improving Tourism Safety through Risk Mitigation Training

The Merapi jeep tourism area is located in a disaster-prone zone. Therefore, it is necessary to improve the understanding of the community and tourism operators regarding risk management and disaster mitigation.

Solutions that can be implemented include disaster emergency response training for tour guides and business operators, and emergency evacuation simulations in natural disaster scenarios. With this training, tourists will feel safer, and the community will be better prepared to deal with possible disasters.

The Hargo Binangun community empowerment training program is expected to address various issues faced in the management of Merapi jeep tourism. With improved service competencies, attraction diversification, managerial strengthening, and operational digitization, the Hargo Binangun community can manage Merapi jeep tourism in a more professional, competitive, and sustainable manner. This not only supports local economic improvement but also supports Sleman Regency's vision of creating a prosperous and independent community based on local potential.

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Training Of Apem Packaging Design And Occupational Safety And Health (Osh) To Improve The Quality Of Apem Yaa Qowiyyu, A Specialty Of Jatinom Klaten

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Abstract. Training to improve the quality of Apem Yaa Qowiyyu, a specialty of Jatinom Klaten were aimed to: 1) increase knowledge of apem packaging design, and 2) increase knowledge and practice in Occupational Safety and Health (OSH). The Apem Yaa qowiyyu quality improvement training was conducted at the Bonyokan Sub-district Office, Jatinom District, Klaten from July to September 2025. The training participants were 22 Apem Yaa qowiyyu business operators in Jatinom District. Community service is carried out through stages of socialization, training, and technology implementation. Knowledge assessment is conducted through pre-tests and post-tests. Results showed that: 1) training on modifying packaging from mica packaging to laminated box packaging made the packaging more attractive and informative and resulted in a knowledge increase of 5.39%, 2) training in business management with material on the implementation of OSH resulted in a knowledge increase of 1.9%.

INTRODUCTION

Apem Yaa qowiyyu is a unique product that is only found among the people of Jatinom District, Klaten Regency. According to Ruslani, apem Yaa qowiyyu has an important history for the residents of Jatinom. In the 1600s, Ki Ageng Gribig was an important cleric in Jatinom who performed the Hajj pilgrimage in Mecca and offered a closing prayer, "Ya qowiyu Yaa Assis qowina wal muslimin, Yaa qowiyu warsugna wal muslimin." After the prayer, apem was distributed to the community and became an annual tradition during the month of Sapar (1). This tradition is commemorated every month of Sapar by making a mountain of Yaa qowiyyu apem weighing 8 tons and distributing it to visitors attending the ceremony (2).

Apem cake has long been synonymous with the annual Saparan tradition in Jatinom District, Klaten, during the Ki Ageng Gribig memorial ceremony. However, this special cake, which usually only appears once a year, can now be enjoyed every day and even taken home as a souvenir. Made from rice flour or wheat flour, coconut milk, sugar, and tape, these cakes can now be easily found along the Klaten-Jatinom highway in Jatinom District. The cake makers sell their wares on the side of the road from morning until evening (3).

PROBLEMS

The problems faced by Apem Yaa qowiyyu business are product quality and business management. The problem with product quality is that apem fans are from the millennial generation and above, while Generation Z is not interested in apem, partly because the plastic packaging with sticker labels is not attractive to consumers. The problem with business management is the workers' lack of understanding of occupational safety and health (OSH) in the event of a fire.

COMMUNITY SERVICE METHOD

The improvement of apem Yaa qowiyyu quality was carried out in three stages, namely socialization, training, and practical application of technology.

1. Training Materials and Tools

This training requires the following materials:

a. Packaging design training: apem, Oriented Polypropylene (OPP) plastic packaging, and cardboard packaging

b. Occupational Safety and Health training: paper, wood, matches, gasoline or diesel fuel, and water

The training also requires the following equipments:

a. Packaging design training: plastic sealer

b. Occupational Safety and Health training: portable fire extinguisher (PFE)

2. Preparation and Socialization

Preparation for activities is the main foundation for the success of this Community Service (CS). The preparation process was carried out through coordination meetings with the managers of Apem Yaqowiyyu Jatinom, one of micro, small, and medium enterprises (MSMEs) and village officials. This initial meeting was an important forum for exploring the real needs of MSMEs. From the results of the discussion, it was found that the main problems faced by MSMEs were unattractive packaging designs and weak production management and hygiene aspects.

In addition, an internal coordination meeting between lecturers and students held on September 9, 2025, served as an opportunity to finalize the implementation strategy. In this forum, each lecturer shared their roles according to their expertise. The material was sorted so that it was coherent, complementary, and applicable. Students were also given roles as documenters, group facilitators, and practice assistants.

The preparation stage does not only stop at assigning roles, but also involves preparing tools: freezers, vacuum sealers, nitrogen, and practice materials to ensure that the demonstration runs smoothly. This approach shows that the team is not only there to give lectures, but also to provide participants with hands-on experience.

The socialization, which is the initial stage of CS, was carried out by the CS team to MSMEs of Apem Yaa qowiyyu to convey the CS activities that will be collaborated on. The socialization began with a diagnostic assessment through interviews, observations, and pre-tests of all business actors in the Apem Yaa qowiyyu MSMEs. This was done to map the condition of human resources (HR) and supporting facilities and infrastructure in the implementation of CS.

3. Training

a. Packaging design training

Packaging plays a vital role in ensuring the durability and maintaining the functionality of food products. Currently, many consumers are interested in food packaging design, but food packaging must be in line with the objectives of food packaging, such as protection, safety, consumer information listed on the label, and so on (4). Documentation of packaging design training activities can be seen in Figure 1.

A B

FIGURE 1. *Yaa Qowiyyu Apem Packaging Design Training. Packaging design training participants listening to material (A), Packaging design resource person presenting material (B), Some of the apem packaging design training material (C and D).*

Before the training, apem packaging only used simple plastic wrap with a label attached. This made the product difficult to compete with other modern snacks that looked more attractive. The material covered included: The function of packaging is not only as a container, but also as the identity of the product; Characteristics of good packaging, which is hygienic, practical, informative, and attractive; Tips for low-budget packaging design that still looks professional; and Branding strategies through packaging, including the importance of logos, product names, and nutritional information. Participants were also invited to discuss current product packaging trends, including how to adapt to the youth market without abandoning traditional values.

The results of the pretest and posttest of the packaging design training activity can be seen in Figure 2 and Table 1, which show an overall increase in knowledge of 5.39%. The ability to choose the appropriate packaging material for apem products experienced the smallest increase, namely 0.25%, while the habit of designing product packaging experienced the largest increase, namely 12.53%.

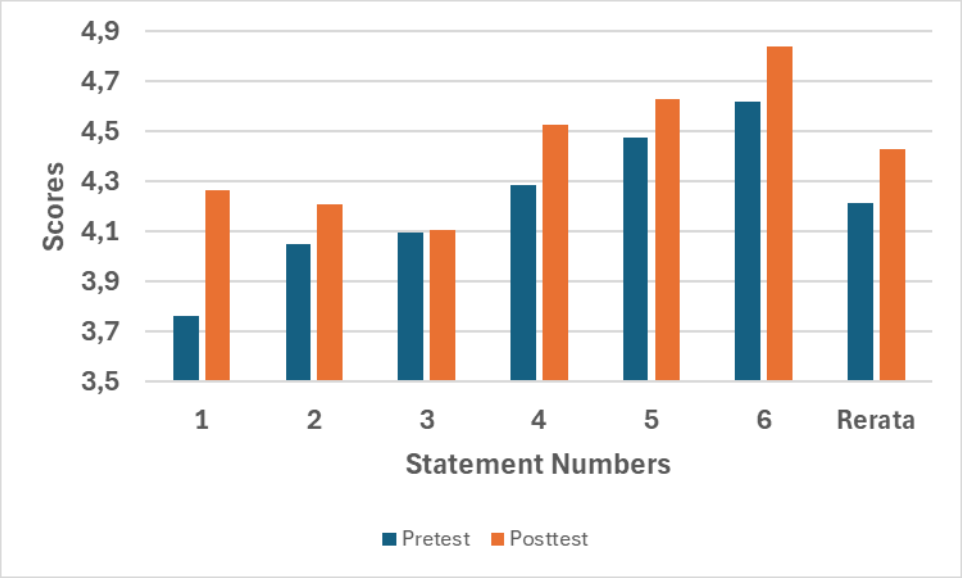


FIGURE 2. *Results of the pretest and posttest for the Yaa Qowiyyu apem packaging design training*

TABLE 1. *Increase knowledge of packaging design training at the Yaa Qowiyyu apem company*

No	Statements	Increase (%)
1	The habit of designing product packaging independently	12.53
2	Knowledge of basic food packaging requirements (hygienic, safe, and environmentally friendly)	4.07
3	The ability to choose the right packaging materials for apem products	0.25
4	Skills in packaging design	6.02
5	Distinctive packaging can differentiate products from competitors	3.88

6	The importance of specialized training in designing Apem Yaqowiyyu packaging	5.58
	Average	5.39

The results of the pretest and posttest of the packaging design training activity can be seen in Figure 2 and Table 1, which show an overall increase in knowledge of 5.39%. The ability to choose the appropriate packaging material for apem products experienced the smallest increase, namely 0.25%, while the habit of designing product packaging experienced the largest increase, namely 12.53%.

b. Occupational Safety and Health Training

This OSH training encourages participants to understand that food production is not only about taste, but also occupational safety and health. In daily practice, MSME actors often neglect OSH aspects, such as in the use of gas stoves, processing of hot ingredients, and the layout of production rooms. Workplace hygiene, the use of simple protective equipment such as gloves, and understanding the risk of fire due to gas cylinders are very important in food production. This material is highly appreciated because it provides new skills that can be immediately applied. This training aims to provide theoretical understanding and practical skills in handling initial fires using PFE. The training is beneficial for increasing safety awareness, reducing panic, mastering practical skills, understanding PFE and its use, and protecting assets and lives. The training material covers fire introduction, fire classification, and PFE introduction.

The use of fire extinguishers is an important part of an overall fire prevention strategy. These devices are designed and used to extinguish small fires before they become too large. They are commonly found in public places and workplaces around the world, but in order to function properly, they must be used by competent and capable individuals. Improper use can cause more damage than good. In addition, most fire extinguishers discharge their contents within 10 to 30 seconds, which does not allow time for trial and error in an emergency situation (5). Therefore, fire extinguisher skills are essential for employees.

Documentation of the implementation of OSH training can be seen in Figure 3, and the results of the pretest and posttest can be seen in Figure 4 and Table 2.

FIGURE 3. *Occupational safety and health training. Participants listen to the presentation from the speaker (A). The speaker is presenting occupational safety and health material to participants (B). Some of the material is about occupational safety and health (C and D)*

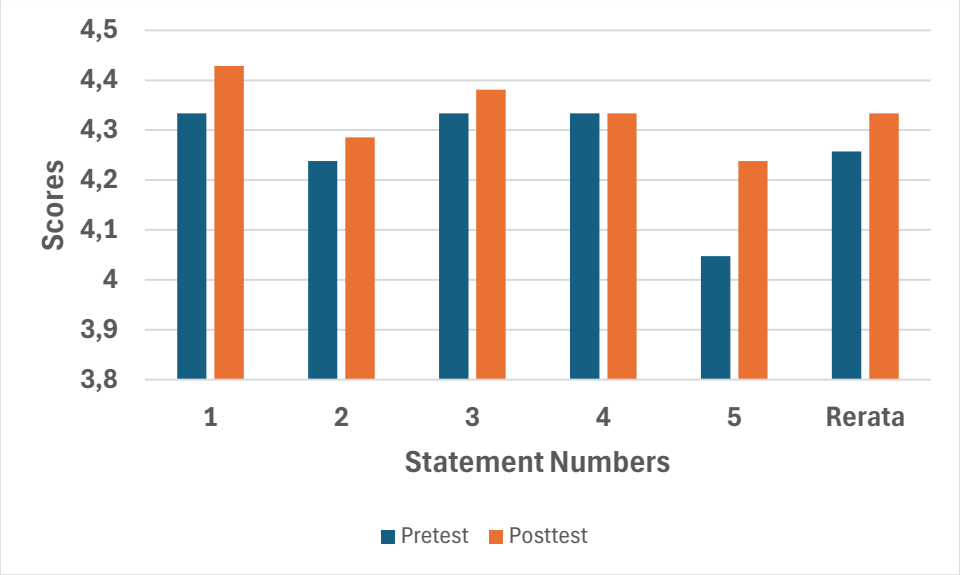


FIGURE 4. *Results of pretest and posttest on occupational safety and health material*

TABLE 2. *Increased knowledge of occupational safety and health (OSH) at the Yaa Qowiyyu apem company*

No	Statements	Increase (%)
1	The importance of occupational safety and health (OSH) in the food business	2.4
2	Understanding the occupational risks that may occur during the production process of Apem Yaa qowiyyu	1.2
3	The habit of storing raw materials in a hygienic manner	1.2
4	Knowledge of how to use work equipment safely	0.0
5	Skills in implementing OSH	4.8
	Average	1.9

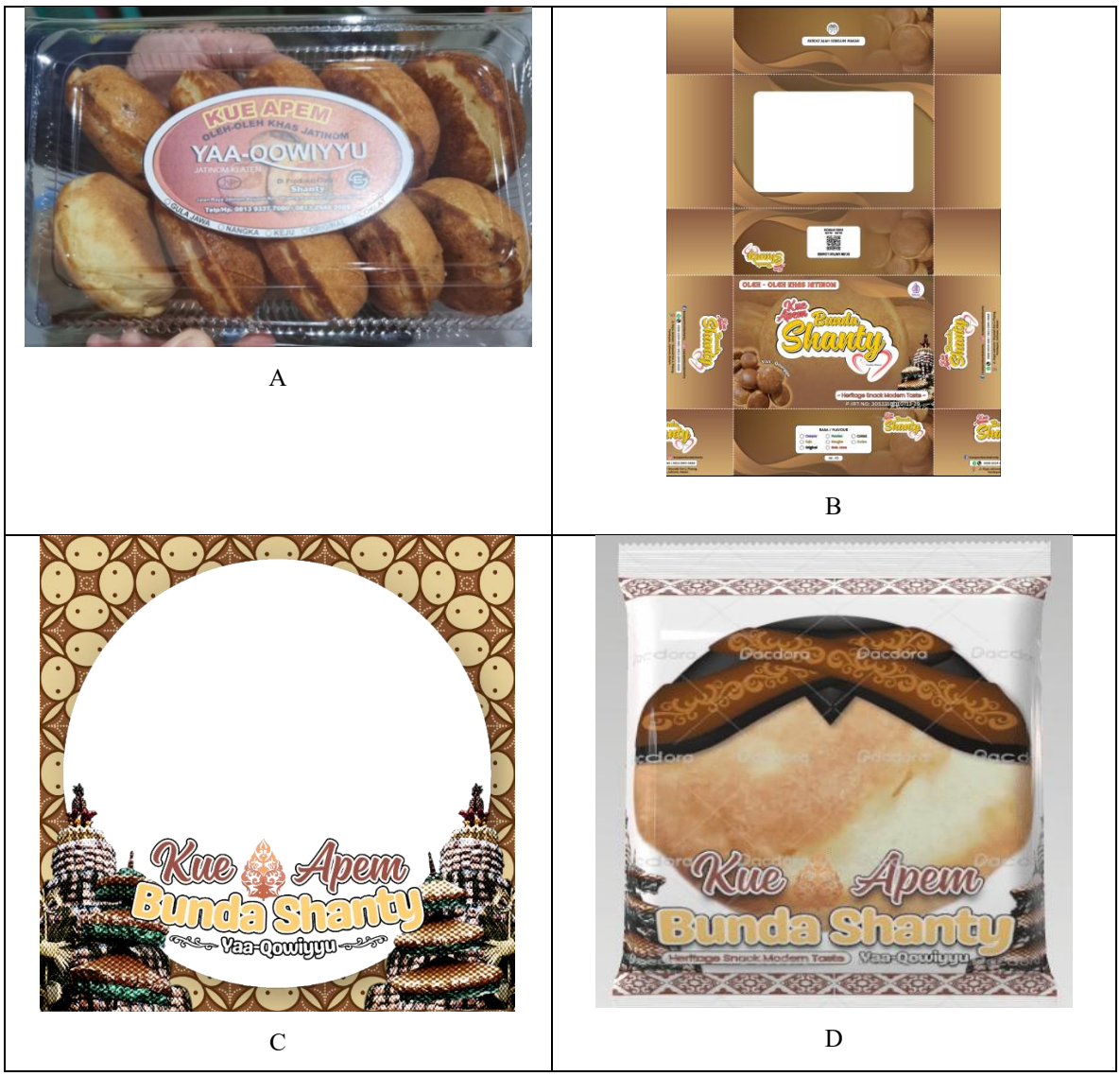
Figure 4 and Table 2 show that OSH training increased overall knowledge by 1.9%. Knowledge of how to use work equipment safely did not increase, possibly because they already knew how to use the equipment. However, OSH application skills increased by 4.8% with this training.

4. Application of technology

a. Packaging design training

Food packaging is an integral part of the modern food industry, serving a variety of important functions beyond simply packaging products. Food packaging plays an important role in maintaining freshness, ensuring safety, providing information to consumers, and even influencing purchasing decisions (6). Figure 6 shows the old packaging (before training) and the new packaging (after training). The old packaging for Yaa Qowiyyu apem was made of mica and contained ten apem per package. The packaging had a label with product information (Figure 5A). There are two types of recommended new packaging, namely:

1) Cardboard packaging for apem contains ten pieces per package. Apem is a product that contains margarine and grated coconut in sufficient quantities, so it tends to be oily. The cardboard is laminated so that the paper packaging does not appear oily from the outside. The cardboard packaging uses brown coloring to match the basic color of apem. The box packaging design features the Yaa Qowiyyu ceremony, with an image of a mountain of apem and the words: “Heritage Snack Modern Taste”. The information listed on the box packaging includes: product name, brand, distribution permit number, manufacturer, manufacturer's address, contents, flavor variants, and halal label (Figure 5B). This packaging design has been registered for copyright with application number EC002025137056 and registration number 000977317 with the title of creation Apem Yaqowiyyu Packaging Design Characterized by Local Wisdom.
2) OPP plastic packaging for individual apem packaging. Two individual plastic packaging designs were proposed by the team, as shown in Figures 5C and 5D. Figure 5C shows individual plastic packaging with a batik design and an image of the Apem Yaa Qowiyyu mountain, while Figure 5D shows individual plastic packaging with a blangkon image and the Apem Yaa Qowiyyu mountain.



A B C D

FIGURE 5. *Application of apem packaging with traditional-contemporary designs. Initial apem packaging with mica labeled (A). Box packaging with traditional-contemporary designs (B). Packaging design concepts for apem with individual plastic packaging (C and D)*

b. Occupational Safety and Health Training

At this stage, training participants are equipped with practical skills in handling initial fires using fire extinguishers. The following are the steps for extinguishing a fire:

1) Preparation: The volunteer team, assisted by students, prepared the location for the firefighting practice, which was in the yard of the Bonyokan village head's office. Next, a fire simulation was prepared by burning paper and wood.
2) The instructor demonstrated the proper use of a fire extinguisher using the pull, aim, squeeze, sweep (PASS) method in front of the participants.
3) The training participants practiced fire extinguishing according to the demonstration by the instructor.

FIGURE 6. *Fire extinguishing practice*

Figure 6 shows one of the training participants practicing fire extinguishing using a fire extinguisher.

CONCLUSION

Results showed that: 1) training on modifying packaging from mica packaging to laminated box packaging made the packaging more attractive and informative and resulted in a knowledge increase of 5.39%, 2) training in business management with material on the implementation of OSH resulted in a knowledge increase of 1.9%. This training is expected to provide a sense of security during production and expand marketing due to more attractive packaging.

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Development Of A Prototype Model For Evaluating English For Specific Purposes (Esp) Programs In Higher Education

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Abstract. This study aims to develop a prototype evaluation model for English for Specific Purposes (ESP) programs in higher education, particularly in the Maluku Province, through the design of a contextual, valid, reliable, effective, and practical model called IntegraESP. The research was motivated by the limited use of ESP evaluation instruments, which tend to be generic and fail to account for the sociolinguistic diversity and geographical characteristics of the island region. The IntegraESP model integrates two major theoretical frameworks: the CIPP model (Context, Input, Process, Product) and Kirkpatrick's Four Levels (Reaction, Learning, Behavior, Result). The study employed a Research and Development (R&D) approach based on the ADDIE model, encompassing the stages of analysis, design, development, implementation, and evaluation. The research involved 300 students from five universities in Maluku, along with experts and lecturers serving as validators. The developed evaluation instrument consists of five key dimensions: Student Background, Program Facilities, Implementation, Language Skill, and Outcome. The content validity test using Aiken's V yielded an average score of 0.85 (high category), while construct validity through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) confirmed the model's adequacy (acceptable goodness of fit indices). The construct reliability for all dimensions exceeded 0.85, indicating a very high level of internal consistency. Field implementation showed a strong level of acceptance among students and lecturers, with recommendations for improving efficiency through digitalization of the instrument. Overall, IntegraESP proved to be valid, reliable, effective, and practical as an ESP program evaluation model that is contextually adaptive to the Maluku region and has the potential for broader application at the national level.

Keywords: program evaluation; English for Specific Purposes; IntegraESP model.

INTRODUCTION

The English for Specific Purposes (ESP) program functions as a strategic approach in higher education to equip students with English language skills tailored to academic and professional requirements. In the context of globalization, ESP competence determines graduates' competitiveness in addressing increasingly complex labor market demands [1][24]. Despite its strategic significance, ESP program evaluation practices in Indonesian higher education, particularly in Maluku Province, remain constrained. The evaluation instruments employed are generally generic and do not account for socio-linguistic diversity or the geographic conditions of the archipelago [2][25]. Consequently, a gap emerges between program objectives and the outcomes achieved by students. This study develops the IntegraESP Evaluation Model, which is contextual, valid, reliable, effective, and practical. The model integrates two primary evaluation frameworks, namely CIPP (Context, Input, Process, Product) and Kirkpatrick Four Levels [3][4]. The development results identify five main dimensions: Student Background, Program Facilities, Implementation, Language Skill, and Outcome. This approach provides a comprehensive perspective on ESP program effectiveness while addressing local needs in Maluku.

The research employs a Research and Development methodology based on the ADDIE model (Analyze, Design, Develop, Implement, Evaluate) [6]. The initial stage involves needs analysis and prototype design of the evaluation instruments. Subsequently, the study focuses on content validity testing using Aiken's V [7], construct validity assessment through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) [8], and construct reliability testing based on inter-indicator consistency (Cronbach's Alpha) [9]. The research questions are as follows:

1) how can an ESP program evaluation model be designed to meet the needs of higher education institutions in Maluku? 2) what are the quality test results of the evaluation model instruments? 3) how is the IntegraESP evaluation model implemented? and 4) how effective and practical is the model for large-scale implementation [1][2]. With an achievement of Technology Readiness Level (TRL) 3, this study is expected to contribute theoretically by providing a more adaptive evaluation framework and practically by enhancing the quality of ESP programs in Maluku higher education. Furthermore, the findings may serve as a foundation for developing national ESP evaluation policies [10].

RESEARCH METHOD

This study employed a Research and Development (R&D) approach using the ADDIE model, which comprises five stages: Analyze, Design, Develop, Implement, and Evaluate [19]. This approach was selected because it enables the development of an ESP program evaluation model that is theoretically sound and practically applicable within the higher education context. The research was conducted at five universities in Maluku Province, representing the socio- linguistic diversity of the island region. The participants included 300 students enrolled in ESP programs, along with lecturers and experts who served as instrument validators. The involvement of multiple respondent groups aimed to ensure comprehensive data collection and accurately reflect the factual conditions of ESP implementation. The research instrument consisted of a questionnaire with 75 items covering five main dimensions: Student Background, Program Facilities, Implementation, Language Skill, and Outcome. The instrument was developed by integrating the CIPP and Kirkpatrick models and underwent multiple testing stages to ensure its quality. Data were collected through literature review, interviews, questionnaires, and supporting documentation. Content validity of the instrument was assessed by experts using Aiken's V index, with eligibility criteria exceeding 0.80 [20]. Construct validity was then analyzed through Exploratory Factor Analysis (EFA) to identify factor structures, followed by Confirmatory Factor Analysis (CFA) to confirm model fit [21]. Construct reliability was estimated using Cronbach's Alpha coefficient with a minimum threshold of 0.70 [22]. Data analysis was conducted in multiple layers, beginning with instrument quality testing, followed by the evaluation of the model's practicality and effectiveness based on student and lecturer feedback. The results of these analyses provided the foundation for the final development of the IntegraESP model.

In addition, the research methodology emphasized the triangulation of sources and analytical techniques to ensure that the resulting evaluation model is valid, reliable, effective, and practical within the Maluku context. The sequential stages ensured that IntegraESP was grounded not only in theoretical frameworks but also tested through actual implementation in higher education, thereby supporting its academic and practical accountability.

RESULTS AND DISCUSSION

1. Design of the ESP Program Evaluation Model

The present study developed a prototype of the IntegraESP Model by integrating the CIPP framework and Kirkpatrick Four Levels [13][14]. This integration produced five primary dimensions: Student Background, Program Facilities, Implementation, Language Skill, and Outcome. These dimensions constitute a comprehensive evaluation system that emphasizes the interrelationship between inputs, processes, and learning outcomes.

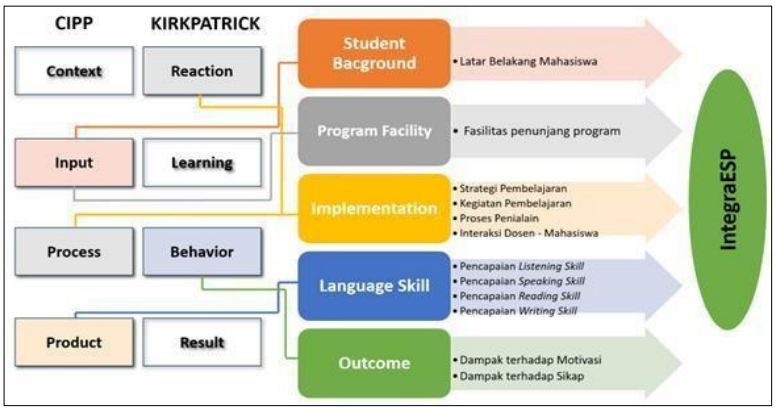

FIGURE 1. *Illustrates the conceptual design of the IntegraESP Model.*

The diagram indicates that Student Background and Program Facilities function as inputs that influence the quality of Implementation. Implementation subsequently affects the achievement of Language Skill, which ultimately shapes Outcomes in terms of student motivation, attitudes, and professional readiness. IntegraESP assesses not only individual aspects but also maps the relational flow among factors determining ESP program success in higher education.

2. Quality of the ESP Program Evaluation Model

Content validity constituted the initial stage of quality assessment. Quantitative analysis based on Aiken's V (20) was applied to seven primary aspects, including instrument objectivity, evaluation guideline objectivity, practicality, and efficiency of time, cost, and effort utilization. Table 1 presents the content validity results. Aiken's V scores ranged from 0.75 to 0.93, with an average of 0.85, indicating that all aspects were valid. The highest score was obtained for the practicality of the evaluation guideline (0.93), while the lowest score was observed in time efficiency (0.75). These results suggest that the IntegraESP instrument is generally considered appropriate by experts, although potential improvements remain in time efficiency.

TABLE 1. *Content Validity of the IntegraESP Evaluation Model*

No	Assessment Aspect	Aiken V
1	Objectivity of data collection instrument	0.89
2	Objectivity of evaluation guideline	0.89
3	Practicality of data collection instrument	0.86
4	Practicality of evaluation guideline	0.93
5	Efficiency of evaluation time use	0.75
6	Efficiency of evaluation cost use	0.82
7	Efficiency of evaluation effort use	0.82
	Content Validity of Evaluation Model	**0.85**

Construct validity was subsequently examined through exploratory factor analysis (EFA). The analysis yielded a Kaiser-Meyer-Olkin value of 0.97 and a significant Bartlett test ($p < 0.05$), confirming the suitability of the data for factor analysis [21]. EFA identified five main factors consistent with the model design, encompassing 75 statement items distributed as follows: Student Background (6 items), Program Facilities (6 items), Implementation (16 items), Language Skill (37 items), and Outcome (10 items). Each factor exhibited a loading factor ≥ 0.40 and explained over 16% of the variance. The visualization is presented in Figure 2.

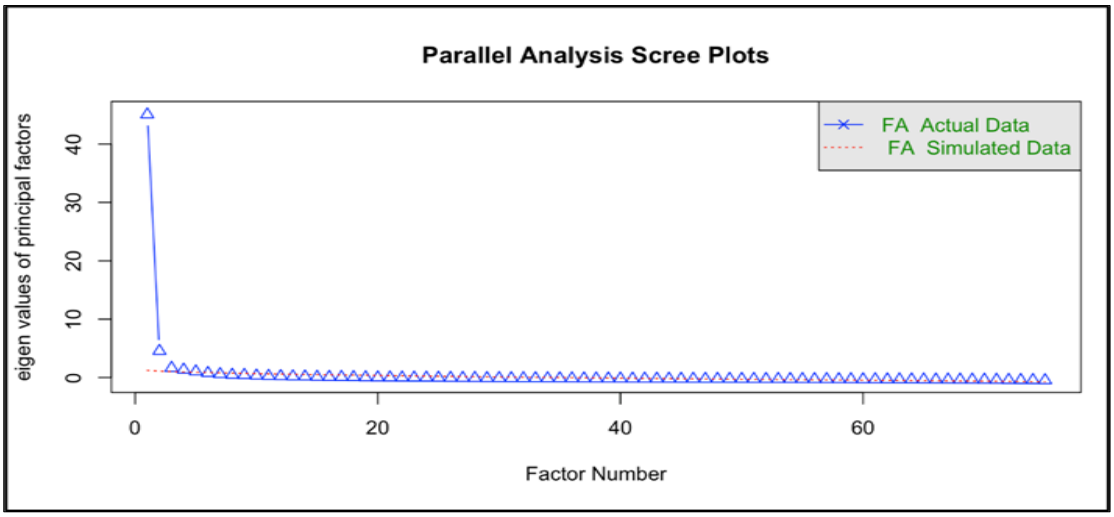

FIGURE 2. *Parallel Analysis Scree Plots*

TABLE 2. *Summary of EFA Results*

Main Factor	Number of Indicators	Variance (%)	Evaluation
Student Background	6	18.5	Appropriate
Program Facilities	6	17.2	Appropriate
Implementation	16	20.7	Appropriate
Language Skill	37	16.4	Appropriate
Outcome	10	16.8	Appropriate

Confirmatory factor analysis (CFA) was conducted to verify model fit. The results indicated adequate goodness of fit, with Chi-square/df < 3, CFI = 0.92, TLI = 0.91, RMSEA = 0.06, and SRMR = 0.05. All indices met the standard criteria [21][29], confirming that the five IntegraESP dimensions are empirically consistent with the conceptual design.

TABLE 3. *CFA Goodness of Fit Indices*

GOF Index	Obtained Value	Criteria	Interpretation
Chi-Square/df	< 3.0	< 3.0	Good
CFI	0.92	> 0.90	Fit
TLI	0.91	> 0.90	Fit
RMSEA	0.06	< 0.08	Good
SRMR	0.05	< 0.08	Good

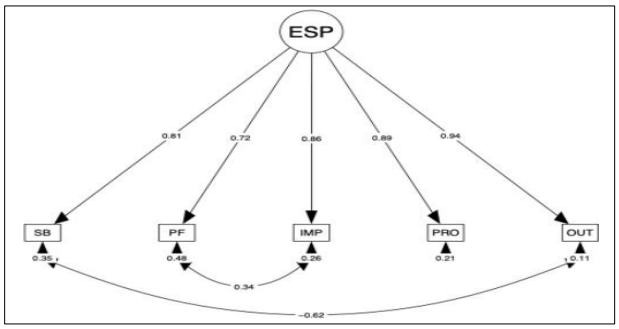

FIGURE 3. *CFA Results Diagram of the IntegraESP Model*

Construct reliability was estimated to assess internal consistency across indicators. Reliability coefficients demonstrated excellent results. Table 4 presents the reliability scores for each dimension: Student Background (0.85), Program Facilities (0.93), Implementation (0.97), Language Skill (0.99), Outcome (0.96), and overall ESP construct (0.93), all exceeding the minimum threshold of 0.70 [22][30]. The highest score for Language Skill indicates the strongest internal consistency, while other dimensions also exhibited high to very high reliability. These findings confirm that the IntegraESP instrument is both valid and reliable for evaluating ESP programs.

TABLE 4. *Construct Reliability Estimates*

Variable/Aspect/Factor	Construct Reliability Coefficient	Reliability Category
Student Background	0.85	High
Program Facilities	0.93	Very High
Implementation	0.97	Very High
Language Skill	0.99	Very High
Outcome	0.96	Very High
ESP	0.93	Very High

3. Implementation of the IntegraESP Evaluation Model

A large-scale trial was conducted at five universities in Maluku involving 300 student respondents. Results indicated that all instrument dimensions could be completed effectively, with students providing positive feedback regarding item clarity and relevance.

Field findings revealed that the Student Background dimension captured variations in motivation and English learning experience. Students rated Program Facilities as sufficiently available, although utilization was suboptimal. Implementation promoted collaboration and communication, though some items were considered repetitive. Language Skill effectively measured the four language abilities, although some students perceived certain items as overly lengthy and technical. Outcome demonstrated the positive impact of the program on motivation, attitudes, and career relevance [23]. Overall, respondent acceptance of the instrument was high, with recommendations to simplify long items and convert the instrument to digital format for greater efficiency. Table 5 details these findings.

TABLE 5. Key Findings from IntegraESP Implementation

Dimension	Number of Items	Key Field Findings
Student Background	6	Students completed items effectively, reflecting diverse motivation and English learning experiences.
Program Facilities	6	Responses indicated adequate facilities, including classrooms, language labs, and digital resources, though utilization was not optimal.
Implementation	16	Learning strategies promoted collaboration and communication; some evaluation items were repetitive.
Language Skill	37	Instrument captured language proficiency in listening, speaking, reading, and writing; certain items were lengthy and technical, requiring simplification.
Outcome	10	Program positively influenced motivation, attitudes, and career relevance; students perceived ESP as beneficial for their future.

These findings confirm that IntegraESP operates according to its design, with high respondent acceptance. Technical improvements are suggested for lengthy items in Language Skill and repetitive items in Implementation, while the overall instrument is practical and relevant. A key recommendation is transitioning to a digital format to enhance data collection and processing efficiency.

4. Effectiveness and Practicality of the IntegraESP Model

Effectiveness assessment indicated an average score of 0.85 for the model, guide, and instrument, classified as effective. The model produced objective and efficient data that supported strategic decision-making in higher education. Practicality was evaluated through indicators of procedural clarity, ease of use, completeness of information, and flexibility, yielding an average score of 0.89, classified as practical, with the instrument achieving the highest score (0.93) [20]. IntegraESP is therefore valid, reliable, effective, and practical for widespread use. The instrument can be operated efficiently by novice evaluators without substantial additional resources. These results confirm that IntegraESP fulfills the four main evaluation criteria of validity, reliability, effectiveness, and practicality, establishing it as a suitable contextual evaluation framework for implementation in Maluku universities with potential for national adoption.

In addition, the study demonstrates considerable convergence with the theoretical foundations of character education in the literature, particularly regarding the cultivation of moral and civic values through structured learning and habitual practice. However, gaps remain in terms of students' motivation, engagement, and the consistency of program implementation across all school personnel. These findings highlight the need for integrated strategies that combine curriculum design, extracurricular activities, and ongoing support to fully realize character education objectives.

CONCLUSION

The IntegraESP model integrates the CIPP and Kirkpatrick frameworks, resulting in five primary dimensions: Student Background, Program Facilities, Implementation, Language Skill, and Outcome. This design emphasizes the interconnection between program input, process, outcomes, and impact in higher education ESP contexts. The model demonstrates content validity, with mean scores falling within the high category. Construct validity testing through EFA and CFA confirms a stable factor structure aligned with the conceptual design. The reliability of each dimension ranges from high to very high, indicating consistent measurement of the intended constructs. Field testing across five universities with 300 students shows that IntegraESP is feasible for implementation. Students are capable of comprehending and completing the instrument while providing positive feedback regarding the relevance of items to their learning experiences. The model proves effective, achieving high mean effectiveness scores, and practical, with very good practicality scores. Both the model and its instruments are easily used even by novice evaluators and can support strategic decision-making for ESP program quality enhancement.

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Integrating Fragmented R&D Models: A Hybrid Framework For Vocational Education Informed By Bibliometric And Systematic Review Insights

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Abstract. This study explores the transformation of Research and Development (R&D) in vocational education using a bibliometric approach and a systematic literature review (SLR). Analysis of 11,781 publications (2000–2024) reveals a global shift from a linear R&D model to an adaptive, iterative framework that is responsive to industry needs. While classic models such as ADDIE, Borg & Gall, and 4D maintain methodological rigor, newer approaches—such as Design Thinking, Rapid Prototyping, Agile, and Open Innovation—provide flexibility, collaboration, and faster validation cycles. Based on the synthesis of these findings, this study proposes a Hybrid Adaptive R&D Framework (ADDIE+) that integrates procedural disciplines with agile iteration, cross-sector co-creation, and a Technology Readiness Level (TRL) orientation. This framework ensures scientific credibility while promoting industrial applicability and product dissemination. Overall, adaptive R&D emerges as a strategic approach to bridge theory and practice, so that vocational education is able to respond effectively to technological changes, market needs, and demands for continuous innovation.

INTRODUCTION

Research and Development (R&D) serves as the backbone of educational innovation, particularly in vocational education, where learning outcomes are required to be directly translated into applicable skills and solutions relevant to industry. However, in recent decades, the R&D methodology landscape has shown an increasingly fragmented trend, leading to inconsistencies in how innovations are conceptualized, developed, and evaluated (Slamet, 2022; Mesra et al., 2023). Classical models such as ADDIE, 4D, and Borg and Gall have made important contributions to systematically organizing the learning development process. However, the linear and prescriptive structure of these models indicates limited flexibility in responding to the dynamic, technology-based, and highly contextual realities of vocational education (Hidayat & Nizar, 2021; Yusuf et al., 2024; Yin & Gulnaz, 2025).

In practice, these classical models tend to separate what are essentially continuous stages—from analysis, design, development, implementation, to evaluation—into a rigid sequence. While this approach ensures procedural order and methodological rigor, it undermines the responsiveness needed for iterative improvement, cross-sector collaboration, and rapid feedback mechanisms essential to vocational learning environments (Shakeel et al., 2023; Mohammad Basir et al., 2025). As a result, many R&D projects in vocational institutions produce pedagogically robust outcomes but lack operational flexibility, resulting in limited adoption and often not progressing beyond the initial pilot stage (Widodo et al., 2025; Saputra et al., 2024).

At the same time, contemporary education is experiencing unprecedented disruption due to digital transformation, the demands of Industry 4.0, and the increasing push for continuous innovation. Vocational education programs are now required to equip students not only with technical competencies, but also with creativity, adaptability, and problem-solving skills in real-world industrial contexts (Adit et al., 2025; Díaz-Lauzurica & Moreno-Salinas, 2025; Efendi et al., 2025). Under these new pressures, traditional R&D paradigms are increasingly struggling to maintain their relevance. These models lack the iterative agility necessary to continuously integrate stakeholder input, respond to rapid technological shifts, and accommodate local socio-economic diversity (Mahadewi et al., 2025; Ganefri et al., 2022).

As a compensatory measure, researchers have begun exploring more iterative and collaborative R&D frameworks, such as Design-Based Research (DBR), Agile, Stage-Gate, and Design Thinking (Poizat et al., 2024; Cochrane, 2020; Edgett, 2025; Qianqian et al., 2025). These models reimagine R&D as a cyclical process based on co-creation and evaluation, with an emphasis on adaptability, user feedback, and real-world testing. For example, DBR integrates theory development and empirical validation through iterative design cycles

(Kühn, 2017; Ngoveni & Machaba, 2025), while Agile emphasizes rapid prototyping and continuous stakeholder engagement to improve efficiency and responsiveness (Bastian et al., 2023; Cochrane, 2020). Similarly, the Stage-Gate model introduces systematic decision points to assess the feasibility and readiness of innovation (Edgett, 2025), while Design Thinking promotes human-centered innovation by placing empathy and creativity as the foundation of design (Barbieri et al., 2025; Qianqian et al., 2025).

Despite these advances, methodological fragmentation persists. Each model is developed based on different epistemological assumptions and sectoral demands, resulting in fragmented and rarely integrated implementations (Mesra et al., 2023; Slamet, 2022). Linear models guarantee reliability but lack adaptability to context, while iterative models encourage creativity but often neglect methodological consistency. This disconnect creates what can be termed a "methodological gap," a condition where R&D practices fail to converge into a coherent, scalable, and context-responsive framework (Hidayat & Nizar, 2021; Widodo et al., 2025). The impact is the proliferation of isolated innovation efforts within the scope of projects, instead of contributing to the sustainable accumulation of vocational knowledge (Adit et al., 2025; Usmeldi & Amini, 2022).

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In response, researchers have begun exploring more iterative and collaborative R&D frameworks, such as Design-Based Research (DBR), Agile, Stage-Gate, and Design Thinking (Poizat et al., 2024; Cochrane, 2020; Edgett, 2025; Qianqian et al., 2025). These models reimagine R&D as a cyclical process that emphasizes co-creation and continuous evaluation, with a focus on adaptability, user feedback, and real-world testing. For example, DBR integrates theory development and empirical validation through iterative design cycles (Kühn, 2017; Ngoveni & Machaba, 2025), while Agile emphasizes rapid prototyping and continuous stakeholder engagement to improve efficiency and responsiveness (Bastian et al., 2023; Cochrane, 2020). Similarly, the Stage-Gate model provides systematic decision points for assessing innovation feasibility and readiness (Edgett, 2025), while Design Thinking encourages human-centered innovation by placing empathy and creativity as the foundation of design (Barbieri et al., 2025; Qianqian et al., 2025).

Despite these advances, methodological fragmentation persists. Each model is developed based on different epistemological assumptions and sectoral demands, resulting in separate and rarely interconnected applications (Mesra et al., 2023; Slamet, 2022). Linear models guarantee reliability but lack contextual adaptability; while iterative models encourage creativity but often neglect methodological consistency. This disconnect results in what can be termed a "methodological gap," a condition where R&D practices fail to converge into a coherent, scalable, and context-responsive framework (Hidayat & Nizar, 2021; Widodo et al., 2025). The impact is the proliferation of isolated innovation efforts at the project level, without contributing cumulatively to the development of vocational knowledge (Adit et al., 2025; Usmeldi & Amini, 2022).

Addressing this gap requires more than simply selecting a single model; it requires integrating various R&D paradigms into a hybrid system capable of combining procedural order with adaptive flexibility. The concept of Open Innovation provides a theoretical foundation for this integration by emphasizing the openness of knowledge boundaries and collaboration between academia, industry, and the community (Chesbrough, 2003; Espada-Chavarría et al., 2021; Kozyk et al., 2021). In the context of vocational education, this openness is crucial because the design of learning innovations must align with real-world work standards and the dynamics of industrial transformation (Dubitsky et al., 2022; Ganefri et al., 2022). Furthermore, Stage-Gate and Agile principles can be combined to ensure accountability at every stage without stifling creativity and experimentation (Edgett, 2025; Bastian et al., 2023).

Based on these developments, this study believes that the primary challenge in vocational R&D is not model obsolescence, but rather fragmentation. Existing models remain relevant, but stand apart; what is needed is a meta-framework that allows them to work synergistically. Therefore, this research aims to develop an Adaptive or Hybrid R&D Model for vocational education, systematically structured based on the findings of bibliometric analysis and a systematic review of the global R&D literature. The bibliometric stage identifies intellectual structures, trends, and thematic clusters in R&D studies, while the systematic review examines empirical patterns, gaps, and successful practices across various educational contexts (Ma & Ismail, 2025; Liu et al., 2021). The combination of these two approaches provides a comprehensive evidential basis for synthesizing fragmented theories into an integrated, empirically grounded model.

This Adaptive Model is designed to bridge methodological differences by integrating four key dimensions: (1) a systematic structure, inherited from classical frameworks such as ADDIE and 4D to ensure scientific accountability; (2) iterative flexibility, adopted from Agile and DBR principles to enable rapid adaptation; (3) contextual integration, to ensure responsiveness to cultural, institutional, and industry diversity; and (4) output orientation, which links research results to product innovation and advanced skills development (Mahadewi et al., 2025; Poizat et al., 2024; Cochrane, 2020; Yusuf et al., 2024).

Thus, the primary objective of this research is to construct a conceptual synthesis that not only unifies previously fragmented R&D models but also translates them into a coherent framework relevant to the specific challenges of vocational education in the era of digital transformation and lifelong learning (Ramdani et al., 2025; Waskito et al., 2024). Drawing on bibliometric and systematic evidence, this research moves beyond anecdotal model modifications to a data-driven and theoretically robust model development process. The resulting Adaptive R&D Framework is expected to guide future research, product development, and curriculum design, while providing a methodological blueprint for vocational educators that is both academically rigorous and practically applicable.

METHOD

This study employed a mixed-methods design, combining bibliometric analysis and a Systematic Literature Review (SLR) to gain a comprehensive understanding of Research and Development (R&D) models in vocational education. The integration of these two complementary approaches enabled the study to quantitatively explore the global research landscape while synthesizing theoretical insights qualitatively. Bibliometric analysis uncovered large-scale publication patterns, collaboration networks, and the evolution of research topics, while the SLR provided an in-depth interpretation and conceptual mapping of R&D models in the context of vocational education.

Bibliometric analysis was conducted as the initial stage of the study. Data were collected from the Scopus database, which was selected for its broad multidisciplinary coverage and stringent indexing standards. This database selection aimed to ensure the representation of high-quality, peer-reviewed publications from diverse geographic and institutional backgrounds. The bibliometric dataset included metadata such as author names, affiliations, keywords, titles, abstracts, and citation counts.

The analysis focused on two main dimensions: performance analysis and science mapping. Performance analysis was used to examine publication productivity trends, influential authors, primary publication sources, and citation impact. Meanwhile, knowledge mapping aimed to identify conceptual structures and thematic relationships between publications. All analyses were conducted using VOSviewer software and the R-based Bibliometrix package, which allows visualization of author collaboration networks (co-authorship networks),

keyword co-occurrence patterns, and thematic clusters representing the intellectual structure of R&D research in vocational education.

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The bibliometric stage yielded an overview of the development of R&D research in vocational education over time, including dominant themes and the global collaboration landscape. This stage also provided an empirical basis for selecting key documents for further systematic review analysis. A total of 1,742 initial records were identified from Scopus. After removing duplicates and filtering irrelevant entries, 927 publications met the inclusion criteria and were retained for further analysis. The distribution of the literature selection process is summarized in Figure 1 (PRISMA Flowchart).

Following the bibliometric mapping, a Systematic Literature Review (SLR) was conducted to deepen the analytical interpretation of the identified studies. The SLR approach was chosen due to its methodological rigor in synthesizing previous research systematically and transparently. This stage aims to classify, interpret, and integrate findings from the selected literature to uncover conceptual models and empirical applications of R&D in vocational education. The review process followed the PRISMA 2020 protocol, which includes identification, screening, eligibility assessment, and inclusion. Inclusion criteria included studies published between 2000 and 2025, written in English or Indonesian, and directly addressing R&D frameworks, educational innovation, or vocational product development. Publications outside these criteria—such as non-peer-reviewed articles, incomplete bibliographic records, or studies irrelevant to R&D or vocational education—were excluded from the analysis.

The data collection process in both stages emphasized credibility and completeness. Bibliometric data provided quantitative indicators of scientific output, while full-text documents analyzed in the SLR provided qualitative insights into how R&D models are conceptualized and applied in the vocational context. The combination of these two types of data ensured a balanced understanding of the scale and substance of global research.

For data analysis, descriptive statistical methods were first applied to bibliometric data to identify publication growth trends, keyword frequency, and author productivity. Next, a qualitative synthesis of the SLR was used to compare, evaluate, and contextualize various Research and Development (R&D) models—such as ADDIE, 4D, Borg and Gall, Design Thinking, and Design-Based Research—by highlighting their strengths, limitations, and adaptability to vocational education. Findings from both approaches were integrated through methodological triangulation, ensuring that the quantitative patterns resulting from the bibliometric analysis aligned with the conceptual narrative emerging from the SLR.

To maintain transparency and methodological validity, the entire research process was systematically documented through an audit trail that recorded each stage of data selection and analysis. Peer validation was also conducted with experts in the fields of vocational education and research methodology to ensure consistency of analysis and accuracy of interpretation. The combination of bibliometric methods and SLR, supported by a structured procedure as shown in Figure 1, strengthens the credibility, reliability, and replicability of this research.

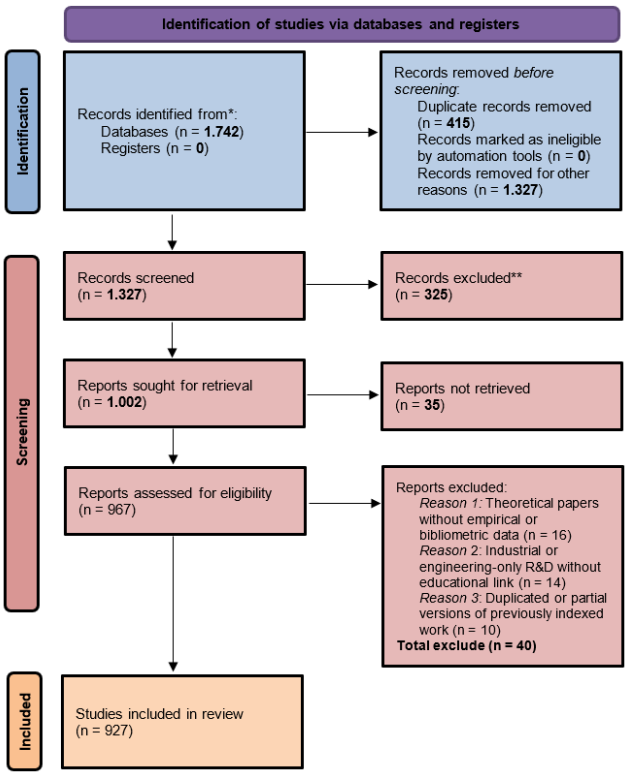

FIGURE 1. *PRISMA Flow Diagram*

In summary, this research's methodological framework—based on bibliometric mapping and a systematic literature review—provides both an empirical and conceptual basis for analyzing global Research and Development (R&D) models in vocational education. The integration of quantitative trends and qualitative findings forms a strong evidence base for the development of an Adaptive R&D Framework, which aligns theoretical models with the practical needs and context of vocational higher education.

RESULT

Bibliometric Analysis

The bibliometric dataset used in this study provides a comprehensive overview of global research on Research and Development (R&D) in vocational education, spanning a 25-year period from 2000 to 2025. Data collection was conducted through the Scopus database, selected for its extensive coverage of reputable journals, conference proceedings, and peer-reviewed scientific books. Through a systematic screening process, 907 documents were identified as relevant to the research objectives, originating from 595 different publication sources. These sources included journal articles, book chapters, and conference papers, providing both breadth and depth of analysis.

As presented in Table 1, the document distribution indicates that journal articles are the most dominant publication type, accounting for more than two-thirds of all publications, followed by conference proceedings and books. This dominance of journal articles underscores the maturity of scholarly discourse in this field, with the majority of studies published through peer-reviewed media rather than in preliminary format. In addition, the wide publication time span allows for observation of longitudinal trends as well as thematic shifts in the R&D research landscape.

TABLE 1. *Summary of Key Information from the Bibliometric Dataset*

Description	Result
Analysis Period (Timespan)	2000–2025
Number of Publication Sources	595
Number of Documents Analyzed	907

The temporal distribution of publications is shown in Figure 2, which shows a consistent upward trend in the number of publications, particularly after 2015. This growth pattern reflects the increasing relevance of the

Research and Development (R&D) framework in vocational education along with the growing demands of Industry 4.0 and the digital transformation of learning environments. The sharp increase in recent years (2020–2025) indicates a growing global focus on model adaptation, innovation-based pedagogy, and hybridization of R&D methodologies.

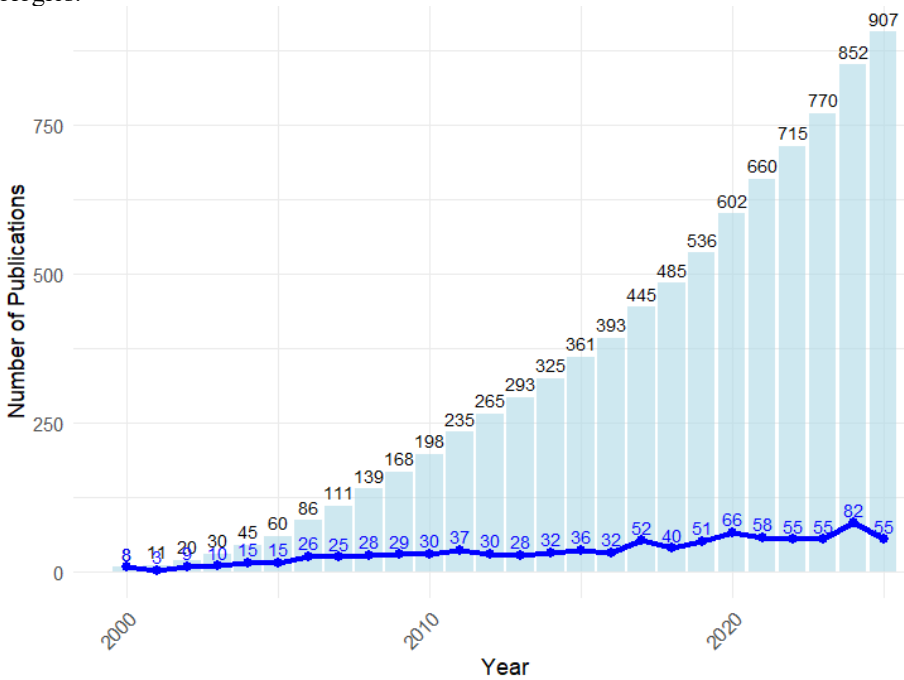

FIGURE 2. *Annual and Cumulative Publication Trends (2000–2025)*

Overall, these characteristics confirm that the analyzed literature corpus is both quantitatively robust and qualitatively representative. Thus, this dataset provides a solid empirical foundation for further analysis of thematic evolution, intellectual structure, and model integration, which together form the basis for the development of a hybrid R&D framework specifically designed for vocational education.

The intellectual landscape of R&D research in vocational education exhibits an interconnected yet heterogeneous structure, shaped by the coexistence of various methodological traditions. Citation and co-citation analysis reveals that foundational frameworks such as ADDIE, Borg and Gall, and 4D coexist with newer paradigms such as Design-Based Research (DBR), Agile, and Stage-Gate. This structure reflects both fragmentation and early indications of the convergence of R&D methodologies that are driving the field's evolution toward a hybrid approach.

As summarized in Table 2, a number of seminal references consistently anchor the intellectual foundation in this domain. The work of Borg and Gall (1983) and Thiagarajan et al. (1974) remains the most frequently cited, indicating its long-term influence in shaping procedural rigor and instructional development. More recent citations emphasize adaptive and collaborative models, such as Design Thinking, DBR, and Open Innovation, demonstrating methodological diversification. This diversification enriches the theoretical repertoire, but also challenges its methodological coherence.

TABLE 2. *Most Local Cited References*

No	Referensi	Local Citations
1	Lave J., 1991	13
2	Boxberger, A Historical Study of the NAMT	10
3	Submission to the House of Representatives Standing Committee Inquiry	9
4	Wehler H.-U., Deutsche Gesellschaftsgeschichte, 3	8
5	Kusmer, A Ghetto Takes Shape	7
6	Bandura A., 1986	6
7	Fullan M., 2007	6
8	Gilliland, Development of Music Therapy	6
9	Kolb D.A., 1984	6
10	Eraut M., 1994	5

The co-citation network shown in Figure 3 visualizes this duality. The separate clusters represent different epistemological lines: one cluster focuses on systematic instructional design, and the other on iterative, user-centered development. These clusters are connected through intermediary authors—such as Ganefri, Hidayat, and Slamet—whose work bridges traditional educational design with applied innovation in the context of vocational education. The density of interconnections between these nodes indicates the emergence of a transitional research community that seeks to integrate structured and flexible R&D approaches.

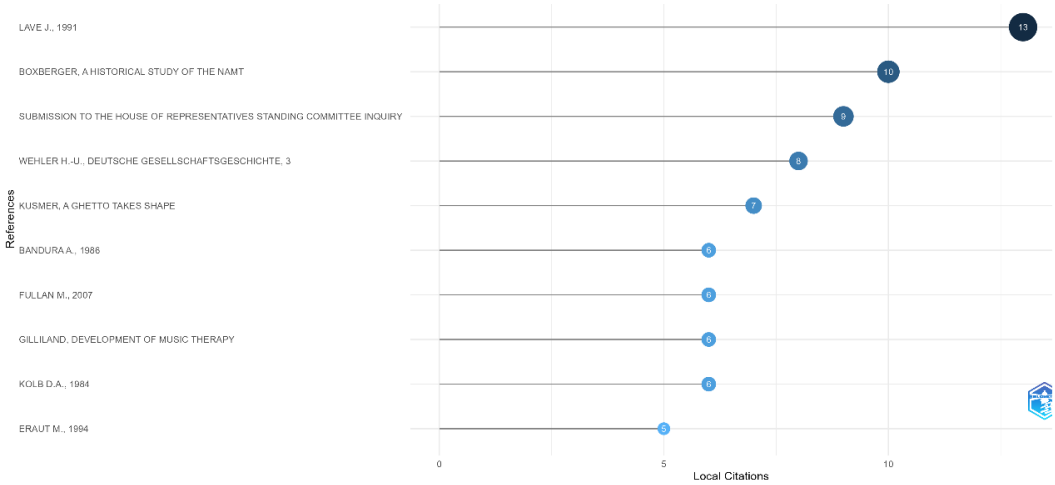

FIGURE 3. *Most Local Cited References (visual network)*

Overall, the intellectual and citation mapping indicates that the field is undergoing a methodological transformation. While legacy classical models still provide structure and reliability, the growing interconnectedness between agile and design-based frameworks indicates the emergence of an increasingly adaptive R&D ecosystem. This intellectual convergence provides the empirical basis for the development of the hybrid model proposed in this study.

Co-word analysis indicates that research on vocational R&D is concentrated in a small number of high-frequency terms. As reported in Table 3, the cumulative trend line shows that the term "vocational education" consistently outperformed other terms throughout the period 2000–2025, followed by "curriculum development" and "education."

TABLE 3. *Keyword Frequency Over the Years*

Year	Vocational Education	Curriculum Development	Education	Educational Development	Human	Teaching	Curricula	Curriculum	Article
2000	0	0	0	0	0	0	0	0	0
2005	5	3	2	2	1	1	1	1	1
2010	45	30	20	15	14	13	11	11	10
2015	160	110	80	70	60	58	50	50	48
2020	280	180	140	120	100	95	90	90	85
2025	360	220	144	125	146	114	114	116	99

This longitudinal pattern is visualized in Figure 4, which explicitly highlights the dominance of vocational education over time.

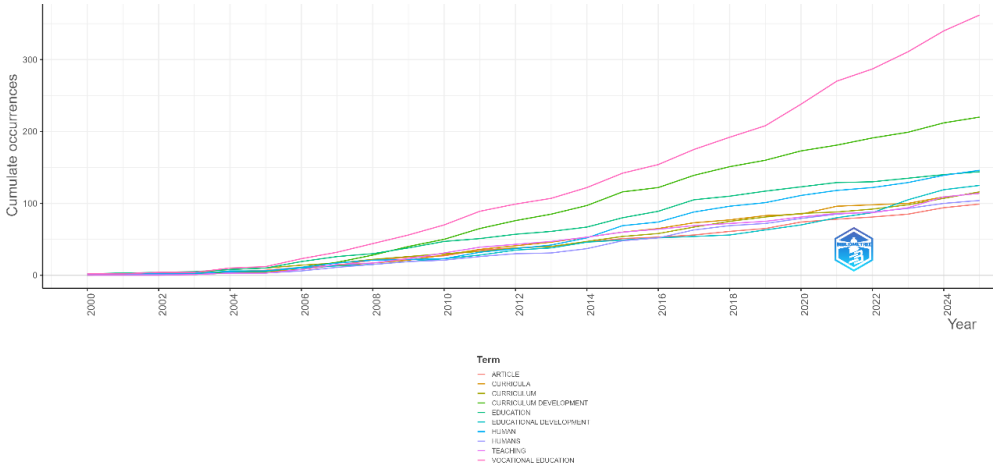

FIGURE 4. *Cumulative Trend of Keyword Occurrences (2000–2025)*

The proportion-based view in Figure 5 shows "vocational education" = 12%, "curriculum development" = 7%, and "education" = 5%, with additional contributions from "educational development," "human," and "teaching." This confirms that the field's lexical core is anchored in vocational education and curriculum-focused topics.

FIGURE 5. *Keyword TreeMap of the Most Frequent Terms*

Frequency rankings in Table 4 provide precise counts: vocational education (362), curriculum development (220), human (146), education (144), educational development (125), curriculum (116), curricula (114), teaching (114), humans (104), and article (99).

TABLE 4. *Top Ten Wirh Highest Frequency*

Rank	Keyword	Number of Occurences
1	Vocational Education	362

Rank	Keyword	Number of Occurences
2	Curriculum Development	220
3	Human	146
4	Education	144
5	Educational Development	125
6	Curriculum	116
7	Curricula	114
8	Teaching	114
9	Humans	104
10	Article	99

Meanwhile, Figure 5 illustrates the relative weight of the dominant terms in the dataset. The term "vocational education" (12%) appears to have a larger proportion than other categories, followed by "curriculum development" (7%) and "education" (5%). This visual proportion confirms the lexical centrality of vocational education as the primary focus of the field of study, while terms related to curriculum and education occupy a secondary but still significant position.

Complementing these findings, Figure 6 reinforces the same pattern by displaying vocational education, education, curriculum development, and learning as the most prominent terms. The relative font size in the visualization reflects the weight of their frequency of occurrence, confirming that the majority of R&D publications in vocational education remain conceptually grounded in curriculum model development and innovation.

FIGURE 6. *Word Cloud*

Finally, Figure 7 shows close alignment with the numerical rankings in Table 4. The co-word map visualizes the same top ten terms—vocational education, curriculum development, education, and teaching—arranged in order of frequency of occurrence. This consistent pattern between the figure and the table suggests that vocational education serves as the conceptual core of the field of study, surrounded by constructs related to curriculum design and educational innovation.

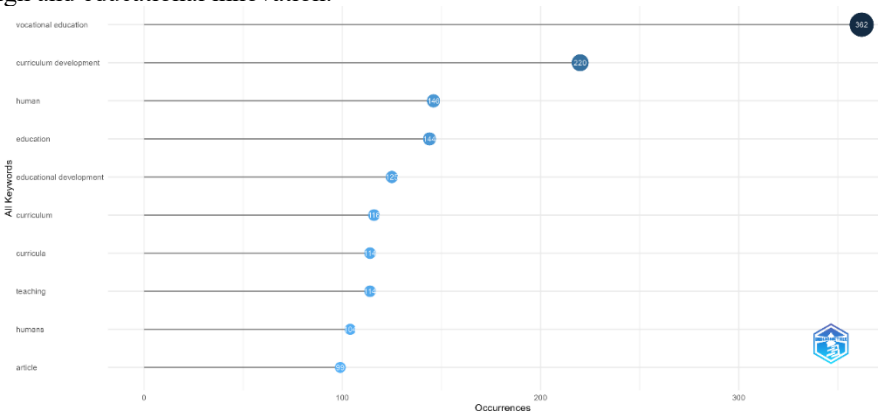

FIGURE 7. *Top Ten with Highest Frequency*

Bibliometric coupling and thematic evolution analyses reveal how vocational education R&D research develops conceptually and collaboratively across regions and institutions. As shown in Figure 8, Indonesia emerges as a major contributor with the highest number of publications, forming a dense hub of collaboration compared to other countries such as Malaysia, China, and the United States. This configuration suggests that the research landscape remains regionally concentrated, with relatively limited cross-national integration.

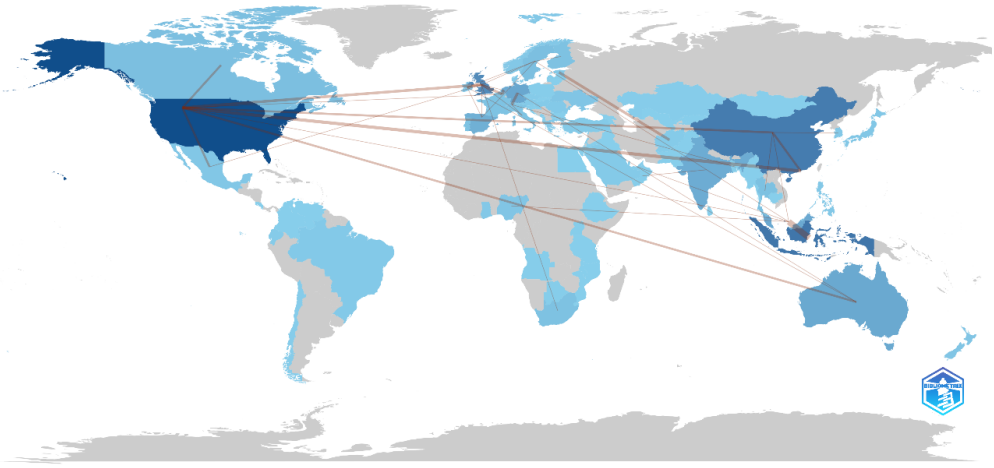

FIGURE 8. *Country Collaboration Map in Vocational Education Research*

Supporting this pattern, Table 5 presents the same ranking numerically, confirming Indonesia's prominence in international collaboration metrics.

TABLE 5. *Countries with the Highest International Collaboration*

Rank	Country	Number of Collaborative Articles
1	Amerika Serikat	68
2	Tiongkok	61
3	Indonesia	53
4	Inggris	49
5	Australia	45
6	Belanda	41
7	Jerman	39
8	Malaysia	35

At the institutional level, Figure 9 reveals a compact but cohesive structure dominated by authors affiliated with Indonesian universities. The visualization shows clear clusters around *Universitas Negeri Yogyakarta, Universitas Negeri Padang,* and *Universitas Pendidikan Indonesia*, indicating the emergence of interlinked institutional sub-networks within the same national ecosystem.

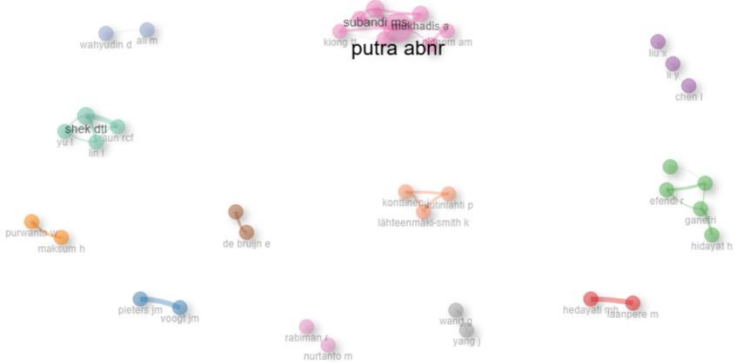

FIGURE 9. *Author Collaboration Network in Vocational Education Research*

Correspondingly, Table 6 highlights the individual authors who serve as bridges within these networks, such as Ganefri, Usmeldi, and Slamet, who demonstrate strong internal connectivity yet limited cross-border engagement.

TABLE 6. *Authors with the Widest Collaboration Networks*

Rank	Author	Number of Collaboratin	Main Affiliatin
1	Putra ABNR	14	Universitas Negeri Padang
2	Shek DTL	12	The Hong Kong Polytechnic University
3	Ganefri	11	Universitas Negeri Padang

Rank	Author	Number of Collaboratin	Main Affiliatin
4	Subandi MS	10	Universitas Negeri Malang
5	Mukhadis A	10	Universitas Negeri Malang

Further insight into the field's intellectual progression is provided by Figure 10. The historiographic map delineates the chronological lineage of influential works, illustrating how early studies on curriculum development and education (2000–2010) have evolved into more integrated discussions on innovation and learning in recent years (2021–2025). This temporal layering shows the field's gradual shift from fragmented, institution-specific approaches toward more cohesive and interconnected models.

FIGURE 10. *Historiography of Vocational Education Research*

Finally, Figure 11 synthesizes thematic evolution across interconnected clusters, such as curriculum development, education, vocational education, and innovation. The density and interconnectedness of these clusters demonstrate the convergence of conceptual domains that now underpin the emerging hybrid R&D framework. Previously separate thematic nodes—representing distinct strands in instructional design, product innovation, and competency-based learning—are now increasingly integrated, reflecting the maturation of the research field toward an interdisciplinary and adaptive R&D model.

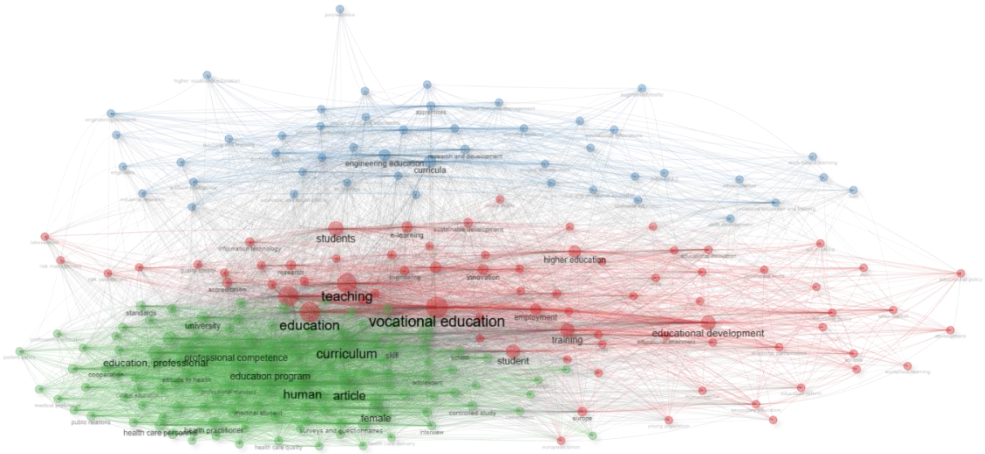

FIGURE 11. *Thematic Map Network in Vocational Education Research*

The conceptual structure analysis clarifies how the corpus is organized around a limited set of closely connected concepts. The dendrogram in Figure 12 shows that vocational education, curriculum development, and education form a primary branch, while terms such as human, professional competence, and methodology appear on distinct branches but remain linked within the overall structure.

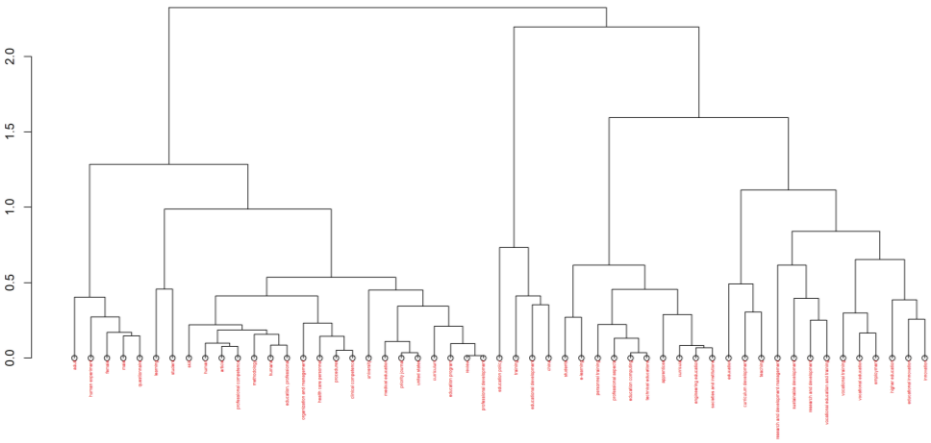

FIGURE 12. *Dendrogram of Factor Analysis Results in Vocational Education Research*

These clusters are supported numerically in Table 7, which lists four factor-derived clusters and their sizes—for example, the cluster anchored by vocational education, curriculum development, education includes 145 articles, followed by clusters centered on human/professional competence/methodology (98), technical education/innovation/R&D (84), and training/apprentices/higher education (72).

TABLE 7. *Articles by Factor Analysis Clusters in Vocational Education Research*

Cluster	Main Articles (Examples)	Number of Articles
1	Vocational Education, Curriculum Development, Education	145
2	Human, Professional Competence, Methodology	98
3	Technical Education, Innovation, Research & Development	84
4	Training, Apprentices, Higher Education	72

The factorial map using MCA in Figure 13 situates these terms on two principal dimensions (Dim 1 = 77.45%, Dim 2 = 8.54%). In this configuration, vocational education, curriculum development, and education are centrally positioned, indicating high connectedness to other terms. In contrast, items such as adult, questionnaire, and human experiment occupy more peripheral positions, consistent with narrower topical scopes.

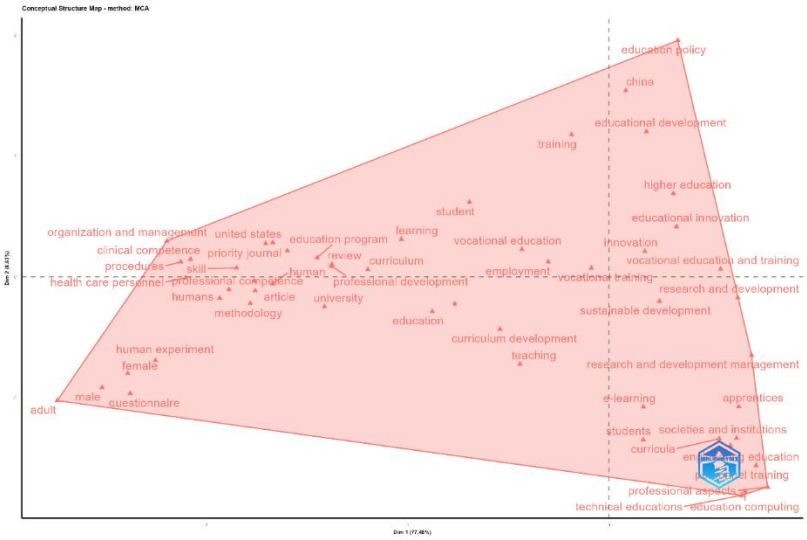

FIGURE 13. *Conceptual Structure Map of Keywords (MCA Method)*

The thematic mapping in Figure 14 classifies topics into motor themes, basic themes, niche themes, and emerging/declining themes.

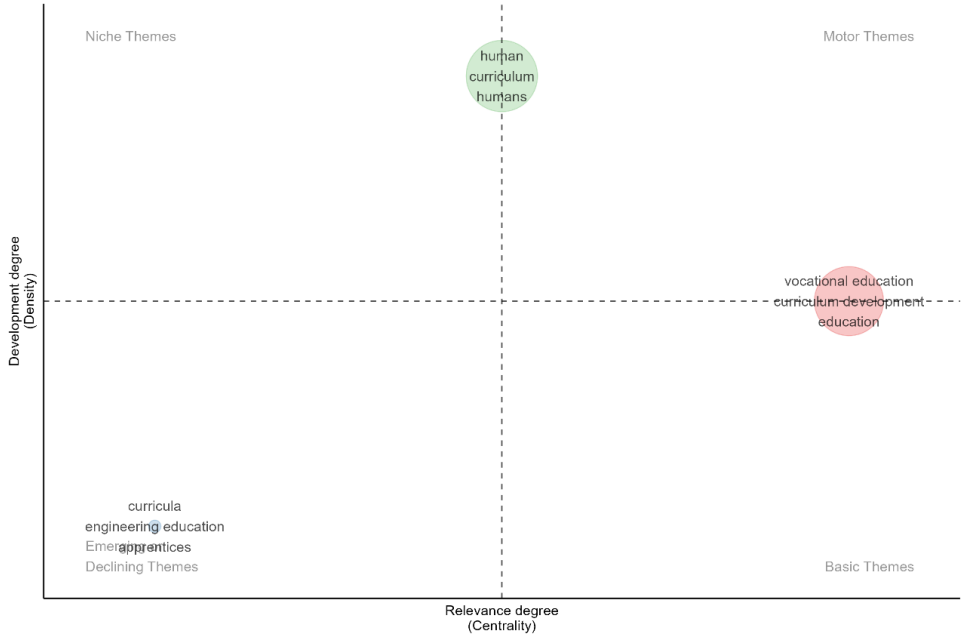

FIGURE 14. *Thematic Map of Vocational Education Research*

According to Table 8, vocational education, curriculum development, and education fall under motor themes, educational development and higher education are basic themes, human and curriculum are niche themes, while curricula, engineering education, and apprentices are emerging/declining. This distribution confirms the centrality of vocational- and curriculum-oriented constructs while indicating newer or more specialized lines of inquiry at the field's periphery.

TABLE 8. *Theme Distribution by Thematic Cluster*

Theme Category	Main Keyword	Description
Motor Themes	Vocational Education, Curriculum Development, Education	Core themes with high relevance and density, forming the intellectual foundation of vocational education research
Basic Themes	Educational Development, Higher Education	General supporting themes that connect multiple research areas and provide interdisciplinary continuity
Niche Themes	Human, Curriculum	Specialized themes with limited scope, focusing on specific aspects or methodological studies within vocational education
Emerging/Declining	Curricula, Engineering Education, Apprentices	New or declining themes that indicate shifting research priorities—either growing in novelty (digital/applied learning) or decreasing in attention (traditional training)

Overall, the dendrograms, MCA maps, thematic maps, and thematic networks demonstrate a consistent pattern: the conceptual core of the field is anchored by vocational education and curriculum development, with related educational constructs providing bridges to specific and emerging themes.

The bibliometric synthesis indicates that there is no single dominant R&D model in the global landscape of vocational education research. Instead, the field exhibits methodological diversity, combining classical systematic frameworks with modern, agile, context-based approaches. This heterogeneity reflects a paradigm shift from procedural uniformity to methodological pluralism—which views structure and flexibility as complementary strengths in research and innovation.

Classic models such as Borg & Gall and ADDIE emphasize systematic procedures—from needs analysis, design, and development, to testing, revision, and implementation. These frameworks have proven effective in providing a structured, replicable, and scientifically sound learning development process. In contrast, modern or agile models such as Agile, Rapid Prototyping, and Design Thinking prioritize flexibility, rapid iteration, and intensive user engagement. Originating from industrial and design disciplines, these approaches align with the

need for responsiveness in vocational contexts facing rapid technological change and dynamic job market demands.

Meanwhile, contextual models such as Design-Based Research (DBR) signal a growing trend toward integrative inquiry, where design, implementation, evaluation, and theory develop simultaneously in authentic educational environments. Together, these patterns confirm the bibliometric evidence for a hybrid and adaptive R&D paradigm—one that combines systematic rigor with practical flexibility and contextual sensitivity.

TABLE 9. *Summary of Dominant R&D Models in Global Vocational Education Literature (2000 – 2025)*

Model Category	R&D Model Name	Frequency of Occurrence	Main Characteristics
Classical	General Research and Development	129	Systematic and procedural; sequential stages from analysis to development, testing, and implementation.
	Borg & Gall	1	Structured, ten-step model widely used in educational research and product development.
	ADDIE	1	Involves Analysis, Design, Development, Implementation, and Evaluation; concise yet comprehensive.
Modern / Agile	Rapid Prototyping	2	Fast iteration cycles focusing on testing and repeated refinement.
	Agile	1	Flexible, responsive to change, and user-driven.
	Design Thinking	1	Human-centered, creative, and empathy-driven; emphasizes ideation and innovation.
Emerging / Contextual	Design-Based Research (DBR)	1	Collaborative and context-based; integrates theory and practice in real educational settings.

Based on this synthesis, the Adaptive Hybrid R&D Model required for vocational education must embody four essential characteristics: (1) Structured foundation – retaining classical rigor to ensure the process remains systematic and scientifically defensible; (2) Agile flexibility – enabling rapid responsiveness to industrial, technological, and labor market changes; (3) Local contextualization – ensuring that innovation aligns with Indonesia's vocational realities while maintaining global relevance; (4) Product-oriented focus – emphasizing downstream application, so research outputs become tangible innovations beneficial to education, industry, and society.

In essence, bibliometric evidence confirms that the Adaptive Hybrid R&D Model must be dual in nature—theoretically robust, methodologically flexible, and contextually grounded. This duality forms the intellectual basis for transforming vocational R&D into a coherent, evidence-driven system capable of sustaining innovation across educational and industrial ecosystems.

SYSTEMATIC LITERATURE REVIEW

A systematic literature review (SLR) was conducted to complement the bibliometric findings by providing a deeper qualitative and conceptual understanding of how various Research and Development (R&D) models are applied in vocational education. While the bibliometric analysis revealed macro trends and collaboration patterns, the SLR specifically examined how each R&D framework is operationalized, validated, and adapted in the vocational context. The review followed a structured synthesis approach focusing on model typology, educational alignment, and adaptability for product-oriented innovation.

The SLR included 20 reputable articles published between 2016 and 2025, selected through an inclusion process that prioritized the application of empirical R&D in vocational and technical education. The primary objective of the review was to identify patterns of fragmentation among models, particularly between the classical, agile, and hybrid paradigms and to uncover potential integrations that could inform the development of an Adaptive R&D Framework.

Each study was categorized according to its R&D model, cluster, and main contribution, followed by a detailed assessment of fragmentation aspects and opportunities for integration. This approach allowed the review to trace how classical models such as Borg & Gall and ADDIE evolved into hybrid and iterative variants through influences from Agile, Design Thinking, and Design-Based Research paradigms. The metadata of the reviewed studies are summarized in Table 10, serving as the empirical foundation for subsequent analysis.

TABLE 10. *Systematic Literature Review Metadata on R&D Models in Vocational Education*

No	Author(s) & Year	R&D Model	Cluster	Key Contribution / Findings	Fragmentation Aspect	Integration Potential
1	**Waskito et al. (2024)**	Borg & Gall–based R&D	Instructional / Assessment	Developed a five-stage *constructivist feedback* method that improved adaptivity, decision-making, and creativity among mechanical engineering students.	Assessment-centric; limited prototyping and industry co-validation.	Embeds a reflective feedback mechanism adaptable to iterative vocational design cycles.
2	**Ganefri et al. (2022)**	Three-phase R&D (Analysis–Design–Validation)	Innovative & Product Design	Created a *Digipreneur LMS* integrating marketplace and e-learning to foster entrepreneurial intention.	Lacks testing iteration and industry participation.	Provides a digital backbone adaptable for structured validation and iterative field refinement.
3	**Mahadewi et al. (2025)**	Hybrid R&D (Borg & Gall + Dick & Carey)	Hybrid ISD	Produced a culturally adaptive LMS validated by experts and learners (REGARD flow).	Local scope; no effectiveness trials.	Introduces contextual and culture-aware instructional design relevant to vocational diversity.
4	**Muhtar et al. (2025)**	Dick & Carey (Preparatory Stage)	Classical Instructional	Conducted front-end analysis for Project-Based Learning (PjBL) in welding, emphasizing authentic assessment and blended VR learning.	Early-stage only; no implementation or evaluation.	Offers a systematic analytical foundation for subsequent ADDIE-style development and testing.
5	**Kozyk et al. (2021)**	Technological Forecasting (S/W/D/L matrices + fuzzy logic)	Innovation Management / Tech Transfer	Proposed a market-behavior forecasting method linked to early TRL mapping and commercialization strategy.	Focused on macro transfer, not instructional design.	Contributes TRL-based forecasting and decision-gate logic for applied vocational product development.
6	**Espada-Chavarría et al. (2021)**	Open Innovation Program	Collaborative HR / Industry–Education	Built inclusive internship ecosystems for students with disabilities via partnerships with multinational firms.	Small sample; macro-level HR focus.	Highlights the importance of open innovation and cross-sector collaboration in vocational ecosystems.
7	**Kühn (2017)**	Design-Based Research (DBR)	Iterative Pedagogical Design	Developed a *social competence model* for disadvantaged youth using iterative DBR cycles grounded in experiential learning.	Context-bound; process-focused evaluation.	Adds empathy and iteration elements from Design Thinking to soft-skill R&D in VET.
8	**Ngoveni & Machaba (2025)**	Design-Based Research (DBR)	Iterative Assessment Design	Created a five-pillar formative assessment model (targets, monitoring, feedback, self & peer assessment) validated through classroom design cycles.	Limited empirical generalization; teacher training gaps.	Strengthens reflective, feedback-driven instructional refinement aligned with adaptive ADDIE evaluation.
9	**Putra (2016)**	Stage-Gate R&D (Forward–Backward Process Synthesis)	Industrial Process Engineering	Built a phased industrial R&D model emphasizing synthesis–evaluation–redesign cycles with uncertainty mapping.	Highly technical; industry-only focus.	Provides structured decision gates and iterative testing logic for adaptive vocational product R&D.

No	Author(s) & Year	R&D Model	Cluster	Key Contribution / Findings	Fragmentation Aspect	Integration Potential
10	**Bastian et al. (2023)**	Agile–Scrum Methodology	Agile Product Development	Designed an AR-based learning game for programming courses using *sprint*, *backlog*, and *retrospective* cycles.	Limited usability testing; no longitudinal outcomes.	Demonstrates iterative co-design, sprint reflection, and learner involvement as adaptive elements.
11	**Fahrenkopf et al. (2019)**	Rapid Prototyping (Multi-Project Wafer)	Engineering / Innovation Management	Established a shared-access prototyping ecosystem enabling rapid design–test–refine cycles for photonics devices.	Highly technical; minimal educational linkage.	Models collaborative rapid prototyping and shared feedback loops for vocational innovation hubs.
12	**Shakeel et al. (2023)**	Modified ADDIE + Rapid Prototyping	Hybrid Instructional Design	Integrated sequential ADDIE with concurrent prototyping and review; validated via CVI, TAM, and GPA gain tests in TVET context.	Small sample; no industry validation.	Illustrates a reflective, evidence-based ADDIE hybrid where design–development–evaluation interact dynamically.
13	**Wang et al. (2025)**	Design Thinking (DT–CSCL)	Design Thinking / Digital Pedagogy	Implemented a five-stage DT cycle in collaborative learning; improved creative thinking and metacognitive regulation.	Course-specific; short-term results.	Contributes DT scaffolding for the Design–Development–Evaluation flow within adaptive ADDIE logic.
14	**Muslim et al. (2024)**	4D Model (Define–Design–Develop–Disseminate)	Instructional Media Development	Developed *Augmented Clutch Reality Mobile (ACRMobi)* using AR for vocational engineering; validated with Aiken's V = 0.91–0.93.	Limited scope; Android-only; short-term testing.	Combines procedural rigor with iterative revision, bridging 4D and prototyping logic.
15	**Eliza et al. (2024)**	4D Model	Learning App Development	Designed a cybersecurity-awareness mobile app for 136 vocational students; achieved gain score = 0.72 and 77–87% effectiveness.	Regional focus; no long-term evaluation.	Embeds user-centered validation loops, shifting classical 4D toward cyclical adaptive R&D.
16	**Yusuf et al. (2024)**	4D Model	Instructional Material Development	Created genre-based English worksheets validated across four institutions; improved reflective writing and comprehension.	Context-limited; small-scale testing.	Demonstrates feedback-responsive refinement and reflective integration within systematic 4D stages.
17	**Widodo et al. (2025)**	Borg & Gall–Based R&D	Entrepreneurship Program Design	Developed a validated entrepreneurship model emphasizing mindset, character, and product-based learning; κ = 1.00.	No empirical outcome testing.	Shows human-centered development integrating feedback and co-design — precursor to adaptive ADDIE.
18	**Ariawan et al. (2025)**	Borg & Gall (Simplified 3 Stages)	Digital Evaluation Design	Built a *backward-chaining digital test* for critical thinking; achieved 88.94% expert–teacher quality score.	Limited to interface design; no student testing.	Demonstrates feedback-driven revision loops and AI reasoning aligned with iterative ADDIE hybrid.
19	**Norouzkhani et al. (2025)**	ADDIE + Sukr Framework (Gamification)	Digital App Development	Applied ADDIE with gamified elements (Fun, Growth, Socialization, etc.) in a mobile health app; SUS = 80.68 (Good).	Domain-specific (healthcare); resource-intensive.	Exemplifies structured ADDIE phases infused with iterative usability cycles and stakeholder co-design.
20	**Mohammad Basir et al. (2025)**	ADDIE + HBM + CTML	MOOC-Based Instructional Design	Created a rabies-prevention MOOC using ADDIE integrated with behavioral and multimedia theories; CVI = 0.91, FVI = 0.99.	Limited to health-education domain.	Demonstrates theory-integrated, adaptive ADDIE application with iterative validation and gamified learning flow.

The reviewed literature shows that R&D practices in vocational education exhibit a high degree of methodological diversity. As summarized in Table 11, these models can be grouped into four dominant clusters: (1) Classical Instructional Models such as Borg & Gall, ADDIE, and 4D; (2) Agile and Rapid Prototyping approaches that emphasize iteration and user feedback; (3) Contextual and Design-Based Models such as DBR and Design Thinking; and (4) Collaborative and Open Innovation Frameworks that connect education with the industrial ecosystem.

Each cluster reflects a distinct orientation toward adaptation, innovation, and validation. Classical models maintain procedural rigor and repeatability, thus ensuring methodological accountability. In contrast, modern agile and prototyping approaches emphasize flexibility and user co-creation, bridging vocational education with the dynamics of industrial innovation. Contextual and hybrid approaches—particularly those integrating Design Thinking, DBR, and ADDIE hybrids—represent a synthetic pathway in which iterative design logic is aligned with pedagogical structures.

TABLE 11. *The Mapping of R&D Models*

Cluster of R&D Models	Included Models	Core Focus	Vocational Relevance Potential
Classical & Instructional	ADDIE, Borg & Gall, 4D	Systematic structure, validation, procedural efficiency	Ensures process quality and rigor but tends to be less adaptive to rapid industrial changes.
Innovative & Iterative	Design Thinking, Rapid Prototyping, Agile	Empathy, rapid iteration, flexibility	Highly suitable for practical and contextual product innovation, though it requires a strong culture of collaboration and consistent documentation.
Innovation Management	Stage-Gate, Open Innovation	Product downstreaming, quality control, cross-sector collaboration	Strategically supports vocational product industrialization, but demands substantial resources and network capacity.
Collaborative Research	Design-Based Research (DBR)	Theory–practice integration, contextual validation	Provides both academic legitimacy and practical applicability, though it requires extended timeframes and intensive stakeholder engagement.

A systematic literature review (SLR) was conducted to complement the bibliometric findings by providing a deeper qualitative and conceptual understanding of how various Research and Development (R&D) models are applied in vocational education. While the bibliometric analysis revealed macro trends and collaboration patterns, the SLR specifically examined how each R&D framework is operationalized, validated, and adapted in the vocational context. This review followed a structured synthesis approach focusing on model typology, educational alignment, and adaptability for product-oriented innovation.

The SLR included 20 reputable articles published between 2016 and 2025, selected through an inclusion process that prioritized the application of empirical R&D in vocational and technical education. The primary objective of this review was to identify patterns of fragmentation among models—particularly between the classical, agile, and hybrid paradigms—and to uncover potential integrations that could inform the development of an Adaptive R&D Framework.

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Viewed from the perspective of vocational relevance, Table 11 shows a clear convergence trend: structured instructional design remains necessary to ensure reliability, but adaptability and contextual responsiveness increasingly determine R&D effectiveness. The coexistence of systematic, agile, and collaborative approaches

marks a paradigm shift from linear product development to an adaptive, iterative, and context-integrated framework, which serves as the conceptual basis for the Adaptive R&D Model proposed in the next section.

A synthesis of the findings from Tables 10 and 11 indicates that R&D practices in vocational education are transitioning from a rigid procedural framework to a more adaptive, iterative, and collaborative paradigm. Classical models such as Borg & Gall, ADDIE, and 4D continue to provide methodological stability and replicability, as demonstrated by Waskito et al. (2024), Widodo et al. (2025), and Yusuf et al. (2024). These models guarantee systematic validation and a clear evaluation path, but are limited by their linear nature—often stopping at the dissemination stage without iterative testing or industry involvement.

In contrast, agile and prototyping approaches such as those proposed by Bastian et al. (2023), Shakeel et al. (2023), and Putra (2016) emphasize flexibility, co-design, and rapid feedback. Sprint-based logic aligns with industry needs but often lacks pedagogical depth and standardized evaluation. Similarly, contextual and hybrid frameworks such as DBR, Design Thinking, and integrated ADDIE variants (Kühn, 2017; Ngoveni & Machaba, 2025; Mahadewi et al., 2025) successfully combine structure and creativity through empathy-based design and iterative classroom validation, although their scope tends to be local and less generalizable.

Meanwhile, the Open Innovation and Technological Forecasting model (Espada-Chavarría et al., 2021; Kozyk et al., 2021) extends vocational R&D beyond the educational realm by linking it to industry, technology ecosystems, and community development. Its collaborative nature fosters scalability and sustainability, although pedagogical integration remains secondary.

Overall, this fragmentation between clusters arises from differences in emphasis—the classical model prioritizes rigor, the agile model emphasizes responsiveness, and the open innovation model emphasizes collaboration. However, beneath these differences lies a growing convergence: the need to combine systematic structure, iterative adaptability, and cross-sector collaboration. This triadic synthesis forms the conceptual basis of the proposed Adaptive R&D Model, which integrates the procedural discipline of traditional approaches, the flexibility of agile cycles, and the inclusiveness of collaborative ecosystems, as shown in Figure 15.

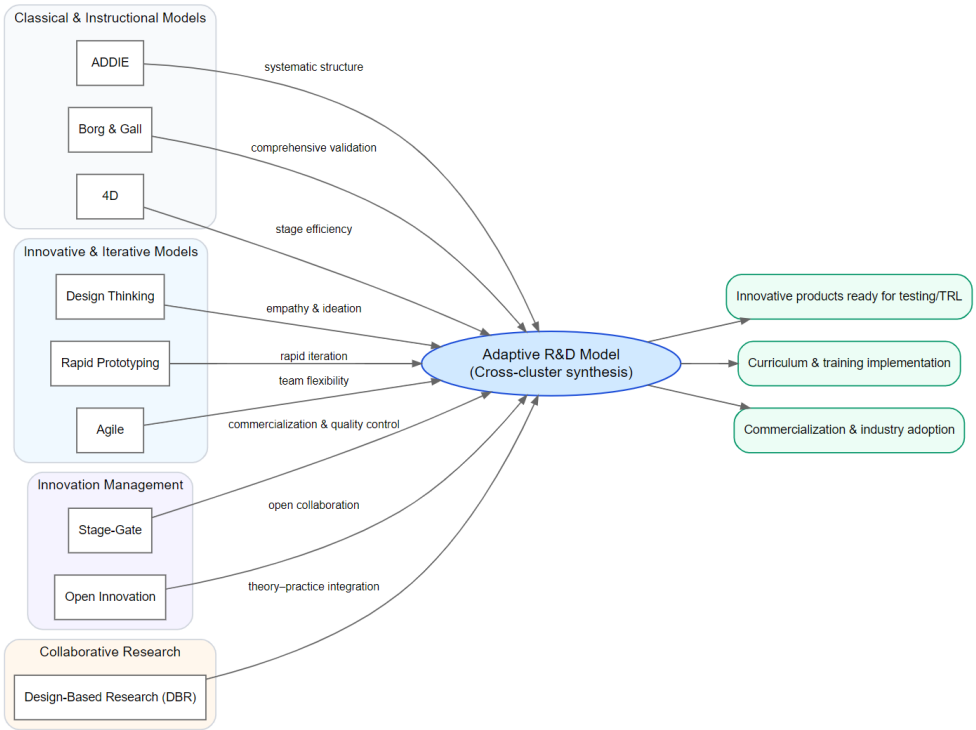

FIGURE 15. *Cross-Cluster Synthesis of R&D Models Toward an Adaptive Model for Vocational Education*

Hybrid Adaptive R&D Framework for Vocational Education

The synthesis of bibliometric and systematic review findings reveals that no single R&D model can fully address the complex and dynamic nature of vocational education. Instead, the evidence supports the development of a Hybrid Adaptive R&D Framework that bridges methodological rigor with contextual flexibility.

TABLE 12. *Integration of Bibliometric and Literature Review Findings as the Basis for an Adaptive R&D Framework*

Aspect	Bibliometric Findings	Literature Review Findings	Implications for Vocational R&D
Paradigm Trend	Shift from linear models toward iterative, collaborative, and open frameworks.	Classical models remain dominant but show limited flexibility.	A synthesis between classical structure and innovative dynamics is required.
Dominant Keywords	Significant growth in *Design Thinking*, *Agile*, *Prototyping*, and *Open Innovation*.	Innovative models are considered relevant but face challenges in academic documentation.	The adaptive model must integrate flexibility with academic legitimacy.
Industry Linkage	University–industry collaboration is an emerging and growing research trend.	*Stage-Gate* and *Open Innovation* models demonstrate strong networking and downstreaming features.	Industry integration should become a core element of the adaptive R&D model.
Academic Validation	Theoretically grounded models (*ADDIE*, *Borg & Gall*, *DBR*) remain highly cited.	Literature highlights the importance of empirical validation and methodological rigor.	The adaptive model must retain academic grounding to ensure scientific accountability.
Product Downstreaming Orientation	Recent publications connect R&D with *Technology Readiness Levels (TRL)* and commercialization-oriented innovation.	Literature emphasizes that vocational education must produce ready-to-use products.	Product downstreaming should be embedded as a final outcome in the adaptive model.

As shown in Table 12 and Figure 16, the intersection of empirical publication trends and theoretical model clusters highlights three dominant orientations—systematic, iterative, and collaborative—which together form the epistemic foundation for the proposed framework.

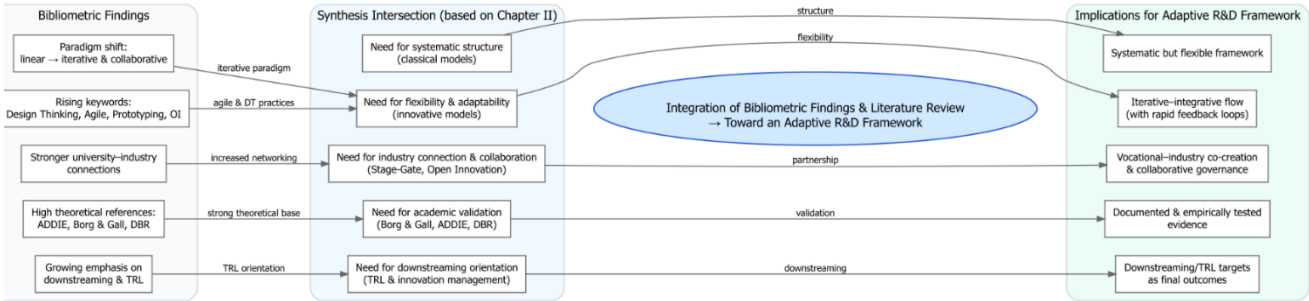

FIGURE 16. *Integration of Bibliometric and Literature Review Findings → Toward an Adaptive R&D Framework*

The Hybrid Adaptive R&D Framework (visualized in Figure 17) evolves from the classical ADDIE model while incorporating dynamic features from 4D, DBR, Agile, Stage-Gate, and Open Innovation paradigms. This synthesis transforms ADDIE's linear sequence into a cyclical, feedback-driven process that emphasizes continuous evaluation and stakeholder engagement. The result is ADDIE+, a multidimensional model integrating procedural accuracy, rapid iteration, and cross-sector collaboration—essential features for vocational contexts that demand responsiveness to industry change and technological advancement.

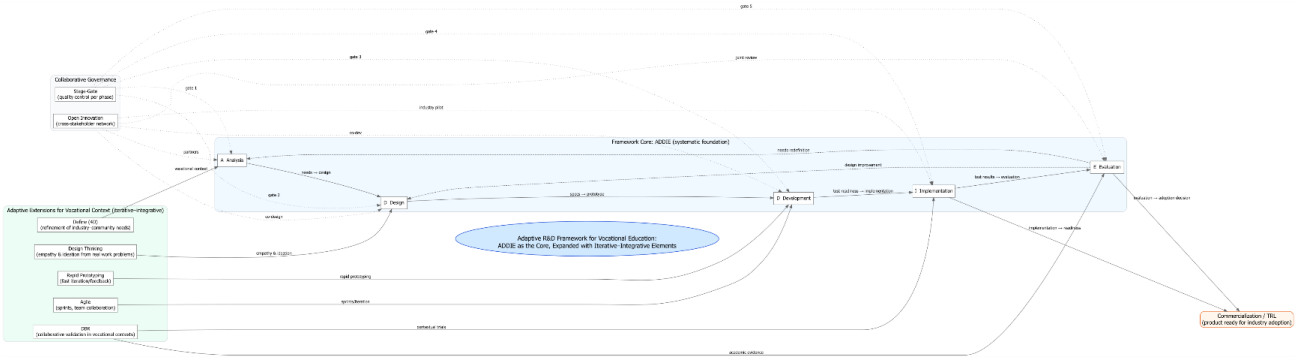

FIGURE 17. *Adaptive R&D Framework for Vocational Education: ADDIE as the Core, Expanded by Iterative–Integrative Elements*

As detailed in Table 13, the adaptive framework unfolds through five recursive phases: (1) Contextual Analysis for identifying needs and stakeholder priorities; (2) Design and Co-Creation integrating user and industrial input; (3) Iterative Development supported by rapid prototyping; (4) Validation and Adaptation ensuring contextual relevance; and (5) Integration and Dissemination for product and skill transfer. Each phase functions not as a fixed step but as a dynamic cycle promoting reflection and refinement.

TABLE 13. *Synthesis of ADDIE as the Core Framework with Adaptive Model Extensions for Vocational Education*

Stage in the Adaptive Framework	Core Framework (ADDIE)	Adaptive Extensions from Other Models	Focus in Vocational Context
Contextual Needs Identification	Analysis	Define (4D)	Industrial needs analysis and user/community requirement assessment.
Conceptual Design and Initial Planning	Design	Design Thinking	Empathy-based and ideation-driven design addressing real-world workplace challenges.
Prototype Development and Rapid Iteration	Development	Rapid Prototyping, Agile	Fast iteration, repeated trials, and responsiveness to industrial dynamics.
Academic Validation and Field Testing	Implementation, Evaluation	Design-Based Research (DBR)	Collaborative validation involving practitioners, students, and industry partners.
Industry Integration and Collaborative Governance	– (Not Explicit in Core ADDIE)	Stage-Gate, Open Innovation	Quality control, industrial networking, and multi-stakeholder collaboration management.
Product Downstreaming and Dissemination	Implementation / Disseminate	Disseminate (4D, Borg & Gall), TRL	Delivering ready-to-adopt products with downstream orientation and industrial sustainability.

The Hybrid Adaptive R&D Framework surpasses traditional models by balancing scientific accountability with operational flexibility. It retains the structural precision of Borg & Gall and ADDIE, the iterative agility of DBR and Agile, and the openness of collaborative innovation systems. Consequently, the model aligns with the evolving paradigm of vocational education—where innovation, evidence-based refinement, and industry relevance must coexist within a unified methodological architecture.

DISCUSSION

This research demonstrates a significant paradigm shift in vocational education research and development (R&D) over the past decade. Bibliometric analysis shows a consistent increase in publications, peaking in 2024, reflecting the evolution of R&D from a linear process to an adaptive and iterative process responsive to industry and societal needs (Mesra et al., 2023; Slamet, 2022). Classical models such as ADDIE, Borg & Gall, and 4D

still dominate, in line with previous research (Gall et al., 2003; Thiagarajan, 1974). However, their rigidity and long development cycles limit their application in the dynamic vocational context that demands rapid, market-oriented innovation.

In contrast, the increasing adoption of Design Thinking, Rapid Prototyping, and Agile frameworks emphasizes empathy, iteration, and collaboration (Brown, 2009; Schwaber & Sutherland, 2017). This underscores the global trend toward integrating procedural disciplines with creative flexibility. Furthermore, the growing focus on Technology Readiness Level (TRL) and product commercialization—aligned with innovation management theory (Gregersen, 1994; Cooper, 1990)—indicates that vocational R&D now targets implementable and scalable outcomes, rather than mere prototypes. The rise of Open Innovation practices (Chesbrough, 2003) also marks a shift toward a collaborative ecosystem connecting academia, industry, and community stakeholders.

The resulting Adaptive R&D Framework (Hybrid ADDIE+) effectively bridges these paradigms. It maintains academic rigor through structured ADDIE stages, enhances flexibility through Agile iteration and Design Thinking, and ensures industry relevance through Stage-Gate and Open Innovation mechanisms. Its emphasis on TRL-based product readiness drives R&D outcomes toward tangible impact and commercialization.

Overall, this hybrid framework represents a methodological evolution appropriate for modern vocational education—systematic yet flexible, reflective yet action-oriented, and scientifically robust yet responsive to industry needs. It offers a comprehensive response to vocational demands for rapid innovation, stakeholder collaboration, and sustainable knowledge transfer in the evolving landscape of applied higher education.

CONCLUSSION

This study provides comprehensive evidence that the evolution of research and development (R&D) in vocational education demands a paradigm shift from rigid procedural frameworks to adaptive and context-sensitive methodologies. The integration of bibliometric analysis and systematic literature review findings confirms that no single R&D model can fully address the dynamic demands of vocational innovation. Classical frameworks such as ADDIE and Borg & Gall provide methodological rigor, while modern models such as Agile, Rapid Prototyping, and Design Thinking provide iterative flexibility and user-centered responsiveness. The proposed Hybrid Adaptive R&D (ADDIE+) framework synthesizes these advantages—maintaining scientific accountability while enabling rapid iteration, stakeholder collaboration, and product readiness through Technology Readiness Levels (TRLs) and Open Innovation mechanisms.

This framework not only aligns with global trends but also addresses the unique needs of vocational education, namely responsiveness to industry demands, contextual adaptability, and an emphasis on product dissemination and commercialization. Ultimately, the Hybrid ADDIE+ model represents a future-oriented methodological innovation—theoretically grounded, empirically validated, and practically oriented to foster a sustainable vocational ecosystem, capable of continuous learning, innovation, and social impact.

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Implementation of Character Education Integrated With History Subjects in Vocational High Schools in The Special Region of Yogyakarta

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Abstract. The National Character Education Movement constitutes a strategic national agenda aimed at cultivating a character-driven society in Indonesia. This agenda is operationalized in schools through the reinforcement of character education, primarily based on the 2013 curriculum. History, as a compulsory subject, is implemented in vocational high schools (Sekolah Menengah Kejuruan, SMK), which possess distinct characteristics due to their focus on productive learning. This study aims to examine: 1) the realities of implementing character education integrated with history in SMKs,
2) obstacles encountered in its implementation, and 3) efforts undertaken to execute the integrated character education program effectively. The study employs an evaluation research design combining quantitative and qualitative approaches. The population comprises SMKs in the Special Region of Yogyakarta, with a sample of six SMKs categorized as high, medium, and low. Data sources include principals, teachers, and students, while data collection techniques encompass questionnaires, interviews, and observations. Data analysis involves descriptive quantitative and qualitative methods. Findings reveal that: 1) the character education program in SMK N I Yogyakarta, SMK N 2 Depok Sleman, and SMK N I Sedayu Bantul is integrated across curricular and extracurricular activities; 2) obstacles include learning system limitations, suboptimal understanding among teachers and staff, insufficient student awareness of character education significance, and inadequate media, equipment, and program support, resulting in less effective classroom implementation; 3) schools have established character monitoring teams, mandated teacher assessments of spiritual and social aspects, conducted evaluations based on teacher assessments, intensified program socialization among teachers, staff, and students, and provided supporting tools for program implementation.
Keywords: implementation; education; character.

INTRODUCTION

The primary challenge facing Indonesia today lies in the multifaceted nature of the nation's character, necessitating a responsive approach from both the state and society. In the era of the Asian economic community, individuals are required to compete and collaborate while optimizing their various potentials. Among these potentials, creativity constitutes a crucial attribute that can be developed through education and environmental stimulation. Creativity is an innate potential present from the prenatal stage and can be nurtured through educational and training interventions. Individuals with superior creativity can create opportunities to sustain themselves within the Asian economic community. Creativity plays a vital role in navigating limitations and generating solutions that facilitate life management. However, creativity may decline due to multiple factors, including life stressors, anxiety, low motivation related to self-concept, complacency with stagnant conditions, fear of failure, laziness, negative moods, and contemporary technologies that encourage instant thinking. Optimizing creativity is therefore essential for enhancing human resources as a strategic step in addressing the demands of the Asian economic community.

National Law No. 20 of 2003, Article 1, paragraph 2, emphasizes that national education must continuously adapt to societal developments. Education, as a systemic entity, is an integral part of community, national, and state life. Consequently, the education system, while not value-free or culture-free, is closely linked to local, national, and global communities. Societies aiming to maintain and advance their existence must endeavor to render their education systems more dynamic and responsive to ongoing changes and prevailing trends (Siswoyo, 2013).

Human resource development can be facilitated through education and training, particularly in higher education institutions. Universities function as educational agents responsible for producing superior

generations, exemplified by Universitas Negeri Yogyakarta. This institution trains prospective educators for both formal and non-formal educational contexts. Students, as future educators, are stimulated to develop into distinguished generations (Elkins, 2007). Such superior generations are expected to exhibit exemplary character rooted in Indonesia's national identity, cultivated through educational processes. Character education is operationalized through eighteen core values derived from religion, Pancasila, culture, and national education objectives: religious, honest, tolerant, disciplined, hardworking, creative, independent, democratic, inquisitive, nationalistic, patriotic, appreciative of achievements, communicative, peace-loving, fond of reading, environmentally conscious, socially responsible, and accountable (Kemdiknas, 2011). Prospective educators must embody these values, particularly creative-communicative traits, to optimize teaching and achieve educational goals.

The Ministry of National Education commits to modeling and implementing character education. The national movement for character education has been disseminated across educational institutions and has become a priority within the national development program. The Ministry's vision emphasizes cultivating Indonesian individuals who are comprehensively intelligent, competitive, and dignified. Comprehensive intelligence encompasses spiritual, emotional, social, intellectual, and kinesthetic dimensions. Strategic planning is grounded in Law No. 20 of 2003 concerning the National Education System, which asserts that education constitutes a conscious and planned effort to foster learning environments that enable learners to actively develop their potentials, including spiritual strength, self- control, personality, intelligence, noble character, and necessary skills for individuals, society, nation, and state. Character education is similarly reflected in the vision and mission of other educational institutions, which aim to produce graduates who are not only intelligent but also morally upright.

Government attention to character development is further formalized through Presidential Regulation No. 87 of 2013 concerning the Strengthening of Character Education. Strengthening Character Education (Penguatan Pendidikan Karakter or PPK) is a movement under the responsibility of educational units to reinforce student character by harmonizing emotional, cognitive, and physical development with collaboration among schools, families, and communities as part of the National Mental Revolution (Gerakan Nasional Revolusi Mental). PPK aims to prepare students as Indonesia's golden generation in 2045 with Pancasila-based character and values to navigate future challenges. It seeks to position character education as the core of the national education platform across formal, non- formal, and informal channels while respecting Indonesia's cultural diversity. PPK also aims to revitalize and strengthen the potential and competencies of educators, educational staff, students, society, and families in its implementation.

Article 3 of the Presidential Regulation stipulates that PPK is implemented by integrating Pancasila values into character education, encompassing religiousness, honesty, tolerance, discipline, hard work, creativity, independence, democracy, inquisitiveness, nationalism, patriotism, achievement appreciation, communication skills, peace-loving, reading interest, environmental care, social care, and responsibility. PPK is implemented in formal educational units through intramural, co-curricular, and extracurricular activities, within and outside the school environment. Implementation follows school-based management principles under the responsibility of school principals and teachers. Human innate abilities develop in relational contexts with the social environment (Rousseau). In the interaction between individuals and society, human conduct is guided by ethical and moral frameworks (Foerster, Marx, Kohlberg, and Dithrey). Noble character is not innate but cultivated through long-term processes of upbringing and education. In Arabic, character (akhlaq) refers to the disposition or habitual conduct of performing good deeds. Al-Ghazali (2010) describes akhlaq as behaviors stemming from a virtuous heart.

This study focuses on a detailed evaluation of character education integrated with history lessons in vocational high schools (Sekolah Menengah Kejuruan, SMK) in the Special Region of Yogyakarta (DIY). The research examines the actual implementation of integrated character education programs, the character education content within history lessons, and the effectiveness of program implementation in SMK. Findings are expected to provide valuable input for schools and teachers to dynamically develop curricula, particularly regarding the planning, execution, and evaluation of character education integration. Based on the background outlined, the research questions are formulated as follows:

1. What is the reality of implementing character education programs integrated with subject matter in SMK?
2. What obstacles have emerged in implementing character education integrated with subject matter?
3. What strategies can overcome challenges in the implementation of character education programs integrated with subject matter in SMK?

RESEARCH METHOD

The present evaluation study examines the character education program integrated with history

subjects in vocational high schools (Sekolah Menengah Kejuruan or SMK) in the Special Region of Yogyakarta (DIY). The study employs purposive sampling to select three schools as research sites, namely SMK N 1 Yogyakarta, SMK N 2 Depok Sleman, and SMK N 1 Sedayu Bantul. The focus of this research is to assess the implementation of character education within the context of history instruction at these institutions. This research adopts an educational evaluation design with both quantitative and qualitative methodological approaches. Given its evaluative nature, the study applies criteria of program success to analyze the implementation of character education, particularly its integration with history subjects at SMK N 1 Yogyakarta, SMK N 2 Depok Sleman, and SMK N 1 Sedayu Bantul.

The study collects both quantitative and qualitative data. Quantitative data are obtained from closed-ended questionnaires, which capture information regarding the extent of character education implementation integrated with history subjects in the selected SMKs. These data are intended to provide an empirical representation of the current state of the integrated character education program. Qualitative data are gathered from open-ended questionnaires, allowing respondents to describe their experiences and perceptions concerning the character education program within the history curriculum. Data collection is conducted through in-depth interviews with school principals, history teachers, and students. The primary instrument for data collection consists of an interview guide designed to investigate the realities of the integrated character education program in SMKs. The instrument assesses program implementation by focusing on three validated aspects: instructional design, instructional execution, and learning evaluation.

Instrument validity is ensured through expert validation, which evaluates the feasibility and appropriateness of the instrument based on expert judgment. Qualitative data analysis is conducted to derive meaningful interpretations by analyzing content to determine the coherence between quantitative and qualitative findings regarding the integrated character education program in SMKs. The study employs interactive analysis techniques (Miles & Huberman, 1984), which involve three interrelated components: data reduction, data display, and conclusion drawing or verification. These activities occur interactively with ongoing data collection, forming a cyclical process that continues until a comprehensive understanding is achieved. Throughout this process, the researcher continually moves among the three analytical components while collecting data, maintaining iterative engagement until the analysis is complete.

RESULTS AND DISCUSSION

Results

The research was conducted at SMK N 1 Yogyakarta, SMK N 2 Depok Sleman, and SMK N 1 Sedayu Bantul, involving three school principals, six history teachers, and twelve students, totaling twenty-one respondents. Respondents were requested to provide assessments and explanations through correspondence. School principals and teachers were asked to elaborate on history learning as an effort to instill historical awareness and nationalism. Meanwhile, some students were asked to evaluate the history learning process, particularly the teaching methodologies employed by teachers, and to identify efforts to actualize values of historical awareness and nationalism both academically in learning and in behavior formation.

Character education programs integrate curricular and extracurricular activities. According to teachers, these programs effectively improve students' character. Observed changes indicate character improvement following program implementation compared to prior conditions. Character education initially requires compulsion and structured enforcement, ultimately resulting in habituation (S1, Interview, September 14, 2025). Most students also acknowledged the significant role of character education in providing foundational guidance, which is reflected in improved behavior (G1, Interview, September 14, 2025).

A weakness of the character education program is the limited support from various stakeholders, including teachers and staff. While core teachers strive to implement the program, several other teachers and staff remain uncooperative, thereby diminishing the program's effectiveness (D2, Interview, September 14, 2025). This lack of support hampers optimal program implementation. Additionally, some students exhibit apathy, demonstrating insufficient engagement in character education activities. Although students generally achieve a minimum grade of B, their behavior and learning engagement vary, including inconsistencies in conduct and dress (S2, Interview, September 15, 2025).

This study primarily focuses on character education programs that promote historical awareness and nationalism among students. Interviews with students regarding the implementation of these values in history learning indicate that schools and teachers actively seek to instill historical awareness and nationalism (R1, Interview, September 15, 2025). Observations and interviews further reveal that students positively evaluate teachers' efforts, learning materials, teaching methods, available facilities, and classroom climate as conducive to these goals (R2, Interview, September 15, 2025). History learning materials utilize textbooks standardized by BSNP, including publications from Erlangga Jakarta, Grasindo, Yudistira, and other recognized publishers (Observation, September 12, 2025).

The teaching methods are also considered effective, with some history topics delivered via team teaching, optimizing the learning process. Facilities support learning through a moving class system, which allows a dedicated history classroom scenario. Teaching media are adequate, complemented by sufficient internet access. Nevertheless, the exemplary schools lack an IPS laboratory, including a history laboratory, with only initial planning underway (KS, Interview, September 14, 2025).

Students report limited motivation and engagement in history compared to other subjects, particularly those assessed nationally. Nonetheless, classroom climate remains conducive and interactions among students and between students and teachers are positive (Observation, September 14, 2025). A notable challenge is students' perception of history as boring, particularly since it is not examined nationally (R4, Interview, September 14, 2025). One student remarked that while teachers perform well, the subject remains personally irrelevant, reflecting a concerning trend regarding young people's disregard for social studies and history, which are vital for national character development. In contrast, history teachers evaluate their performance, learning materials, methods, and facilities as very good.

Teachers report delivering lessons effectively despite student motivation issues and limited teaching hours (G1, Interview, September 15, 2025). The limited schedule hinders efforts to instill historical awareness and nationalism due to the dense curriculum. One teacher commented on the difficulty of fostering these values in forty-five-minute weekly sessions while covering substantial material (G2, Interview, September 14, 2025). Teachers consider their methods, materials, and facilities highly effective relative to other schools in the Special Region of Yogyakarta.

School principals evaluate history teachers' performance as satisfactory, noting visible efforts to instill historical awareness and nationalism (KS, Interview, September 15, 2025). Principal assessments are conducted via biannual supervision. Plans include establishing an IPS laboratory to enhance history learning quality, with preliminary studies conducted at both secondary schools and universities. Strategic efforts to cultivate historical awareness involve developing a history or IPS laboratory oriented toward quality learning processes.

Students' actualization of historical awareness and nationalism reflects positive outcomes. Students acknowledge the importance of historical awareness for national culture development and nationalism for fostering unity (R6, Interview, September 15, 2025). SMK N 1 Yogyakarta continues to develop character education, integrating historical awareness and nationalism. Weekly flag ceremonies and other socially oriented activities support these objectives. Academic competencies are also considered; the school's minimum competency criteria (KKM) for history is 7.6. Based on final semester examinations of the 2025/2026 academic year, students achieved an average score of 83.67, indicating excellent academic proficiency exceeding the KKM standard.

Historical awareness as a learning outcome refers to students' ability to comprehend the significance of national history for their future life. It reflects an internalized understanding of historical meaning and its function in education. Teachers implement historical awareness through: a) fostering reflection on the importance and essence of history for the present and future; b) emphasizing self and national identity to enhance awareness; c) promoting historical culture for national cultural preservation; and d) encouraging students to protect national historical heritage both locally and more broadly.

Nationalism in this study refers to students' attitudes and behaviors reflecting loyalty and dedication to the nation. These attitudes manifest in history learning and daily activities, promoting awareness of national identity and dynamics. Strategies to cultivate nationalism include: a) instilling pride in Indonesia by exploring its historical, cultural, and natural uniqueness; b) fostering love for the homeland through education emphasizing national loyalty; c) promoting willingness to sacrifice for the nation by prioritizing public over personal interests; d) teaching respect for diversity within a heterogeneous society; e) nurturing appreciation for cultural diversity; f) honoring national heroes; and g) prioritizing public interest above personal gain.

Challenges in implementing character education at SMKs include: 1) a curriculum dominated by formal classroom activities emphasizing content rather than substantive character development; 2) inconsistent understanding among teachers and staff in fostering character, leading to inconsistency; 3) students' limited appreciation for character education, focusing on knowledge and skills while neglecting spiritual and social competencies; and 4) insufficient media, tools, and program support, reducing classroom effectiveness (G3, Interview, September 14, 2025).

School strategies to implement character education comprise: 1) establishing a character education monitoring team responsible for program design, implementation, and evaluation; 2) requiring teachers to continuously assess spiritual and social aspects of student character; 3) evaluating student character development and providing recommendations to enhance learning quality; 4) intensively socializing the program to teachers, staff, and students through curricular and extracurricular activities; and 5) providing supporting facilities and resources to facilitate program implementation in all activities.

Discussion

The findings of this study indicate that character education programs at SMK N 1 Yogyakarta, SMK N 2 Depok Sleman, and SMK N 1 Sedayu Bantul effectively contribute to the development of students' character, particularly in fostering historical awareness and nationalism. This finding aligns with previous literature that defines character as a set of values, beliefs, and behaviors essential for achieving life goals (Muchlas, 2012: 22; Anita Yus, 2008). In line with Kurtus's perspective, character is observable through behavior, reflecting an individual's moral and mental qualities, which distinguish them from others (Furqon Hidayatullah, 2010: 16; Kurtus in Tuhana, 2011:18). Similarly, the study reveals that teachers and students recognize character as something cultivated through continuous practice and reflection rather than inherited traits (Helen G. Douglas in Samani & Hariyanto, 2012:41).

The implementation of character education through both curricular and extracurricular activities corresponds with the principles outlined in Presidential Regulation No. 87 of 2017. Curricular activities provide reinforcement of character values within the learning process, whereas extracurricular activities broaden students' potentials, talents, and social competencies (Perpres No. 87/2017, Articles 7(5) and 9(2)). The research findings corroborate this framework, as schools integrate activities such as flag ceremonies, history learning in dedicated history classrooms, and the use of various media and internet access to support students' moral and civic development. However, limitations exist, such as insufficient support from some teachers and staff, constrained teaching hours, and students' apathy toward history learning, which partially hinders the full actualization of character values in practice. This observation highlights the gap between policy intentions and practical implementation, particularly regarding consistent reinforcement across all educators and activities.

The research also demonstrates the alignment of teaching practices with the conceptualization of character as comprising attitudes, intellectual capacities, and ethical behaviors, including honesty, responsibility, and commitment to social contribution (Michael Novak in Lickona, 2013:81). Students' responses suggest an increasing awareness of historical and nationalistic values, supporting the literature that emphasizes the cultivation of positive character traits through internalization of moral and civic principles (Suyadi, 2013:7-9; Kementrian Pendidikan Nasional, 2010). The study confirms that embedding historical awareness within character education can enhance students' understanding of national identity and social responsibility.

Nevertheless, certain inconsistencies were observed. While students generally recognize the importance of historical awareness and nationalism, their engagement in history learning is lower compared to other subjects that are assessed nationally. Some students perceive history as less relevant, reflecting a partial divergence from the ideal conceptualization of character formation that emphasizes habituation and reflection in daily behavior (Kurtus in Tuhana, 2011:18). This gap indicates that character education requires not only structured programs but also strategies to increase student motivation and perceived relevance of subjects such as history.

In terms of program implementation, the study confirms the importance of a supportive school environment, continuous teacher assessment of character aspects, and monitoring mechanisms, as recommended in the literature on character education development (Kementrian Pendidikan Nasional, 2010; Perpres No. 87/2017). The strategic plan to establish an IPS laboratory also reflects alignment with best practices in creating an interactive and resource-rich learning environment to reinforce character values, which is consistent with the principle that character is shaped through experiential learning and habitual practice (Muchlas, 2012:22; Helen G. Douglas in Samani & Hariyanto, 2012:41).

In addition, the study demonstrates considerable convergence with the theoretical foundations of character education in the literature, particularly regarding the cultivation of moral and civic values through structured learning and habitual practice. However, gaps remain in terms of students' motivation, engagement, and the consistency of program implementation across all school personnel. These findings highlight the need for integrated strategies that combine curriculum design, extracurricular activities, and ongoing support to fully realize character education objectives.

CONCLUSION

Character education programs at SMK N I Yogyakarta, SMK N 2 Depok Sleman, and SMK N I Sedayu Bantul are implemented through integrated curricular and extracurricular activities, producing observable improvements in students' character. Initially perceived as compulsory, students gradually internalize character education, resulting in enhanced behavior and social competence. Teachers report the program as effective in fostering essential personal and social skills, although student engagement varies. Implementation challenges persist due to limited support from some teachers, staff, and students, inconsistencies in the application of character education, a curriculum predominantly oriented toward academic content, and

inadequate instructional resources. Students often prioritize academic achievement over spiritual and social development, reflecting partial engagement with character education objectives. To address these challenges, schools have established monitoring teams, mandated continuous assessment of students' spiritual and social character, conducted evaluations with actionable recommendations for teaching improvement, and intensified program socialization among teachers, staff, and students. Additionally, schools endeavor to provide supporting resources to facilitate program implementation. These initiatives collectively enhance the effectiveness and sustainability of character education in shaping students' character.

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The Transformation Of School Principals' Leadership In Strengthening Quality Culture In The Digital Era A Study Of Vocational High Schools In Yogyakarta

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Abstract. School leadership holds a strategic role in sustaining a quality oriented culture within vocational education amid the digital era and Society 5.0. Leadership transformation is required to enhance school governance effectiveness, optimize technology utilization, and align educational practices with labor market demands. Vocational high schools are expected to adapt to technological change in order to produce graduates with clearly defined competencies and employment readiness, which requires principals to implement innovative and accountable leadership strategies that strengthen quality culture. This study examines the transformation of principal leadership in reinforcing quality culture at vocational high schools in Yogyakarta during the digital era and identifies strategies for integrating technology to improve educational quality and students' work readiness. A qualitative approach with descriptive analysis was employed. Participants included principals, teachers, administrative staff, and students directly involved in educational and managerial processes. Data were collected through interviews, observations, and document analysis to obtain an in depth understanding of leadership practices in quality culture development. The findings indicate that principals significantly influence educational quality through transformational leadership that promotes active participation among teachers and students. The integration of technology in learning processes and the systematic development of teachers' digital competencies are essential for preparing students for contemporary workforce challenges. Strategies such as improving facilities, implementing continuous professional development, and strengthening stakeholder collaboration contribute to sustained quality culture and reinforce the relevance of vocational education in the digital era.
Keywords: Leadership Transformation; School Principals; Quality Culture; Digital Era; Vocational High Schools; Society 5.0

INTRODUCTION

Rapid technological and informational advances in the twenty first century have fundamentally reshaped educational demands. The emergence of Society 5.0, initiated in Japan, emphasizes the integration of big data, artificial intelligence, and the internet of things to foster an inclusive and sustainable society. In education, this context necessitates structural changes in institutional management and human resource development to cultivate adaptive and globally competitive competencies aligned with accelerated technological change (Nakamura, 2018). Vocational high schools in Yogyakarta occupy a strategic position in preparing skilled labor for industrial sectors. These institutions face increasing pressure to produce graduates who possess technical proficiency and the capacity to adapt to digital transformation. This condition underscores the need for effective principal leadership to institutionalize a sustainable quality culture as a determinant of educational performance in vocational education.

Principal leadership directly influences the formation of a quality culture through consistent practices that support instructional effectiveness, efficient resource management, and competency development among teachers and educational staff in response to industrial demands (Timsina & Iyer, 2021). In this capacity, principals function not only as administrative managers but also as strategic leaders who align school vision, mission, and values with institutional quality objectives. Empirical evidence indicates that transformational leadership strengthens quality culture by prioritizing staff empowerment and shared vision development (Leithwood et al., 2020). In vocational schools in Yogyakarta, principals have translated this leadership approach into policies supporting industry based curricula, teacher capacity building, and instructional technology integration. These initiatives are reinforced through the creation of school environments that promote professional confidence, collaboration, and commitment to measurable quality standards.

At SMK Negeri 2 Yogyakarta, the principal established an industrial partnership with PT. Yogya Presisi Tehnikatama Industri to implement Computerized Numerical Control technology, enabling students to

acquire hands on experience with contemporary industrial systems. This collaboration illustrates the alignment of vocational education with labor market requirements through direct industry engagement (SMK Negeri 2 Yogyakarta, 2024). Similarly, the principal of SMK Muhammadiyah Imogiri facilitated a seminar entitled Paradigma Baru Pembelajaran di Era Industri 4.0 dan Society 5.0 to enhance teachers' and students' understanding of digital era instructional adaptation. This initiative reflects a quality culture that prioritizes educator capacity development to ensure responsiveness to technological and industrial change (Suara Aisyiyah, 2024).

At SMK Negeri 7 Yogyakarta, the implementation of the Aplikasi Penjaminan Mutu SMK 2.1 reinforced standardized quality assurance in instructional and managerial processes. This application is complemented by Gelar Budaya and Gelar Karya projects that promote student creativity while integrating character education with technical competence to address global challenges (SMK Negeri 7 Yogyakarta, 2024). At SMK Perindustrian Yogyakarta, the principal introduced international Test of English for International Communication certification to strengthen students' global communication skills. This program enhances graduate competitiveness in international labor markets and reflects leadership commitment to globally oriented competency development in the context of Society 5.0 (SMK Perindustrian Yogyakarta, 2023).

Principals in vocational schools in Yogyakarta therefore play a central role in cultivating quality culture through technology driven strategies, industrial collaboration, and systematic competency development for teachers and students. These leadership practices support vocational education that aligns with national standards while responding to global workforce demands in the digital era. This study examines the transformation of principal leadership in strengthening quality culture in vocational high schools in Yogyakarta and analyzes leadership strategies that support graduate readiness for contemporary labor market requirements. Based on this background, the research questions are formulated as follows.

1. How does principal leadership transformation strengthen quality culture in vocational high schools in Yogyakarta in the digital era?
2. What strategies do principals employ to integrate technology in improving educational quality and students'
   readiness for the workforce?

RESEARCH METHOD

This study employs a qualitative descriptive case study to examine principal leadership strategies in strengthening a digitally oriented quality culture in vocational secondary schools in Yogyakarta within the context of Society 5.0, with the primary focus placed at the outset on explaining leadership practices, influencing factors, and encountered challenges. The research was conducted in selected vocational secondary schools in Yogyakarta due to their institutional diversity in quality culture implementation and technological readiness, while participants comprised principals, teachers, administrative staff, and students selected through purposive sampling based on their direct involvement and relevant experience. Data were obtained from primary sources through in depth semi structured interviews with principals, teachers, administrative staff, and students, and from secondary sources including school policy documents, annual reports, and scholarly literature related to leadership, quality culture, and Society 5.0.

Data collection techniques included interviews to explore leadership strategies and constraints, participatory observation to examine enacted quality culture practices and technology use, and documentation analysis to assess alignment between policies and leadership actions. The collected data were analyzed using thematic analysis involving data condensation, coding, thematic organization, and conclusion drawing. Data credibility was ensured through triangulation across interviews, observations, and documents, as well as member checking to confirm the accuracy of findings with participants. Ethical considerations were addressed by ensuring confidentiality and anonymity, providing clear research explanations, obtaining written informed consent, and restricting data use to academic purposes.

RESULTS AND DISCUSSION

Results

This study synthesizes perceptions and evaluations of principals' leadership across vocational high schools. Drawing on in depth interviews with teachers, principals, and students, the findings delineate leadership styles, strategies for digital transformation and quality culture, as well as emerging challenges and expectations. Leadership is predominantly progressive and transformational, although the level of implementation and adoption, particularly in digitalization, varies across schools. From teachers' perspectives,

principals are viewed as progressive, adaptive, and strongly committed to institutional advancement. Leadership is manifested through tangible physical and digital transformations, with principals acting as visionary leaders who provide direction while modeling innovation through direct involvement. This approach fosters a dynamic environment oriented toward measurable progress.

The prevailing leadership style is democratic, responsive, and situationally agile. Openness to teachers' aspirations and inclusive decision making are supported by effective communication forums that enable participation. Consistency, sustained concern for all school members, and program continuity adapted to contextual change further characterize this leadership. Principals conceptualize leadership transformation as adaptive capacity in response to digital technological change aimed at school advancement. Transformation is framed primarily as a shift in collective mindset from manual to digital work practices rather than mere technology adoption. Principals articulate a clear vision of educational quality, communicated consistently through concrete programs such as BMW (Bekerja, Melanjutkan, Berwirausaha) for graduates and embedded within daily curricular practices.

Students express strongly positive perceptions of principals, describing them as firm and disciplined in rule enforcement while remaining approachable, open, and socially engaged in school activities. This perception reflects an effective balance between authority and relational proximity. Principals are also regarded as supportive and proactive in facilitating student activities, including student organizations and competitions. Their presence in school events and introduction of new cultures, such as cadet oriented practices or block learning systems, are highly valued. Students report noticeable changes within the last one to two years, including stricter discipline systems, curricular adjustments, character development emphasis, and improved facilities such as new laboratories.

In the dimension of Inspirational Motivation, principals demonstrate effectiveness in articulating clear visions and motivating school members toward shared goals. Strategies include consistent role modeling, structured vision communication tools, and dissemination of school achievements to cultivate competitive ethos. Students experience this motivation through ceremonies, morning assemblies, classroom visits, and motivational media that reinforce recognition and achievement orientation. The Idealized Influence dimension indicates that principals function as credible role models through productivity, direct leadership in transformation, punctual discipline, and attention to environmental order. Students identify principals as exemplars of discipline, professionalism, religiosity, openness to innovation, and environmental responsibility, reflecting leadership through example. Principals' early adoption of technology further reinforces this modeling effect.

Within Intellectual Stimulation, principals actively encourage innovation and non stagnation among teachers and students. This is enacted through autonomy in exploring learning platforms and methods, openness to development ideas, and support for external collaboration. For students, this support materializes in innovation spaces, project based tasks, and critical feedback that positions principals as facilitators rather than controllers. The Individualized Consideration dimension reveals efforts to address individual needs of teachers and staff, although depth varies. Support includes facilitative assistance, consideration of personal conditions in task allocation, and mentoring. From the student perspective, principals are perceived as receptive to student voices through channels such as student councils, forums, and direct dialogue, with generally constructive responses.

Quality culture strengthening constitutes a core element of school identity and is pursued intentionally beyond accreditation requirements. This includes environmental transformation, implementation of cultural programs such as 5S systems, literacy and religious activities, and continuous operation of the Internal Quality Assurance System. Quality slogans and resource efficiency policies complement these efforts. Principals aspire for a digital quality culture to become an embedded school identity that supports innovative and adaptive ecosystems and produces technically competent graduates with strong character. Students perceive quality culture maintenance through commitment to process improvement, adequate laboratory facilities, and, in some cases, participation in anonymous online surveys evaluating teaching and services. Strict discipline is also interpreted as a mechanism for institutional reputation preservation.

Digital transformation represents a high commitment domain in which principals act as initiators, facilitators through infrastructure provision, and motivators through training and socialization. A deliberate shift from manual to digital mindsets is pursued through phased planning based on medium and long term roadmaps. Fundamental strategies begin with infrastructure strengthening and human resource capacity building via targeted training. Teachers are granted autonomy in selecting platforms aligned with vocational and industry needs, supported by quality management and school development teams through digital supervision and monitoring. Digital implementation integrates technology into learning, administration, assessment, and services. Teachers are encouraged to develop digital content and utilize learning platforms, while administrative systems include electronic reporting, certification, and attendance. Some schools have developed internal applications through teachers or information technology students.

From students' perspectives, digital transformation remains the most challenging area. Technology

use is perceived as partial, with continued reliance on manual attendance and mixed assignment submission systems. Principal support is experienced more as directional guidance than provision of integrated systems. Students explicitly expect enhancement of integrated digital systems such as electronic attendance, learning platforms, and assignment portals. Transformational leadership implementation, particularly in digital transformation, faces persistent challenges. Digital competence gaps among senior teachers, parents, and students, resistance to change, and uneven adaptation capacities constitute major barriers. Additional challenges include system integration difficulties, application development constraints, concerns regarding program sustainability during leadership transitions, limited competitiveness of instructional content, inadequate practice facilities in certain departments, and inconsistent teacher quality.

The dominant expectation is the sustainability and contextual development of digital transformation and quality culture regardless of leadership succession. This requires specific support, including dedicated information technology expertise for application development and integrated data systems. Large scale training, intensive mentoring, and peer learning mechanisms are necessary to accelerate digital adaptation. Students also expect strengthened infrastructure and fully integrated digital systems, alongside improved teaching quality through method evaluation and structured support. Reflective insights from principals emphasize early initiation of training and socialization, optimization of internal quality assurance from initial stages, and inclusive involvement of school members in planning. The long term aspiration is the establishment of digital quality culture as institutional identity, supported by innovative and adaptive ecosystems and graduates with strong technical competence and character.

Overall, the study demonstrates that vocational school principals have positioned themselves as effective change agents functioning as visionaries, motivators, and role models. Transformational leadership characterized by clear vision, exemplary conduct, individualized support, and sustainable systems has contributed to institutional transformation, particularly in disciplinary culture and facility improvement. Persistent challenges remain in bridging digital disparities and achieving comprehensive and sustainable digital transformation across school operations, indicating the need for long term strategies that integrate structural change with enduring cultural transformation.

Discussion

The transformation of school principal leadership in strengthening quality culture in the digital era constitutes a critical dimension of educational management, particularly within vocational secondary education. Vocational schools play a strategic role in preparing students for evolving industrial demands, positioning principal leadership as a determining factor in educational quality. Rapid technological advancement and pedagogical change require principals to proactively adopt innovations that enhance instructional quality. This study examines how leadership transformation contributes to the development of a sustainable quality culture in vocational secondary schools in Yogyakarta. Transformational leadership theory emphasizes a leader's capacity to enhance follower empowerment through motivation and inspiration (Riski et al., 2021). In the school context, transformational leadership reshapes teachers' work culture and strengthens professional solidarity. Empirical evidence indicates that effective leadership significantly influences teacher commitment and performance, both of which directly affect educational quality (Rosadi, 2023).

A strong quality culture in educational institutions is reflected in the active involvement of all school members, including students, teachers, and principals. Principals are required to create learning environments that support instructional quality and encourage innovation to improve learning outcomes (Megayanti & Asri, 2023). Prior studies demonstrate a positive relationship between school quality culture and student academic performance, underscoring the influential role of principals in cultivating such a culture (Sari et al., 2021). Instructional leadership directs principals to prioritize teaching and learning processes as the core of school improvement (Sanjani, 2019). In the digital era, principals are expected to integrate information technology into instructional practices through online learning platforms and digital collaboration tools. This capacity reflects leadership adaptability in responding to technological change (Werdiningsih et al., 2022). Research findings indicate that principals' technological competence increases student motivation and engagement in learning activities (Fadli & Darmono, 2023).

The instructional leadership role of principals also encompasses teacher professional development. Principals who conduct systematic supervision and provide constructive feedback contribute to improved instructional quality, which subsequently influences student learning outcomes (Primayana, 2016). Technology integration functions not merely as a complementary element but as an effective instrument for improving educational quality. Principals are expected to introduce technology based school management systems, including e learning platforms and online assessment applications, to enhance administrative efficiency (Sapalakkai, 2021). These technologies facilitate information access for teachers and students while increasing transparency in instructional processes.

Findings from vocational secondary schools in Yogyakarta indicate that principals who integrate

information technology into policy implementation demonstrate greater success in fostering a positive quality culture. Institutional effectiveness is closely linked to principals' capacity to utilize technology for quality enhancement (Bajrie & Pujiyati, 2023). Principal leadership is also associated with stakeholder engagement, including parents, communities, and industry partners. Collaboration between schools and industry is essential in vocational education, particularly to ensure curriculum relevance to labor market needs. Active stakeholder involvement enables principals to design competency oriented programs aligned with workforce demands.

Participatory leadership approaches facilitate the involvement of teachers and parents in decision making processes related to school policy. Research evidence suggests that parental engagement contributes to improved school climate and institutional stability. Despite the benefits of leadership transformation, this study identifies several challenges, including resistance to change among teachers accustomed to traditional instructional methods. Gradual engagement strategies supported by targeted professional training are essential to address this issue. Resource limitations, both financial and technological, present additional challenges. Schools with constrained budgets often struggle to provide adequate technological infrastructure and professional development opportunities. Principals are therefore required to formulate strategic initiatives to secure external support from governmental institutions and donors. Performance evaluation constitutes a crucial stage in effective leadership transformation. Principals must establish clear and context relevant indicators to assess program effectiveness. Well formulated evaluation indicators enable the identification of areas requiring improvement.

Transparent and accountable evaluation systems strengthen stakeholder trust. Public dissemination of evaluation outcomes enhances community participation and institutional support, contributing to the reinforcement of school quality culture. The transformation of principal leadership in strengthening quality culture within vocational secondary schools in Yogyakarta demonstrates the necessity of adaptive and integrated leadership practices. Transformational and instructional leadership, technology utilization, stakeholder engagement, and continuous performance evaluation represent essential components supporting sustainable quality improvement. This study offers relevant insights for educational policymakers and provides practical guidance for addressing contemporary educational challenges.

CONCLUSION

This study concludes that principal leadership transformation is central to strengthening a quality culture in vocational high schools in Yogyakarta in the digital era, as principals who adopt transformational and democratic leadership practices are able to create a supportive and innovative school environment that encourages active participation from teachers and students and fosters collective commitment to continuous quality improvement in line with established educational and vocational standards. The findings also show that principals implement deliberate strategies to integrate technology into learning processes to enhance educational quality and students' readiness for the workforce, including the systematic use of digital learning platforms, interactive instructional media, and technology based learning resources, accompanied by targeted training and professional development to strengthen teachers' digital competencies.

The effectiveness of these efforts is reinforced by improvements in educational infrastructure, particularly adequate internet access and appropriate hardware, alongside the strengthening of human resource capacity as a key enabling factor in sustaining digitalized educational practices. Furthermore, continuous evaluation and structured follow up are emphasized as essential mechanisms for assessing the effectiveness of implemented programs and adjusting strategies in response to contextual dynamics, indicating that principals who are responsive to the needs of teachers and students and who base decision making on evaluative evidence are more successful in institutionalizing a sustainable quality culture within vocational schools.

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Performance Evaluation Of The Uny Academic Senate From The Perspective Of The Academic Community

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Abstract. This study evaluates the performance of the Academic Senate at Universitas Negeri Yogyakarta (UNY) from the perspective of the academic community, comprising lecturers and administrative staff. The evaluation focuses on three primary indicators: performance in policy formulation, performance in providing recommendations, and performance in academic supervision. A mixed-methods approach was employed, with data collected through questionnaires and semi- structured interviews. Quantitative data were analyzed using a five-point Likert scale, while qualitative data were descriptively analyzed to reinforce the findings. The results indicate that the Academic Senate at UNY scored 4.3 in policy formulation, 4.4 in providing recommendations, and 3.8 in academic supervision. These findings confirm that the Senate's functions operate effectively, particularly in participatory academic policy formulation and in providing strategic advice to the rectorate. Nonetheless, academic supervision requires enhancement, specifically regarding the involvement of the academic community and the follow-up of evaluation outcomes. The study recommends continuous dissemination of roles and responsibilities, optimization of policy formulation through the establishment of senate regulations, enhancement of the recommendation function, and improved coordination among university bodies.
Keywords: Academic Senate performance, evaluation, academic community, university governance, PTNBH.

INTRODUCTION

Every governmental institution operates with an organizational structure that formally regulates work relationships. According to Indrawan (2020), organizational structure constitutes a crucial element in managing interdivisional work relations. In the context of government institutions, such structures reflect interpersonal and intergroup work interactions aimed at realizing the institution's vision and mission. The primary objective of governmental institutions is to provide public services across strategic sectors in accordance with societal needs. Education is a strategic sector prioritized by the government to develop human resources (Liao & Luo, 2021; Tamvada et al., 2022). Education serves as a focal area for optimizing national human resource quality. Consequently, educational institutions require an organizational structure that functions as a key instrument in achieving the government's vision and mission, which must be effectively utilized by all members of the institution. Organizational structure within educational institutions holds significant importance for the academic community as the main executor of educational vision and mission, including the development of quality human resources. The structure provides insight into the institution's performance and intended objectives. Bo (2022) emphasizes that understanding organizational structure in educational institutions is essential for the academic community, as it influences the optimization of institutional vision and mission attainment. From a work culture perspective, organizational understanding also contributes to enhancing academic performance in delivering optimal services (Sutrisno, 2019). Adequate comprehension of organizational structure fosters a positive work culture and promotes collaboration among individuals in educational settings, ultimately improving loyalty and productivity.

However, empirical evidence indicates that a portion of the academic community across various educational levels possesses insufficient organizational understanding. Tya Astuti (2021) reported that the majority of academic members in primary, secondary, and higher education institutions lack adequate knowledge of organizational structure. This condition results from several factors, including pragmatic orientation and systemic changes within educational institutions. Pragmatic orientation refers to a tendency among academics to prioritize material considerations over optimal service delivery. Such attitudes potentially weaken

organizational culture and diminish service quality. Furthermore, systemic changes within educational institutions often challenge academic adaptation, although such changes are a natural response to evolving societal needs (Demir, 2021). Universitas Negeri Yogyakarta (UNY) exemplifies an educational institution undergoing organizational transformation from a Public Service Agency to a State University with Legal Entity status (PTNBH). This transformation is mandated by Government Regulation Number 35 of 2022 concerning PTNBH Universitas Negeri Yogyakarta. Legal provisions regarding PTNBH are also stipulated in the Indonesian Law Number 12 of 2012 on Higher Education, specifically Article 65 Paragraph 1, which asserts that PTNBH possesses full autonomy in managing quality educational services. In accordance with these regulations, UNY has undertaken a transformation into an outstanding teacher education university through various innovations and progressive changes (Humas UNY, 2022). Such transformations necessitate rapid and accurate adaptation by the UNY academic community, including the strengthening of understanding regarding the university's internal organizational structure.

Research on organizational understanding among academic communities remains limited, particularly in higher education institutions such as UNY. This study aims to identify the level of organizational comprehension among UNY academic members. The findings are expected to provide insights for UNY leadership in formulating work programs and strategies to enhance the capacity and performance of the academic community. Organizational understanding serves as the foundation for establishing a positive, productive work culture oriented toward collaboration and communication among stakeholders. Therefore, the level of organizational understanding among UNY academic members represents a critical aspect for evaluating and improving institutional systems to support the university's vision and mission as a world-class university.

1. Based on the problem identification above, the research questions addressed in this study are as follows:
2. What is the performance of SAU in policy formulation?
3. What is the performance of SAU in providing recommendations?
4. What is the performance of SAU in academic supervision?.

RESEARCH METHOD

This study employed a mixed-methods approach, integrating quantitative and qualitative methodologies, to explore the level of understanding of the civitas akademika at Universitas Negeri Yogyakarta (UNY) regarding the performance of the academic senate. The research design adapted the framework of Jordan (2018), which similarly examined organizational knowledge within UNY. Data were collected using a structured questionnaire assessing organizational understanding and semi-structured interviews conducted with the civitas akademika. The instruments were developed specifically to capture both the quantitative and qualitative aspects of organizational comprehension. Respondents included lecturers and administrative staff from multiple UNY campuses, including the central campus, Bantul, Wates, and Gunungkidul, selected through purposive sampling. Data validity was ensured through triangulation, combining multiple techniques and sources to enhance research credibility (Sugiyono, 2023, p. 368). Quantitative data were analyzed descriptively, calculating percentages of understanding levels based on a Likert scale ranging from 1 (*Tidak Baik*) to 5 (*Sangat Baik*) (John Bacon-Shone, 2020; Suharsimi Arikunto, 2013), with percentage thresholds categorizing comprehension from *Sangat Rendah* to *Sangat Tinggi* (Suharsimi Arikunto, 2013). Qualitative data from interviews were analyzed following Miles and Huberman's (2018, p. 12) model, involving data condensation, presentation, and iterative drawing of conclusions until data saturation was achieved. The study was conducted over three months at Universitas Negeri Yogyakarta.

Figure 1. Research Flow Diagram

The study proceeds through four stages. The preparation stage involves problem identification, literature review, research design, and determination of data sources. The data collection stage covers archival retrieval, expert interviews, and document analysis. The data analysis stage categorizes and compares nationalism in both countries based on social, political, and cultural factors and interprets findings in a broader historical context. The report preparation stage involves manuscript drafting, policy recommendation formulation, and publication to enrich academic discourse. Targeted outcomes include valid historical documents, identification of similarities and differences in nationalism, scientific recommendations on historical-based national insight, publication in journals, and contributions to social and cultural research. This systematic historical approach aims to advance understanding of nationalism in Indonesia and India and inform education and national policy.

RESULTS AND DISCUSSION

Results

This study assesses the performance of the Academic Senate at Yogyakarta State University (Universitas Negeri Yogyakarta, UNY) based on the perceptions of the academic community, comprising lecturers and educational staff. The evaluation employed three primary indicators: (1) performance in policy formulation, (2) performance in providing recommendations, and (3) performance in academic supervision. Based on a five-point Likert scale, the mean scores were as follows:

1. Indicator 1: Performance in policy formulation = 4.3 (very good)
2. Indicator 2: Performance in providing recommendations = 4.4 (very good)
3. Indicator 3: Performance in academic supervision = 3.8 (good)

The study involved 42 lecturers and 15 educational staff who completed questionnaires through purposive sampling (https://unyku.id/evaluasikinerjaSAU_UNY). Additionally, interviews were conducted with 5 lecturers and 4 educational staff, confirming the questionnaire findings that the Academic Senate's performance in fulfilling the three main indicators falls within the very good category.

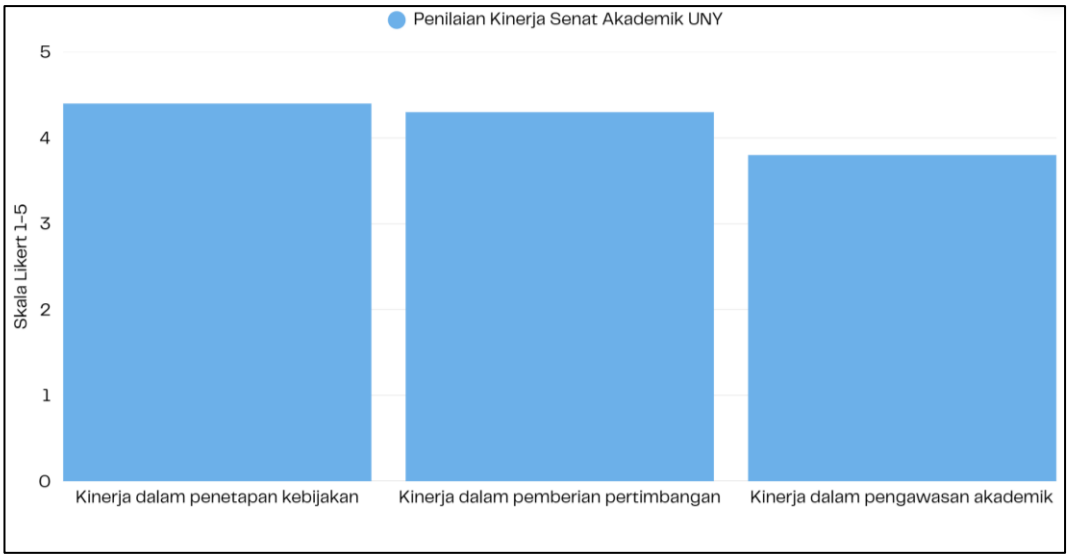

FIGURE 1. *Performance Assessment of the UNY Academic Senate*

These results indicate that the academic community perceives the UNY Academic Senate as performing very well in legislative functions and policy advisory roles, although academic supervision requires further strengthening. When converted into percentage categories based on Arikunto's criteria (2013), the performance ranges from 76% to 88%, classified as high to very high. This demonstrates that the Academic Senate has met the expectations of the academic community in policy formulation, consultative mechanisms, and supervision of the university's academic quality.

Discussion

The performance of the Academic Senate in policy formulation at Universitas Negeri Yogyakarta (UNY) is perceived as highly effective by the academic community. This indicates that the Senate's primary role as a normative and representative body in formulating academic policies has been successfully executed. The policies produced demonstrate adaptability to institutional changes following UNY's transformation into a State University with Legal Entity status (PTNBH). From an organizational theory perspective, the effectiveness of an organization depends

significantly on the clarity of its structure and the roles of its constituent bodies (Mei et al., 2016; Padavic et al., 2020).

The Academic Senate, as a normative body, plays a strategic role in directing macro-level academic policies, including the establishment of academic quality standards, curriculum design, and research ethics. The findings reveal that policy formulation at UNY has incorporated participatory and deliberative principles, engaging faculties and other institutional bodies through plenary meetings and commission mechanisms. The

excellent performance also reflects a robust organizational culture and internal communication. Positive work culture supported by collaborative values and transparency enhances productivity and decision quality (Stankevičienė et al., 2021).

At UNY, collegiality and deliberation within Senate forums constitute important social capital, contributing to academic policies responsive to institutional and societal needs. Nevertheless, there remains a need to strengthen policy dissemination. Some respondents indicated that not all academic staff fully understand the established policies, emphasizing the importance of optimizing official communication channels and enhancing the socialization function of each Senate commission. The highest evaluation was observed in the consultative function, with an average score of 4.4.

This demonstrates that the Academic Senate effectively fulfills its advisory role regarding rectorate policies, particularly in academic development, the establishment of new study programs, academic appointments, and quality assurance. Organizational effectiveness relies on a harmonious relationship between leaders and members, built through two-way communication and proportional delegation of authority (Tiwari & Jha, 2022; Sudirman, 2015). UNY's Academic Senate positions itself as a strategic partner of the rectorate in decision-making rather than a merely symbolic body. Academic staff perceive that the Senate's recommendations are grounded in scholarly analysis and professional ethics, aligning with good university governance principles emphasizing accountability and transparency.

The advisory function is crucial for maintaining a balance between academic autonomy and institutional governance. Additionally, the consultative mechanism exhibits cross-institutional coordination, including collaboration with the Quality Assurance Agency, faculties, and the professors' council. Such collaboration reinforces evidence-based decision- making, as recommended by Bo (2022). Despite this strong performance, respondents noted a need to enhance the efficiency of consultation procedures, as some processes remain time-consuming due to layered bureaucratic mechanisms. Therefore, digitizing consultative processes and establishing an online archival system for Senate decisions are important recommendations to increase the responsiveness of academic advisory functions.

Academic oversight received an average score of 3.8, indicating a good, though improvable, performance. Effective academic oversight depends on an efficient feedback system between supervisors and implementers, clear academic performance indicators, and an institution's capacity for continuous self-evaluation (Stankevičienė et al., 2021). At UNY, Senate oversight is conducted through academic policy evaluation, annual faculty report review, and assessment of the implementation of academic standards. However, direct involvement of the academic community in monitoring requires further expansion. Some respondents also highlighted that the follow-up of oversight results has not been fully publicly disseminated. Effective oversight systems demand open feedback to prevent results from remaining solely administrative (Padavic et al., 2020). Strengthening internal academic audits, enhancing the capacity of oversight commissions, and involving quality assurance bodies are crucial for improving Senate performance. Human resource limitations and high workloads pose additional challenges, as organizational effectiveness may decline under significant administrative pressure (Tiwari & Jha, 2022). Capacity-building strategies, proportional task distribution, and information technology support are therefore prerequisites for achieving an efficient and transparent academic oversight system.

The findings illustrate that UNY's Academic Senate functions effectively as a normative, consultative, and academic oversight body, with two of three indicators rated as very good. This reflects UNY's success in establishing a healthy and participatory academic governance system following its transformation into PTNBH. The Senate serves not only as a policy direction determinant but also as a guardian of the university's academic integrity and ethical standards. This aligns with the perspectives of Özdemir et al. (2020) and Rockman (2020), which emphasize the importance of shared understanding of organizational structures in fostering collective awareness and positive work culture. However, institutional performance is closely tied to the quality of internal communication, information transparency, and inter-organ synergy. The primary recommendations include continuous socialization of duties and functions, optimization of Senate policy formulation through formal regulations, enhancement of the advisory function, and strengthened coordination among university organs.

CONCLUSION

The performance of the Academic Senate has generally been highly effective. Evaluation results based on three primary indicators reveal that the Senate of Universitas Negeri Yogyakarta demonstrates excellent performance in policy formulation, achieving an average score of 4.4, which corresponds to the Very Good category. The Senate also exhibits outstanding performance in providing academic recommendations, with an average score of 4.3, categorized as Very Good. Performance in academic supervision is assessed as good, reflected by an average score of 3.8, which falls into the Good category.

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Comparison Of Indonesian And Indian Nationalism In A Historical Perspective

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Abstract. Nationalism significantly shapes national identity and state policies. This study examines the factors influencing nationalism in Indonesia and India and compares their historical development patterns. Both countries possess extensive histories of independence struggles, providing a valuable context for comparative analysis. The research also investigates the implications of these findings for academic and educational policies. A historical method with a qualitative approach guided this study. The research process involved problem identification, literature review, data collection from primary and secondary sources, comparative analysis, and interpretation of results. Data were gathered from historical archives, official documents, interviews with historical scholars, and relevant academic literature. Comparative analysis focused on social, cultural, and political factors contributing to the formation of nationalism in both countries. Findings reveal that colonial experiences shaped nationalism in both Indonesia and India, but their development patterns differ markedly. Indonesian nationalism emphasizes inclusivity and unity in diversity. Indian nationalism exhibits complexity influenced by caste and religious structures. The educational role in fostering national consciousness also differs: the Indian system highlights local philosophical heritage and traditions, whereas Indonesia integrates nationalism education into the formal curriculum more systematically. These distinctions illustrate how historical, social, and cultural contexts produce unique expressions of national identity in each country.

Keywords: nationalism, national identity, Indonesia, India, comparative historical analysis.

INTRODUCTION

Nationalism is a major factor in the struggle for independence in many countries, including Indonesia and India. Both countries have a long history of fighting colonialism with a strong spirit of nationalism (Kedourie 2013; Taylor 2024). The development of nationalism in Indonesia and India is inseparable from the long history of the great kingdoms that form the national identity of each nation.

In Indonesia, the concept of nationalism can be traced to the glory of the kingdoms of the archipelago such as Sriwijaya and Majapahit. Majapahit, which was founded in 1293 AD by Raden Wijaya, became a large maritime kingdom that controlled most of the archipelago. The Palapa oath pronounced by Mahapatih Gajah Mada reflects the spirit of unity and unity which later became the inspiration for Indonesian nationalism (Munandar 2020; Sanjoyo 2021). Majapahit's vast territory and structured system of government show how the idea of unity has existed since ancient times. The concept of unity in Majapahit was then adopted in the formation of the spirit of Indonesian nationalism in the 20th century (Sholeh, ., and . 2024).

Meanwhile, in India, nationalism also has strong historical roots. The Maurya and Gupta dynasties are examples of great empires that united various regions in the Indian subcontinent (Crawley 2022; Khan M. 2024). Ashoka of the Mauryan Dynasty, for example, spread the teachings of tolerance and unity in his domains, which later became the basis for the struggle of Indian nationalism against British colonialism. In the 19th and 20th centuries, the Indian nationalist movement grew further through figures such as Mahatma Gandhi, who used non-violent strategies to fight for Indian independence (Grishnova Elena et al. 2019).

Both Indonesia and India experienced colonization by foreign powers, which triggered the emergence of national consciousness and the struggle for independence (Aspinall and Berger 2001; Emerson and Chavan 1975; Meng and

Silva 2022). In Indonesia, modern nationalism began to develop since the establishment of Budi Utomo in 1908, the Youth Pledge in 1928, and the Proclamation of Independence in 1945. Indonesian nationalism is heavily influenced by political and military-based struggles. Meanwhile, in India, nationalism emphasizes more on social movements and non-violent resistance through Gandhi's satyagraha strategy.

Thus, this study will compare how nationalism in Indonesia and India developed from a historical perspective, how great empires contributed to the formation of national identity, and how the struggle for nationalism in both countries had similarities and differences in dealing with colonialism. This study will provide insight into how history can be a determining factor in the formation of national identity and modern political policies in each country.

This study aims to analyze the development of nationalism in Indonesia and India in the historical context and identify the factors that affect the differences and similarities in the nationalism movement in both countries. In addition, this study will also compare the impact of nationalism on the struggle for independence and political development after independence, so that it can provide a more comprehensive insight into nationalism in the historical context of the two countries.

This research is also in line with the Strategic Plan (Renstra) of Yogyakarta State University (UNY) research, especially in the aspect of "Development of superior, high-value research, which is able to overcome local, national, and global problems in the fields of education and innovation in the fields of science, technology, mathematics and mathematics, arts, culture, and sports." Through this research, it is hoped that a deeper understanding of the contribution of history in shaping nationalism in Indonesia and India can be obtained, as well as how these insights can contribute to the development of social sciences and history education at the national and international levels.

RESEARCH METHOD

This study employs historical methods to systematically and objectively examine the development of nationalism in Indonesia and India. The historical approach is appropriate for understanding nationalism as a concept shaped through complex social, political, and cultural processes (Toynbee, 2017; Warrington, 2008). Analysis focuses on historical documents and sources to trace factors influencing nationalism, including colonial policies, resistance movements, intellectual thought, and socio-political dynamics (Kuntowijoyo, 2013). A comparative framework highlights similarities and differences between Indonesian and Indian nationalism, emphasizing the influence of colonial experiences and struggles for independence. Data consist of primary and secondary sources. Primary sources include official documents from colonial and post-colonial periods, contemporary newspapers and magazines, manuscripts, letters, memoirs of nationalist figures, and archival data from historical institutions. Secondary sources encompass books, journals, prior research, and analyses by historians, sociologists, and political scientists. Data collection follows historical research steps: heuristic tracing and collecting sources, verification through cross- referencing, interpretation of historical meaning and context, and historiography to construct comprehensive historical narratives.

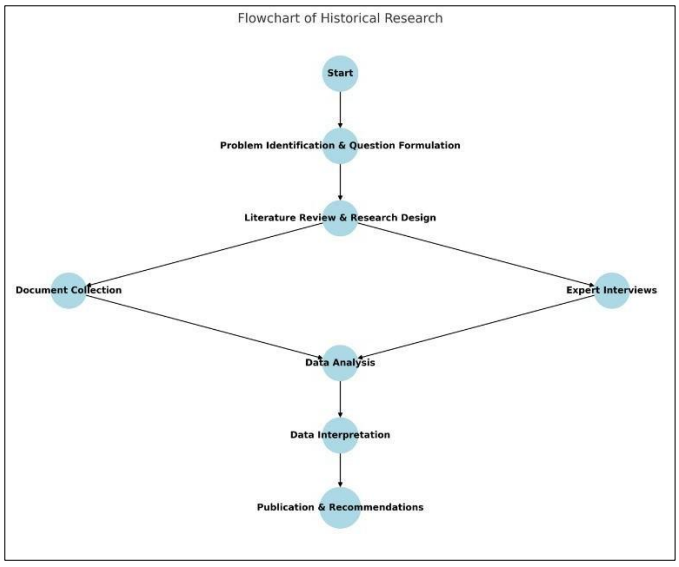

FIGURE 1. *Research Flow Diagram*

The study proceeds through four stages. The preparation stage involves problem identification, literature review, research design, and determination of data sources. The data collection stage covers archival retrieval, expert interviews, and document analysis. The data analysis stage categorizes and compares nationalism in both countries based on social, political, and cultural factors and interprets findings in a broader historical context. The report preparation stage involves manuscript drafting, policy recommendation formulation, and publication to enrich academic discourse. Targeted outcomes include valid historical documents, identification of similarities and differences in nationalism, scientific recommendations on historical-based national insight, publication in journals, and contributions to social and cultural research. This systematic historical approach aims to advance understanding of nationalism in Indonesia and India and inform education and national policy.

RESULTS AND DISCUSSION

1. *The Ideological Background of Nationalism in Two Nations*

Nationalism shaped the formation of nation-states and drove the struggle for independence across Asia. Indonesia and India, both with long histories of colonialism, display unique nationalist trajectories while sharing a common commitment to liberation and socio-cultural plurality (Emerson & Chavan, 1975; Kedourie, 2013). Indonesia experienced colonial domination under Dutch and Japanese powers, whereas India confronted British colonial rule. The ideological expressions of nationalism in each country, however, differ markedly. In Indonesia, nationalism emerged as a synthesis of national identity, religion, and local archipelagic values. Indian nationalism evolved through the interaction of colonial modernity, religion-based social movements, and universal spiritual concepts articulated by figures such as Mahatma Gandhi and Rabindranath Tagore. This comparison emphasizes not only the temporal emergence of nationalism but also its philosophical, social, and moral foundations, as well as its adaptability to contemporary challenges.

2. *Indonesian Nationalism: Integration, Unity, and Social Justice*

Indonesian nationalism developed from collective awareness of colonial oppression into a political ideal of independence. Its origins trace to the early twentieth century, with organizations such as Budi Utomo (1908), Sarekat Islam (1912), and the Indonesian Association (1920s). The Youth Pledge of 1928 formalized the foundational principles of one homeland, one nation, and one language (Meng & Silva, 2022). This nationalism is inclusive, pluralistic, and integrative, embracing ethnic, linguistic, religious, and cultural diversity. No single group dominates, reflecting a civic nationalism oriented toward loyalty to the state and shared ideals. Ir. Soekarno emphasized respect for universal humanity in nationalist thought, evident in his 1926 Youth Congress speech and the formulation of Pancasila (1945) as the basis for state and national morality. Sociologically, Indonesian nationalism functions as a mechanism for social integration. After independence, it provided an ideological framework to maintain national cohesion in a multiethnic society. Despite post-independence challenges such as economic and regional disparities, the principles of unity, cooperation, and social solidarity remain central to national identity.

3. *Indian Nationalism: Spirituality, Non-Violence, and Pluralism*

Indian nationalism centers on spiritual and ethical dimensions of morality, complementing its political aspirations. It emerged in the late nineteenth century as collective consciousness revived under British colonial pressure. Leaders such as King Ram Mohan Roy, Swami Vivekananda, and Rabindranath Tagore promoted social and religious reform grounded in universal Hindu spiritual values compatible with modernity (Van Der Veer, 2021). Mahatma Gandhi advanced Ahimsa (non-violence) and Satyagraha (the power of truth), asserting that true independence encompassed moral liberation from violence, greed, and injustice. Indian nationalism embraces religious and cultural pluralism, seeking unity among Hindus, Muslims, Sikhs, and Christians. It rejects religious chauvinism, adopting the principle of "unity in diversity," later institutionalized as the national motto after 1947. Political discourse in India juxtaposes Gandhi's moral nationalism with Nehru's modernist focus on economic development and science. This tension illustrates the coexistence of ethical nationalism and pragmatic modernist nationalism within Indian political thought.

4. *Indonesia-India Ideological Equation*

Despite contextual differences, both nations share fundamental characteristics of nationalism. First, nationalism is rooted in colonial suffering, functioning as a tool for political and social emancipation. Second, it is pluralistic and inclusive, uniting multiethnic and multireligious societies. Third, nationalism possesses a strong moral and spiritual foundation, expressed through Pancasila and mutual cooperation in Indonesia, and Ahimsa and Satyagraha in India.

Fourth, both reject chauvinism and violence, favoring humanistic and dialogical approaches. Fifth, education and awareness serve as instruments of national liberation, exemplified by Ki Hadjar Dewantara in Indonesia and Rabindranath Tagore in India. These similarities indicate that Asian nationalism embodies ethical-humanistic principles, in contrast to European nationalism driven by industrial and inter-state conflicts. Asian nationalism emerges from moral reflection on suffering rather than ambitions of conquest.

5. *Conceptual and Structural Differences*

Several conceptual and structural differences distinguish Indonesian and Indian nationalism. Indonesia emphasizes political and integrative nationalism, consolidating diverse religions and ethnicities through Pancasila and the 1945 Constitution. India, by contrast, prioritizes cultural-spiritual nationalism, anchored in Hindu dharma and moral reform, yet remains inclusive. Strategically, Indonesia relied on armed struggle and political diplomacy, whereas India adopted non-violent resistance, imparting a stronger moral dimension to its nationalism. Post-independence priorities also differ: Indonesia focuses on state-building and territorial integrity, while India addresses poverty, caste, and social inequities. Contemporary challenges include globalization and religious political polarization in Indonesia, and the rise of Hindu nationalism in India, highlighting the vulnerability of nationalism to exclusivist distortion if not morally and educationally guided.

6. *Education and Cultural Dimension*

Education and culture serve as key instruments for national identity formation in both nations. Ki Hadjar Dewantara emphasized national education grounded in local culture, fostering love for the homeland and universal humanitarian values, captured in the motto In ngarsa sung tuladha, ing madya mangun karsa, tut wuri handayani. Tagore established Shantiniketan as an alternative to colonial education, promoting spiritual development and universal humanism beyond race, religion, or nation. Both educators regarded education as a means of cultivating national character and universal morality. Indonesian and Indian nationalism thus balance national pride with humanistic awareness, tradition with modernity, and independence with openness to the world.

CONCLUSION

Nationalism in the era of globalization encounters challenges distinct from those of the colonial period. In Indonesia, nationalism often manifests symbolically, prioritizing rhetoric over praxis, as unity values are undermined by short-term political interests and identity sectarianism. India demonstrates a tension between technological advancement and the rise of religion-based identity politics. These dynamics indicate the necessity of transforming traditional nationalism, rooted in independence struggles, into reflective nationalism that emphasizes social responsibility, public ethics, and global solidarity. Both countries require a reaffirmation of nationalism that is humanist and educational rather than exclusive or populist. Strengthening nationalism in this context involves revitalizing history and civics education to cultivate national pride alongside critical thinking and empathy. The values of Gandhi and Dewantara remain relevant, illustrating that genuine nationalism entails love for humanity rather than animosity toward other nations. Comparative analysis shows that Indonesian and Indian nationalism exemplify an Asian model of humanistic nationalism centered on morality, solidarity, and spirituality. Indonesia emphasizes social integration and justice, whereas India emphasizes spirituality and ethical conduct. Synthesized, these approaches promote a nationalism that liberates the nation from external domination and individuals from inner moral constraints. This study demonstrates that nationalism in both countries serves as a philosophical guide for inclusive global peace, democracy, and justice.

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Instructional Leadership Models Of Vocational High School Principals In Indonesia And India

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Abstract. Instructional leadership exercised by principals is central to enhancing educational quality in Vocational High Schools oriented toward graduate employability. This qualitative case study examines instructional leadership models of SMK principals in Indonesia and India, with emphasis on learning management strategies, teacher competence development, and collaboration with industry and external stakeholders. Data were collected through in depth interviews, observations, and document analysis involving principals, teachers, and relevant stakeholders, and were analyzed inductively using a thematic approach to identify recurring leadership patterns across contexts. The findings are intended to generate empirically grounded insights into prevailing instructional leadership practices, contextual challenges, and applicable strategies for strengthening learning effectiveness, as well as to inform the development of a contextual instructional leadership model aligned with vocational education needs in both countries. In India, leadership models encompass traditional authoritarian and participatory approaches alongside spiritually grounded servant leadership inspired by humanistic values, reflected in dynamic combinations of top down cultures with task oriented and nurturing practices such as the nurturant task model. In Indonesia, principal leadership commonly manifests in authoritarian, democratic, and situational styles, complemented by instructive, consultative, participative, and delegative forms that specify task and responsibility distribution. Leadership effectiveness in both contexts is contingent upon contextual school needs, particularly the capacity to mobilize resources, cultivate a constructive work climate, and attain measurable educational quality outcomes.
Keywords: relevance; curriculum; management; education; labor market needs

INTRODUCTION

Vocational education plays a strategic role in developing a competent and globally competitive workforce by aligning schooling with labor market demands. Vocational High Schools in Indonesia and vocational schools in India serve as institutional bridges between education and industry, with instructional leadership emerging as a decisive factor in learning effectiveness. Principals' instructional leadership shapes teaching quality, curriculum relevance, and graduate employability. Contemporary workforce demands in the context of the Industrial Revolution 4.0 require graduates to demonstrate not only technical competencies but also adaptability, creativity, and problem solving skills. As learning leaders, principals influence the creation of innovative and industry oriented learning environments. Indonesia's SMK Center of Excellence program and India's Skill India policy reflect national efforts to strengthen vocational education quality and workforce readiness. Despite these initiatives, challenges persist in the effectiveness of principals' instructional leadership in narrowing the gap between educational outcomes and labor market expectations. A comparative examination of instructional leadership models in both countries is essential to identify effective strategies for strengthening vocational education competitiveness.

Prior studies emphasize the centrality of principal leadership in vocational education. Hallinger and Murphy (2021) underscore the importance of principals as instructional leaders who align curricula with industry needs, while Leithwood et al. (2022) demonstrate the contribution of transformational leadership to improved vocational learning quality. In Indonesia, Suyanto et al. (2023) report that graduate quality is closely linked to principals' adaptive

leadership in response to industry change. In India, Kumar (2023) highlights principals' roles in fostering school industry relations through public private partnerships. These studies offer valuable insights, yet direct comparative analysis of instructional leadership models between Indonesian and Indian vocational schools remains limited.

This study assumes that principals' instructional leadership significantly influences vocational education effectiveness and that leadership approaches differ across national policy contexts and organizational cultures. Industry collaborative leadership is expected to enhance curriculum relevance to employment needs. A mixed methods design integrates qualitative and quantitative approaches through policy focused literature analysis, in depth interviews with principals, teachers, and industry representatives, surveys measuring leadership effectiveness and graduate quality, and comparative case studies of vocational schools in Indonesia and India.

The study aims to advance understanding of similarities and differences in instructional leadership models across both contexts and to identify factors supporting leadership effectiveness. Empirical data indicate persistent challenges, with approximately 60 percent of Indonesian vocational graduates experiencing employment mismatches (Ministry of Education, Culture, Research, and Technology, 2023) and only 45 percent of Indian graduates directly entering the workforce (National Skill Development Corporation, 2022). Evidence also confirms the direct impact of principal leadership on learning quality and school industry collaboration (Hallinger, 2021). Key issues include weak integration between education and industry, limited principal capacity for strategic partnerships, and leadership orientations that prioritize administration over innovation. This research contributes to vocational education policy development, strengthens school industry connectivity, and enriches instructional leadership scholarship in response to global workforce demands.

Based on the issues identified above, this study addresses two focused research questions. First, it examines the leadership model practiced by vocational high school principals in Indonesia and India. Second, it analyzes the strengths and weaknesses inherent in the leadership models of vocational high school principals in both national contexts.

RESEARCH METHOD

This study adopts a qualitative descriptive design to examine the implementation of instructional leadership learning models in Vocational High Schools (SMK) in Indonesia and India, with the primary focus placed on principal leadership practices that support learning quality and student skill development. A qualitative approach is employed to capture in depth processes, strategies, and challenges inherent in complex educational leadership contexts, which are not adequately addressed through quantitative methods (Creswell, 2014). The research is conducted purposively in selected vocational schools in Indonesia and India that demonstrate documented initiatives in leadership innovation, over a six month period encompassing preparation, data collection, analysis, and reporting. Data are gathered through semi structured in depth interviews with principals, teachers, and educational personnel, direct observations of leadership practices related to supervision, teacher development, and collaboration with industry and community partners, and systematic analysis of policy documents, academic reports, principal work programs, and regulatory guidelines relevant to vocational education. These data sources are supported by research instruments in the form of interview guides, observation protocols, and documentation checklists to ensure analytical rigor. Data analysis follows an interactive qualitative model involving data reduction, data display, and conclusion drawing conducted iteratively alongside data collection to ensure coherence and analytical depth, as conceptualized by Miles and Huberman (1984).

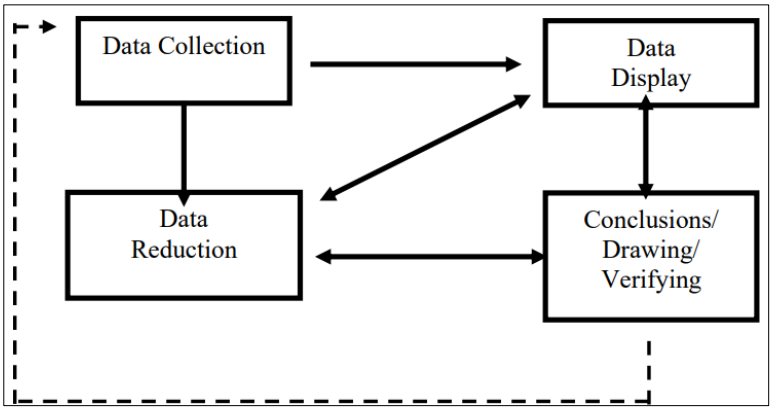

FIGURE 1. *Model of Miles and Huberman's Interactive Analysis*

RESULTS AND DISCUSSION

Principal leadership in India demonstrates substantial variation, ranging from progressive and innovative approaches oriented toward educational quality and school community well being to autocratic practices that restrict reciprocal communication and teacher participation. Several principals exhibit transformative and innovation oriented leadership that emphasizes student and faculty development. The effectiveness of school quality improvement initiatives and program implementation is strongly influenced by the principal's leadership, supported by all institutional components commonly referred to as the tri center of education (Zaki et al., 2023). Principals are therefore expected to foster synergistic collaboration to operationalize the school vision and mission in alignment with national education objectives (Kadarsih et al., 2020). Leadership practices in Indian schools include progressive and innovative leadership that promotes administrative best practices, community well being, and educational excellence. In contrast, traditional or autocratic leadership has been reported to reduce teacher motivation by limiting participation and expression. Student centered leadership prioritizes learner progress through instructional supervision and the cultivation of a positive school climate, while task and performance oriented leadership focuses on directing and motivating teachers to ensure effective instructional processes. Parent involvement leadership further supports school development by engaging families in structured school activities.

Several challenges persist within Indian school leadership, particularly limited teacher participation, declining instructional motivation, and intense academic demands placed on both educators and students. Despite these constraints, principals may attain high social standing and make enduring contributions to education, as illustrated by Mahendra Nath Kapur, former Principal of Modern School New Delhi and recipient of the Padma Shri. In India, the principalship functions within a context of strict governmental regulation affecting curriculum and school operations across both public and private institutions. Empirical findings indicate that principal leadership style significantly influences teacher performance, as reflected in questionnaire based indicators. Although principals may not be physically present daily, open communication and relational proximity enable principals to monitor instructional challenges and program implementation. Sustained openness further strengthens managerial competence in planning, execution, and evaluation of school programs (Tanjung et al., 2021).

Teachers generally reported a clear understanding of the vision and mission under dual principal leadership, facilitating program implementation despite limited principal presence. However, leadership effectiveness was perceived as inconsistent, particularly when principals simultaneously managed multiple schools. Leadership fragmentation often delayed decision making and program execution, leading some teachers to experience professional neglect. School effectiveness was therefore perceived to depend heavily on leadership focus and consistency (Harjati & Anggoro, 2021). Although dual principals were viewed as less effective in direct management, they were widely acknowledged for supporting teacher motivation and professional development. This compensatory strategy aimed to stabilize school operations and sustain teacher performance. Creating a positive organizational climate remains a critical leadership function, particularly for dual principals, to maintain staff well being and instructional continuity during periods of absence (Hidayat et al., 2022).

Conflict management within dual school leadership revealed mixed perceptions. While many respondents acknowledged principals' capacity to resolve conflicts, others identified limitations resulting from delegated authority to senior teachers. This delegation occasionally produced subjective decision making and insufficient coordination. Nevertheless, dual principals consistently prioritized the provision of learning resources, reflecting a commitment to minimizing instructional disruption. Consistent with observational data, principals who maintained open communication and provided structured performance feedback through regular evaluations were perceived as more effective. Transparent and accountable evaluation systems contributed to improved teacher performance and supported the school's institutional image in pursuit of national education goals (Triatna, 2007).

Leadership theory conceptualizes leadership style as a behavioral pattern used to influence group performance (Oliva, 1993). Leadership practice incorporates task oriented and tolerance oriented behaviors. Task behavior, also referred to as initializing structure, job centeredness, or concern for production, emphasizes goal attainment and organizational effectiveness (Likert, 1990; Blake & Mouton, 1990; Dharma, 1992). Such behavior prioritizes directive, impersonal interactions that frame teachers as functional contributors to institutional goals (Cartwright & Zander, 1990; Barnard, 1994). Transactional leadership emphasizes exchange based relationships and does not directly address substantive organizational change, whereas transformational leadership focuses on moral development, intrinsic motivation, and organizational transformation (Burns; Bass). Transformational leadership elevates both leader and subordinate commitment beyond immediate personal interests toward shared ethical objectives.

Blake and Mouton identify five prominent leadership styles, including impoverished management,

country club management, authority obedience, team management, and organizational man management. Among these, team management demonstrates the strongest balance between production demands and individual well being. Democratic leadership is characterized by high task orientation and high tolerance, with principals actively structuring responsibilities through deliberative decision making. This style contrasts with participative leadership, which grants greater autonomy to staff. Both democratic and participatory leadership styles have been empirically associated with improved teacher performance (Blake & Mouton). Autocratic leadership, defined by high task orientation and low tolerance, prioritizes formal authority and strict supervision while disregarding staff needs. This approach often generates workplace stress and diminished performance. Leadership effectiveness therefore depends on contextual alignment between leadership style and organizational conditions.

Leadership models in India reflect a synthesis of traditional authoritarian, participatory, and spiritually grounded servant leadership influenced by figures such as Mahatma Gandhi. Rooted in moral philosophy and community values, Indian leadership traditions emphasize character alongside competence, as articulated in classical texts such as the Vedas and the Arthashastra. In Indonesia, principal leadership commonly includes authoritarian, democratic, situational, instructive, consultative, participative, and delegative styles. Leadership effectiveness ultimately depends on the capacity to mobilize resources, foster a positive work climate, and achieve educational quality goals, a finding consistent with perceptions of dual principal leadership that relies heavily on delegated authority and exhibits limitations in conflict management.

CONCLUSION

Leadership practices in India and Indonesia demonstrate contextually grounded variations that influence school management effectiveness, particularly under conditions of leadership duality. In India, leadership integrates traditional authoritarian and participatory approaches with spiritually grounded servant leadership influenced by figures such as Mahatma Gandhi, emphasizing empathy, humility, moral character, and community orientation as reflected in classical texts such as the Vedas and the Arthashastra, alongside task oriented and nurturing approaches within a top down cultural framework. In the Indonesian context, principal leadership commonly encompasses authoritarian, democratic, situational, instructive, consultative, participative, and delegative styles, with effectiveness contingent upon the capacity to mobilize resources, foster a constructive work climate, and attain educational quality objectives.

Empirical findings from Singorojo District indicate that principal shortages requiring one principal to lead two schools affect management stability and teacher performance, as limited time and energy constrain leadership effectiveness. Although some respondents perceived the dual principal's leadership as ineffective and expressed a preference for a definitive principal, most acknowledged sustained collaboration, open communication, and consistent support for teacher performance through delegation to senior teachers, constructive feedback, and ongoing evaluation, despite the emergence of conflict related to delegated authority.

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Strengthening Historical Literacy to Enhance Historical Thinking Using the Scholarship of Teaching and Learning (SoTL) Approach

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Abstract. Indonesia aims to achieve a golden era by 2045, aspiring to become a developed and prosperous nation, particularly in the digital domain. However, low literacy skills among young generations threaten this goal. The 2018 PISA results for Indonesian students aged fifteen revealed an average score of 371, significantly below the global average of 487. Approximately fifty-five percent of students were categorized as functionally illiterate, indicating difficulties in comprehending texts despite recognizing letters and words. Digital literacy issues exacerbate these challenges, as Indonesian netizens frequently engage in deception, hoaxes, ridicule, bullying, discrimination, and hate speech. Addressing these problems requires research to develop young learners' digital literacy, focusing on teacher competence and the availability of digital literacy instructional tools. This study employed a problem-based Scholarship of Teaching and Learning model supported by digital textbooks. The methodology followed five stages: analysis, design, development, implementation, and dissemination. Multiple-choice assessments demonstrated high validity and reliability, with an item reliability of 0.98, confirming the effectiveness of the instructional design in improving historical literacy and thinking among Generation Z learners. The findings highlight the potential of structured digital pedagogical interventions to enhance both historical understanding and responsible digital engagement.

Keywords: historical literacy; historical digital literacy; history education students; SoTL.

INTRODUCTION

The Indonesian government has set the vision of Indonesia Emas 2045, positioning mastery of digital technology as a central pillar in achieving a developed and globally competitive nation. In alignment with this vision, the Ministry of Communication and Informatics has formulated the Digital Literacy Roadmap 2021–2024 (Setu, 2021), emphasizing the development of digital infrastructure, governance, economy, and society. The successful implementation of these strategic initiatives, however, critically depends on the level of digital literacy among all societal elements. Empirical evidence indicates that the digital literacy of Indonesian youth faces substantial challenges. The Programme for International Student Assessment (PISA) 2018 results ranked Indonesia 74th out of 79 participating countries, with an average score of 371 (OECD, 2021). This finding is corroborated by the World Bank classification, which identifies 55% of Indonesian students as functionally illiterate (UNICEF & UNESCO, 2021), reflecting limited reading ability without comprehensive understanding of textual content.

Education quality constitutes a primary focus in sustainable development efforts (Sustainable Development Goals). The Indonesian government utilizes PISA as a benchmark for improving educational quality (Nugrahanto & Zuchdi, 2019). PISA assesses students' competencies in numeracy and literacy (Sari & Setiawan, 2023). PISA results for Indonesian students are presented in Figure 1 (Fazzilah et al., 2020; Pratiwi, 2019). The data indicate that from 2000 to 2018, Indonesia consistently remained in the low category, measured by students' proficiency in reading, mathematics, and science literacy. Low literacy in Indonesia stems from multiple factors, including instructional materials, misconceptions, non-contextual learning, students' reading abilities, learning environment, school infrastructure, human resources, and school management (Sleeman et al., 2024; Stiff et al., 2023). These factors require systematic intervention to enhance literacy quality. Poor literacy negatively affects students' thinking skills, as literacy and cognitive skills are closely interrelated. In the current digital era, literacy extends beyond reading to encompass the foundation for critical thinking, problem solving, and collaboration (Medranda-Morales et al., 2023; Sepriyanti et al., 2022). This situation increases the vulnerability of youth to misinformation and disinformation, as reflected in the 2020

Microsoft Digital Civility Index, which positioned Indonesian internet users unfavorably in Southeast Asia, indicating tendencies for fraud, hoaxes, cyberbullying, and hate speech (Indrawan, 2020; Ikhsan, 2021).

A determinant of this phenomenon is the limited pedagogical innovation among educators, particularly regarding the effective integration and development of students' digital literacy skills (Revina, 2020; Khasanah & Widyantoro, 2017). The History Education Study Program holds a strategic position in enhancing digital literacy, especially in fostering critical understanding and contextual interpretation of historical information. Nonetheless, the current curriculum and teaching practices rarely integrate digital literacy development as an essential competency. Students' ability to evaluate the validity and reliability of digital historical sources, identify biases and hidden ideological agendas in online historical narratives, and utilize digital technology remains suboptimal. This condition undermines the effectiveness of history instruction in the digital era and hampers the preparation of students as critically thinking and responsible citizens. Contemporary cases, including historical distortions regarding the birth of Pancasila (Hardinanto, 2017), controversies surrounding the G30S incident (Purwanta, 2016), and other disputed historical narratives (Purwanta, 2017; Purwanta, 2018), underscore the urgency of developing historical literacy for teachers and society.

Based on the theoretical and empirical justification above, this study aims to develop an adaptive and contextual historical literacy model for students in the History Education Study Program. Enhancing students' ability to understand, critically evaluate, and ethically utilize digital historical information is expected to significantly contribute to improving history learning quality across educational levels. This approach also aligns with the national agenda for comprehensive digital literacy improvement and has the potential to produce sustainable transformative impact by strengthening history teachers' competencies as agents of educational change.

1. Based on this background, the research questions addressed are as follows:
2. How can a Scholarship of Teaching and Learning (SOTL) Approach model be designed in senior high schools?
3. How readable is the Scholarship of Teaching and Learning (SOTL) Approach model in senior high schools?
4. What is the effect of the Scholarship of Teaching and Learning (SOTL) Approach in senior high schools on enhancing historical literacy and historical thinking in students?

RESEARCH METHOD

This study applied the ADDIE research methodology, which encompasses the phases of Analyze, Design, Development, Implementation, and Evaluation. The framework guided the development of foundational performance in learning, particularly in designing instructional products. ADDIE constitutes an individual-centered instructional design approach integrating immediate and long-term phases, employing a systematic process, and adopting a systems perspective on human knowledge and learning (Dick and Carey, 2021). Data collection involved observation, interviews, and documentation, while data analysis employed the interactive analysis method of Miles and Huberman, consisting of data collection, reduction, presentation, verification, and conclusion drawing. The ADDIE model follows five sequential steps: Analyze, Design, Develop, Implement, and Evaluate, which can be applied procedurally, non- procedurally in a cyclical manner, or through an integrative instructional design approach allowing initiation from specific phases. Sari (2017) further elaborates on the stages within the ADDIE research model.

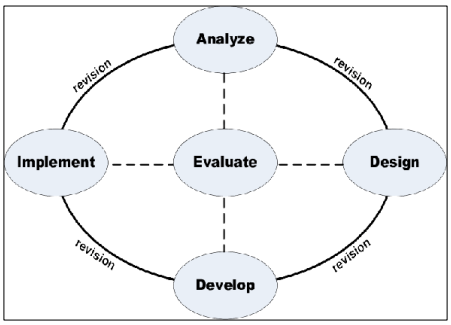

FIGURE 1. *ADDIE Research Methodology*

The research sites selected for field testing of the Scholarship of Teaching and Learning (SoTL) model included Bandung, Jepara, and Sleman, categorized as mid-ranking areas by the LTMPT (Lembaga Tes

Masuk Perguruan Tinggi). Additional sites comprised Sukabumi, Purworejo, and Bantul. High schools in these locations were employed to validate instruments, particularly multiple-choice test items. Research participants included students and teachers. Initial interviews were conducted with both groups at the designated sites. Model and media validation followed through expert review by lecturers and teachers. Empirical validation involved 250 students testing the instruments according to the Rasch model, whereas readability testing involved 146 students. Experimental trials included six experimental classes and three control classes, selected randomly using dice.

Data collection encompassed interviews, observations, and documentation. Interviews involved educators and students, while observations focused on classroom delivery of history instruction. Documentation verified the design, implementation, and evaluation processes within history learning. Quantitative data were collected using test instruments and questionnaires to assess validity, reliability, and effectiveness. Data analysis employed both qualitative and quantitative approaches. Qualitative analysis adhered to the interactive data analysis method of Miles and Huberman, including data collection, reduction, presentation, and verification for conclusion drawing. Collected data from observations, interviews, and documentation were reduced using source triangulation and subsequently organized for verification and conclusion. Quantitative analysis involved multiple techniques. Expert validation applied the V-Aiken method to assess instructional model validity, following the formula provided by Adios et al. (2022), with interpretations based on established V-Aiken criteria.

Empirical item validity was analyzed using QUEST and Parscale software to determine item validity through the Partial Credit Model (PCM), Item Characteristic Curve (ICC), and Information Function or Standard Error of Measurement. The Rasch model measured fit using INFIT Mean Square (INFIT MNSQ) average and standard deviation or INFIT t mean. INFIT MNSQ and OUTFIT MNSQ were analyzed using Rasch coefficients. Fit criteria included INFIT values between 0.77 and 1.30 and INFIT t values from -2.0 to 2.0, ensuring essay items met goodness- of-fit standards. OUTFIT MNSQ indicated the suitability of each essay item and was considered fit if ranging from
0.5 to 1.5 (Laliyo, 2021). Item reliability is presented in the accompanying results. Readability was quantitatively analyzed using the Guttman scale, comprising Yes and No responses, and interpreted descriptively according to the formula provided by Lewkowitz (2023). Effectiveness testing employed ANOVA with a General Linear Model (GLM) after verifying normality and homogeneity prerequisites. ANOVA compared pre-test and post-test scores for historical literacy and historical thinking in experimental and control classes, evaluating score changes across groups. Correlated samples were analyzed using SPSS 24.

The study tested two hypotheses. Hypothesis 1 stated that no differences exist in students' historical literacy and historical thinking between experimental and control classes, whereas the alternative proposed the presence of differences. Hypothesis 2 stated that no improvement occurs in students' historical literacy and historical thinking in both groups, whereas the alternative posited observable improvements.

RESULTS AND DISCUSSION

1. *Analysis*

Students represent an active generation in consuming digital content, with only a few showing interest in reading. Short, instantly informative content discourages students from engaging with longer texts, affecting their literacy levels (G9B2). Student literacy is influenced by interest and motivation; low interest in history subjects corresponds with low learning motivation (G1B2, G10B2, G5B2). Social media platforms, such as TikTok, Instagram, and X, significantly impact historical literacy by shaping students' engagement with information (G6B2, G4B2). Additionally, a conducive learning environment enhances literacy outcomes compared to classrooms that are overcrowded and distracting (G2B2, G8B2). Contextualizing historical events with students' lived experiences assumes that prior knowledge exists, which can be used to connect lessons with everyday life. This approach allows students to internalize historical events, encouraging deeper engagement, comprehension, and active participation in learning (G7B2).

Historical literacy is essential in history education. It can be developed by contextualizing historical events (G7B3) and involves the ability to understand, interpret, and utilize historical information to make decisions and construct insights about the present and future within the classroom setting (G9B3, G8B3, G7B3, G6B1). Mastery of historical literacy reflects students' grasp of subject matter, enabling them to interpret content and relate it to daily life (G1B3, G3B3). The foremost aim of historical literacy is to apply history factually and pragmatically to current and future contexts (G10B3, G4B3). Studying history transcends memorizing dates or events or focusing solely on figures who initiated certain events. Literacy-oriented history education emphasizes interpreting past events as references to correct mistakes or enhance positive practices (G6B3). Historical literacy provides the foundation for developing historical thinking, which is not limited to textbook reading but fosters critical, contextual, and relevant understanding (G2B3). It equips students to access, comprehend, interpret, and evaluate historical sources and narratives, thereby cultivating a critical and contextual

understanding of the past. Historical thinking is defined as intellectual skills for analyzing chronology, cause-effect relationships, change and continuity, primary and secondary sources, and distinguishing fact from interpretation and opinion (G2B4). Historical literacy seeks to make history meaningful for students, while historical thinking facilitates coherent interpretation based on evidence. In this framework, historical literacy represents the goal, whereas historical thinking constitutes the process to achieve it (G7B3).

Historical literacy and historical thinking are complementary in meaningful history education (G6B4). These concepts encourage students to develop a profound understanding of the past and its relevance to present circumstances. Active participation in learning positions students as researchers and interpreters rather than passive recipients of information (G10B4). Historical literacy fosters critical and creative thinking, connecting historical events to everyday life, ensuring comprehension beyond rote memorization (G1B4). Literacy affects understanding of historical subjects and facts, while historical thinking reflects critical analysis from multiple perspectives. Both serve as indicators of students' understanding and the effectiveness of classroom learning (G9B4). Despite overall competence, students' historical literacy requires enhancement, as many struggle with text analysis, especially in oral and written tasks (G10B3, G9B3). This gap can be addressed using alternative literacy techniques, particularly digital historical literacy (G7B3, G5B3, G4B3, G6B3, G1B3). Guidance and supervision are necessary to maintain focus during literacy activities (G2B3). Key factors influencing literacy include interest, motivation, aptitude, and cognitive abilities, which drive curiosity and the ability to connect content to daily life (G3B3, G4B3, G5B3, G6B3, G10B3, G1B3). External motivation, such as assignments, remains important, alongside supportive environments and access to school libraries and digital devices (G7B3, G8B3, G9B3). Effective literacy depends on the combination of student motivation, teaching strategies, and environmental support, as well as the availability of diverse, accessible learning resources (G2B3, G7B3).

Improving historical literacy focuses on students' analytical skills, especially understanding chronology and context (G6B4, G4B3, G10B4, G7B4). Students are expected to recognize event sequences and comprehend the social, cultural, economic, and political contexts influencing historical developments. Historical reasoning enables students to link past and present events using evidence, fostering higher-order historical thinking skills (G1B4, G3B4). Literacy provides the foundation for reading and critically assessing sources, while historical thinking guides logical and relevant interpretation of events (G2B4, G7B4). Chronological understanding enhances critical assessment of cause- effect relationships and historical perspectives (G9B4). Historical literacy integrates knowledge, conceptual understanding, source usage, historical awareness, and historical language to ensure comprehensive analytical capability (G7B3). Teachers employ strategies such as comparative analysis, chronological mapping, and interactive discussions to cultivate historical thinking (G6B4, G7B4, G3B4, G1B4, G10B4, G2B4, G8B4, G9B4). Problem-Based Learning (PBL), role-playing, and project-based activities allow students to explore and construct historical narratives critically, promoting understanding of multiple perspectives and fostering analytical skills (G10B5, G3B5, G6B5, G5B5, G1B5, G2B5, G7B5, G8B5, G9B5). Collaboration among teachers and between teachers and researchers enriches literacy programs, encourages innovative strategies, and ensures theoretical guidance aligns with student needs (G10B5, G3B5, G6B5, G1B5, G7B2).

Digital history textbooks facilitate accessible and flexible learning, supporting historical literacy and historical thinking by incorporating multimedia, interactive links, and contextualized activities (G1B1, G10B1, G3B1, G4B1, G5B1, G6B1, G7B1, G8B1, G9B1). These resources allow students to engage with materials actively, build coherent narratives, and compare multiple sources to enhance comprehension and critical analysis (G6B2, G8B2, G10B2, G1B2, G7B2). Challenges include varying learning styles, attention span, digital access disparities, content relevance, and integration with traditional resources (G1B2, G3B2, G4B2, G6B2, G7B2, G8B2, G9B2, G10B2). Teachers must balance digital and traditional textbooks, maintain student focus, and ensure critical engagement with historical evidence, cause-effect relationships, and chronology (G1B2, G2B2, G6B2, G7B2, G8B2, G9B2, G10B2).

The integration of contextualized digital resources, collaborative teaching, and inquiry-based pedagogies enhances student engagement, comprehension, and analytical skills. This approach enables students to construct and reflect on historical narratives critically, linking past events to contemporary contexts and preparing them for advanced historical thinking (G1B3, G2B3, G3B3, G4B3, G5B3, G6B3, G7B3, G8B3, G9B3, G10B3).

2. *Design*

Based on analyses derived from interviews and observations, the researcher developed a Scholarship of Teaching and Learning (SOTL) instructional model for senior high schools, accompanied by a digital history textbook, employing historical literacy and historical thinking approaches. The model design integrates theoretical foundations with empirical findings from interviews and observations conducted among history teachers. The living history model in this study is logically organized across planning, implementation, and evaluation stages. The planning stage begins with history teachers identifying students' learning styles. Teachers then prepare digital textbook-based media and design student-centered learning. Instructional

planning emphasizes active, interactive, and engaging learning, incorporating students' smartphones to support educational activities. The planning phase encompasses the following activities: identification of student learning styles; formulation of learning objectives based on historical literacy and historical thinking; alignment of learning outcomes with historical literacy and historical thinking competencies; preparation of instructional materials including textbooks, digital books, journals, videos, infographics, and posters; and formation of student groups.

The subsequent stage involves the implementation of the SOTL-based historical literacy and historical thinking instructional model. The instructional syntax includes: introduction, stimulation of historical literacy, core learning activities, exploration of learning materials, communication of learning outcomes, and closing. During the introduction, the teacher opens the lesson and explains the objectives of historical literacy and historical thinking- based instruction. In the stimulation phase, the teacher conducts initial observation using historical literacy and historical thinking questions, analyzing students' competencies. Core learning activities involve grouping students, ensuring that those with historical literacy and historical thinking skills are distributed across groups, and facilitating exploration using digital textbooks. The teacher guides and interacts with students during exploration, while students communicate their understanding to peers. The teacher observes students' ability to explain content comprehensively. The closing phase includes assessing students' historical literacy and historical thinking through targeted questions, followed by teacher-led reflection on the lesson content.

The study also incorporates the design of a digital history textbook as a primary learning resource. The textbook storyboard consists of multiple patterns, including cover pages with title and book identity; content sections with material and fun facts; video-integrated content; interactive activities with questions; digital comics; infographics; and sections combining text and images. Each section is designed to enhance historical literacy and historical thinking by providing diverse and multimodal learning materials.

The third phase of the study focuses on test design to assess students' historical literacy and historical thinking skills. Test items are derived from core competencies characterized by historical literacy and historical thinking. For example, the Indonesian curriculum's core competency in history involves studying the Indonesian Proclamation of Independence. This competency is operationalized through appropriate historical literacy and historical thinking content. Indicators include historical literacy through content and source analysis, contextual understanding, and historical perspective, as well as historical thinking through chronology, narrative construction, and communication. Specific topics include Japan's defeat, the proclamation of independence, and public responses to independence.

3. *Development*

The basic competencies in the Indonesian history subject served as the basis for constructing the test. The test employed multiple-choice objective items with five distractors. The materials, arranged sequentially from 1 to 50, were developed through historical literacy and historical thinking using books and internet sources. Various references provided extensive content for student learning. The test items were adjusted to align with the abundance of materials available to support historical literacy and historical thinking. Experts subsequently reviewed the completed items, and the results are presented below. The expert assessment conducted by five teachers and two specialists using the V-Aikens analysis indicated that the items ranged from very high, high, to average validity. Six items demonstrated very high validity, twenty-seven items had high validity, and only two items fell into the average category. These results confirm the validity of the multiple-choice items based on historical literacy. Some revisions were immediately made at this stage, including balancing the description of each item, adjusting the distractor index, and correcting typographical errors. The finalized items were then empirically tested on eleventh-grade students.

The analysis of item fit using Infit Mean Square (MNSQ) demonstrated that 39 items were appropriate, while one item was not. Most historical literacy items fell within the acceptable range of 0.77–1.30. Item 25 was identified as inappropriate due to an Infit MNSQ value of 0.76 and required replacement. The distribution of item fit from the empirical test indicated that item 28 had the lowest fit at 0.82, whereas item 16 had the highest at 1.28. The average total Infit MNSQ ranged from 0.98 to 1.08, and the Ifit–outfit t ranged from 0.07 to 0.15, indicating appropriate item fit. Reliability analysis confirmed that the historical literacy items were consistent. The item estimation reliability was 0.98, and the case estimation reliability was 0.78, reflecting sufficient to very high reliability. These findings suggest that the historical literacy items consistently produce comparable results across different student groups.

Item difficulty analysis revealed a range from very easy, easy, medium, difficult, to very difficult. Four items were classified as very easy, seven as easy, twenty-one as medium, six as difficult, and four as very difficult. The majority of historical literacy and historical thinking items were at a medium level, as 26 of the 40 items fell within this range. The easiest item was number 1, while the most difficult item was number 12. Item 31 was very easy with a coefficient of -2.76, and item 12 was very difficult with a coefficient of 4.46. Historical test items demonstrated valid and reliable properties consistently. Experts initially validated the

items, which were rated as average, high, and very high in validity. Subsequently, empirical validation involved 250 students who completed 40 items within 60 minutes, confirming both the validity and reliability of the test items in practice.

CONCLUSION

Historical literacy and historical thinking are essential competencies for Generation Z learners. As digital natives, Generation Z students exhibit suboptimal levels of historical literacy and historical thinking, which necessitates immediate intervention through history education. The Scholarship of Teaching and Learning (SOTL) model, grounded in problem-based and inquiry-based approaches, can effectively enhance students' historical literacy and historical thinking skills. Learning aids are also required to serve as accessible resources for students in history learning. The selected media comprises digital history textbooks designed to align with the preferences and learning habits of Generation Z. These digital textbooks should incorporate multiple contexts beyond text, including videos, images, historical source links, digital comics, and infographics. This study developed a multiple-choice test as an instrument to assess historical literacy and historical thinking.

Expert evaluation by five teachers and two specialists using V-Aikens analysis indicated scores ranging from very high, high, to average. Six items demonstrated very high validity, twenty-seven items demonstrated high validity, and two items demonstrated average validity. Validity analysis using infit mean-square (MNSQ) indicated that thirty-nine items were appropriate, while one item was inappropriate. Most historical literacy items were deemed suitable, falling within the MNSQ range of 0.77 to 1.30. Item number 25 was outside this range, exhibiting an infit MNSQ of 0.76. Empirical testing of the historical literacy and historical thinking items assessed not only validity but also reliability. Item reliability was evaluated through item and case reliability estimation. Empirical results showed that the historical literacy items achieved an item reliability estimate of 0.98.

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Evaluation of Hybrid Learning Instruction at Universitas Negeri Yogyakarta

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Abstract. Learning practices in the millennial era have substantially transformed technological and communication patterns within higher education institutions. During the COVID pandemic, universities were required to implement fully online learning modalities, which affected lecturers' performance in online instructional processes, particularly in Hybrid Learning courses at Universitas Negeri Yogyakarta. This study aims to describe the implementation of Hybrid Learning at UNY, to identify the instructional models applied, and to examine the results of the evaluation of Hybrid Learning courses at the university. This research employed an evaluative design using a mixed method approach that integrates qualitative and quantitative data. The evaluation adopted the CIPP model developed by Stufflebeam, encompassing context, input, process, and product dimensions to ensure a comprehensive assessment framework. The findings indicate that the evaluation model for Hybrid Learning was developed through validated instruments that met acceptable construct validity based on factor loading values, with composite reliability scores exceeding 0.7 and Cronbach's alpha values above 0.6. Implementation challenges included student demographics heterogeneity that resulted in internet network instability, as well as limited technological and media competencies among some lecturers. The evaluation results show that the context, input, process, and product aspects were categorized as very good, with an overall mean score of 3.05.
Keywords: evaluation, course, Hybrid Learning, CIPP model.

INTRODUCTION

Education continuously evolves and therefore requires sustained innovation to achieve its intended educational goals. This process is inseparable from classroom learning activities, which play a central role in shaping individuals' intellectual capacity and civic character. Learning processes constitute a fundamental component of education because they transform learners through structured experiences that contribute to cognitive and moral development. Within this context, instructional models emerge as essential instruments in organizing learning activities. A learning model functions as a conceptual framework that systematically structures learning experiences to achieve instructional objectives and serves as a foundational guide for instructional designers and educators in planning teaching and learning activities (Shoimin, 2014, p. 23). Learning outcomes are reflected through cognitive and metacognitive memory processes that influence understanding, which occur when individuals or groups engage in learning experiences (Huda, 2018, p. 2).

The current educational context in Indonesia is strongly influenced by the Covid 19 pandemic, which has introduced substantial changes across multiple sectors, including higher education. Conventional face to face learning has been replaced by *online* or distance learning modalities. At Universitas Negeri Yogyakarta, policies concerning distance learning were extended several times until the issuance of Circular Letter Number 03 SE 2021 concerning the Revision of Circular Letter Number 26 SE 2020 on the Implementation of the Even Semester of the 2020 2021 Academic Year during the Covid 19 Emergency Response Period, issued on January 12, 2021.

Institutional regulations, rector directives, and official circular letters indicate that Universitas Negeri Yogyakarta currently implements distance learning as a response to the Covid 19 pandemic. Students are required to participate in learning activities through *e learning* systems or other appropriate digital platforms. Distance learning differs substantially from conventional face to face instruction, particularly in terms of instructional interaction and value transmission. Educators are challenged to transfer knowledge and character values effectively without direct physical interaction. Learning conducted through distance modalities cannot fully

replicate face to face learning conditions, particularly with respect to pedagogical elements that require direct engagement.

Learning effectiveness is influenced by several principles, including the presence of motivation and clear objectives, consistent practice and repetition, positive reinforcement through successful outcomes, alignment between learning objectives and activities, comprehension of learning materials, guidance from others, observable behavioral change, and reinforcement through exercises and evaluation (Mustaqim, 2008, p. 69). Effective learning also requires specific competencies within individuals. These competencies include sensorimotor skills, observational abilities, associative and verbal memory skills, rational learning capacity, value oriented attitudes, and behavioral inhibition toward inappropriate actions (Prawira, 2016, pp. 237–240). Learning processes therefore must be guided by established principles that foster intellectual development and personal transformation. One essential outcome of learning is the formation of value oriented attitudes, which reflects the internalization of character values through instructional content. Cognitive and affective changes, along with character formation, may encounter challenges when learning is conducted through *online* modalities, as distance learning does not fully mirror face to face instructional environments.

Distance Learning Systems derive substantial benefits from advancements in information and communication technology, which facilitate large scale access to education. Rapid technological development has enabled flexible and adaptive distance education models that expand educational access beyond spatial and temporal boundaries while addressing socio economic constraints.

The development of the Distance Learning System known as SPADA, initiated by the Directorate of Learning and Student Affairs under the Directorate General of Higher Education, began in 2014 and reached only 51 participating higher education institutions by 2017. This figure remains limited when compared to the total number of higher education institutions in Indonesia, which reached 3,225 institutions according to national statistical data (Badan Pusat Statistik, n.d.).

Government initiatives to strengthen SPADA have received significant academic interest, as distance learning offers measurable benefits for higher education delivery. Statistical data indicate participation by 63,704 students from public universities and 108,067 students from private universities (Badan Pusat Statistik, n.d.). The increasing number of students each year highlights the relevance of learning systems that can be accessed across time and location through *online* platforms. This approach does not eliminate face to face instruction but integrates both modalities through *blended learning*.

Advancements in information and communication technology have also driven the development of distance education systems. Technological integration has expanded instructional reach and improved instructional delivery effectiveness. Contemporary distance education systems incorporate various interactive media formats. These systems are characterized by spatial and temporal separation between learners and instructors, the systematic design and production of learning materials, intermittent communication among learners, tutors, and institutions through diverse media, and continuous institutional support and monitoring.

Universitas Negeri Yogyakarta consistently seeks to ensure that graduates possess adequate *life skill* competencies to address future challenges, including those associated with the Digital Era. One strategic effort undertaken by the university involves improving instructional quality through the implementation of innovative learning strategies. Innovative instructional approaches are associated with increased student learning motivation. One such approach is *blended learning*, also referred to as *hybrid learning*, which integrates face to face instruction with *online* learning modalities. This instructional method supports technological literacy development and contributes to improved student learning outcomes.

Research conducted by Afif Rahman Riyanda and colleagues titled "Evaluation of the Implementation of the Distance Learning System at the Faculty of Teacher Training and Education, University of Lampung" indicates that the implementation of distance learning within the PMIPA FKIP Unila environment demonstrates satisfactory performance. Evaluating the effectiveness of distance learning requires systematic program evaluation. The CIPP evaluation model, consisting of Context, Input, Process, and Product components, enables the collection of comprehensive information that supports institutional policy feedback and instructional quality improvement. The evaluation of *hybrid learning* implementation in the Master's Program in History Education during the Covid 19 pandemic is therefore necessary to support the optimization of learning processes and outcomes. The research problems are formulated as follows.

1. How is the implementation of *Hybrid Learning* conducted at Universitas Negeri Yogyakarta?
2. How is the *hybrid learning* instructional model implemented at Universitas Negeri Yogyakarta?
3. How is *Hybrid Learning* evaluated using the CIPP model at Universitas Negeri Yogyakarta?

RESEARCH METHOD

The evaluation of Hybrid Learning implementation at Universitas Negeri Yogyakarta is directed toward generating evidence based recommendations for online learning practices during the COVID period through a program evaluation framework grounded in prior curriculum and learning evaluation studies conducted between 2019 and 2020, which demonstrate the proposer's methodological competence in educational evaluation. This study applies formative program evaluation to assess program quality and organizational context for improvement purposes, as conceptualized in program evaluation theory (Sugiyono, 2018; Ambiyar & Muharika, 2019). The evaluation model adopts the CIPP framework with a focus on input, process, and product components to examine selected resources, implementation processes, and achieved outcomes in online learning within the Master of History Education Program, Faculty of Social Sciences, Universitas Negeri Yogyakarta (Sukardi, 2011). The research is conducted at Universitas Negeri Yogyakarta by selecting samples from five study programs in each faculty, involving lecturers who have implemented hybrid instruction registered in the Be Smart Learning Management System. Data collection employs questionnaires, participatory observation, interviews, and documentation in accordance with qualitative and quantitative research procedures (Alsa, 2007; Darmawan, 2016; Arikunto, 2018; Bungin, 2014; Sugiyono, 2019). Instrument development for questionnaires and observations refers to CIPP indicators proposed by Stufflebeam with contextual modifications aligned to the evaluated program (Sugiyono, 2018). Quantitative data validity is examined through construct validity supported by expert judgment and factor analysis using the Product Moment correlation, while reliability is tested using the Cronbach Alpha coefficient with a reliability threshold exceeding 0.60 (Arikunto, 2018; Riduwan & Sunarto, 2017; Darmawan, 2016). Qualitative data trustworthiness is ensured through credibility, transferability, dependability, and confirmability using source and technique triangulation involving students and lecturers (Arikunto, 2014; Sugiyono, 2019). Data analysis employs mixed methods with a Concurrent Embedded Strategy, positioning quantitative analysis as the primary method and qualitative analysis as supporting data to strengthen interpretation (Creswell, 2009; Sugiyono, 2018, 2019). Questionnaire data are measured using a Likert checklist scale and analyzed through percentage calculations, with interpretation based on predefined feasibility criteria to determine program quality levels (Sugiyono, 2019; Asyhari & Silvia, 2016).

TABLE 1. Likert Scale

Criteria	Score
Strongly Agree (SA)	5
Agree (A)	4
Neutral (N)	3
Disagree (D)	2
Strongly Disagree (SD)	1

$$\textbf{Percentage} = \frac{\textbf{Total Score Obtained}}{\textbf{Ideal Total Score (Criterion)}} \times 100\%$$

Figure 1. Percentage Score Formula

TABLE 2. Interpretation Scale Criteria

Interval	Interpretation
0 percent to 20 percent	Very Not Feasible
21 percent to 40 percent	Not Feasible
41 percent to 60 percent	Moderately Feasible
61 percent to 80 percent	Feasible
81 percent to 100 percent	Very Feasible

RESULTS AND DISCUSSION

1. Instrument Construction

The initial phase of the *hybrid learning* evaluation focused on constructing an appropriate research instrument to ensure that the collected data accurately represented empirical conditions. Instrument development involved identifying evaluation aspects and indicators through theoretical review, designing instrument specifications and formats based on expert judgment from three specialists in measurement and evaluation, and validating the draft instrument through a Focus Group Discussion.Unidimensionality testing was conducted using factor analysis with SPSS version 25. Prior to factor extraction, data suitability was assessed using the Kaiser Meyer Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity for each instrument. According to Anderson et al. (1998), factor analysis requirements include a Kaiser Meyer Olkin value exceeding 0.5 and a significant Bartlett's test result. Unidimensionality indicates that each test item measures a single latent trait. The empirical results showed a Kaiser Meyer Olkin value of 0.868 and a Bartlett's test significance of 0.000, indicating adequate sampling and data normality. These findings confirm the appropriateness of factor analysis. Factors with eigenvalues greater than 1.00 were retained following the criterion proposed by Santoso (2010).

Hambleton and Swaminathan (1985) stated that unidimensionality is satisfied when a dominant component measures a single ability. Naga (1992) supported this assertion by emphasizing that a dominant dimension represents a unidimensional construct. The results indicated that the first factor's eigenvalue was several times greater than subsequent factors, fulfilling the unidimensionality assumption. The cumulative variance explained reached 62.687 percent, with the first component contributing 36.741 percent, indicating that the instrument measured a single dominant construct. The scree plot analysis further supported this finding, as the steep decline between the first and second components demonstrated the presence of one dominant factor. This result confirms that the *hybrid learning* evaluation instrument measured a single dimension.

TABLE 3. KMO values and Barlett'e Instrumen *Hybrid Learning*

KMO and Bartlett's Test[a]		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.868
Bartlett's Test of Sphericity	Approx. Chi-Square	1322.889
	df	120
	Sig.	.000

a. Based on correlations

TABLE 4. Total of Cumulative Variant

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.879	36.741	36.741	5.879	36.741	36.741
2	1.598	9.990	46.731	1.598	9.990	46.731
3	1.470	9.186	55.917	1.470	9.186	55.917
4	1.083	6.770	62.687	1.083	6.770	62.687

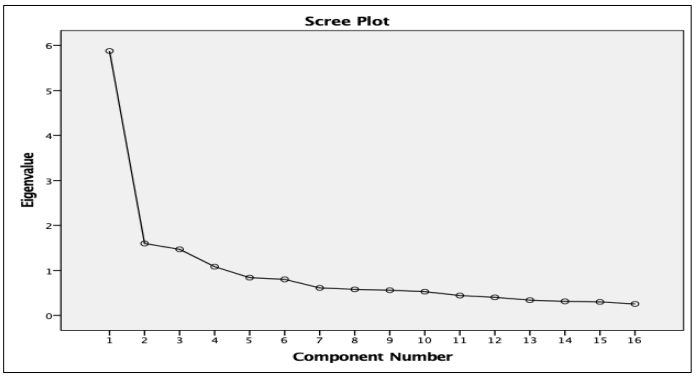

Figure 2. *Scree Plot Score*

2. *Reliability Analysis*

a. Cronbach's Alpha

Item reliability was examined using SPSS by analyzing Cronbach's Alpha coefficients. According to Nunnally (1981), an instrument is considered reliable when the alpha coefficient exceeds 0.7. The pilot testing produced a Cronbach's Alpha value of 0.865, indicating high internal consistency. Reliability coefficients for each component exceeded 0.6, demonstrating acceptable reliability across all components.

TABLE 4. *Total of Cumulative Variant*

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.865	.875	16

TABLE 5. *Realibility Coefficient per Components*

	Cronbach's Alpha
Context	0,802
Input	0,633
Process	0,802
Product	0,652

b. Composite Score Reliability

Composite reliability or Average Variance Extracted was used to assess the reliability of each latent variable. Composite reliability provides a closer approximation of reliability by accounting for differing indicator loadings and does not assume tau equivalence, unlike Cronbach's Alpha (Ghozali, 2014). Comparing these two reliability measures is necessary to evaluate internal consistency. Composite reliability was calculated using the following formula as proposed by Ghozali (2014): $pc = (\Sigma\lambda_i)^2 / [(\Sigma\lambda_i)^2 + \Sigma var(\varepsilon_i)$, where λ_i represents the standardized factor loading and $var(\varepsilon_i)$ equals 1 minus λ_i squared.

The composite reliability results indicated values above 0.65 for all components. The overall composite reliability score reached 0.865, indicating that the *hybrid learning* evaluation instrument demonstrated strong internal consistency.

TABLE 6. *Composite Score Reliability*

	Composite Reliability
Context	0,883
Input	0,783
Process	0,864
Product	0,776

3. *Construct Validity of the Hybrid Learning Evaluation Instrument*

Construct validity was examined using Confirmatory Factor Analysis to determine factor loadings for each component and item. The estimation results showed that the instrument achieved reliability values exceeding 0.7. All sixteen items demonstrated factor loadings greater than 0.3, confirming item validity. Subsequent model modification resulted in a parsimonious fit model. The Confirmatory Factor Analysis yielded a Chi Square value of 1203.84 with 425 degrees of freedom and a Root Mean Square Error of Approximation of 0.067, indicating acceptable model fit. Additional indices included a Goodness of Fit Index of 0.70 and an Adjusted Goodness of Fit Index of 0.66. These values confirm that the structural model aligned with empirical data. All latent variables demonstrated factor loadings exceeding 0.3. The covariance relationships between latent and observed variables were statistically acceptable, indicating that the Confirmatory Factor Analysis model fit the empirical data.

TABLE 7. *Results of Factor Loading with CFA*

No.	Category	Item Numbers
1	Valid	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
2	Not Valid	None

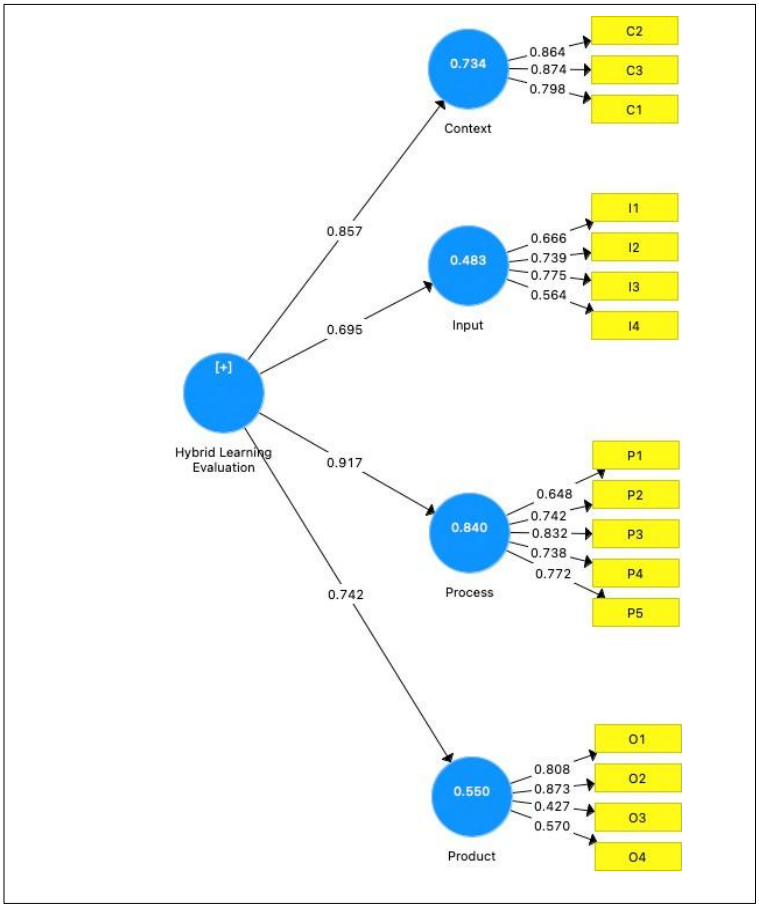

Figure 3. *Diagram Path of Instrument Factor Loading*

TABLE 8. *Summary of Structural Model Factor Loadings*

No.	Component	Factor Loading	Decision
1	Context	0.734	Very good
2	Input	0.483	Good
3	Process	0.840	Very good
4	Product	0.550	Good

4. *Results of the CIPP Evaluation*

a. Descriptive Results of the Evaluation

The evaluation results of *hybrid learning* implementation at Universitas Negeri Yogyakarta were analyzed using the Context Input Process Product model. The descriptive analysis revealed that the context and input components achieved very good categories, while the process and product components achieved good categories.

TABLE 9. *Descriptive Scores of Hybrid Learning Evaluation Results*

No.	Component	Score	Category
1	Context	3.12	Very good
2	Input	3.29	Very good
3	Process	2.98	Good
4	Product	2.82	Good

b. Student demographics

Student demographics was identified as a determining factor in the effectiveness of online learning. Data showed that 66 percent of students resided in rural areas with limited internet connectivity, while 29 percent lived in urban areas. Smaller proportions resided on campus and in island regions. These findings indicate that learning platforms with low bandwidth requirements such as *Google Meet* are more suitable for supporting student participation.

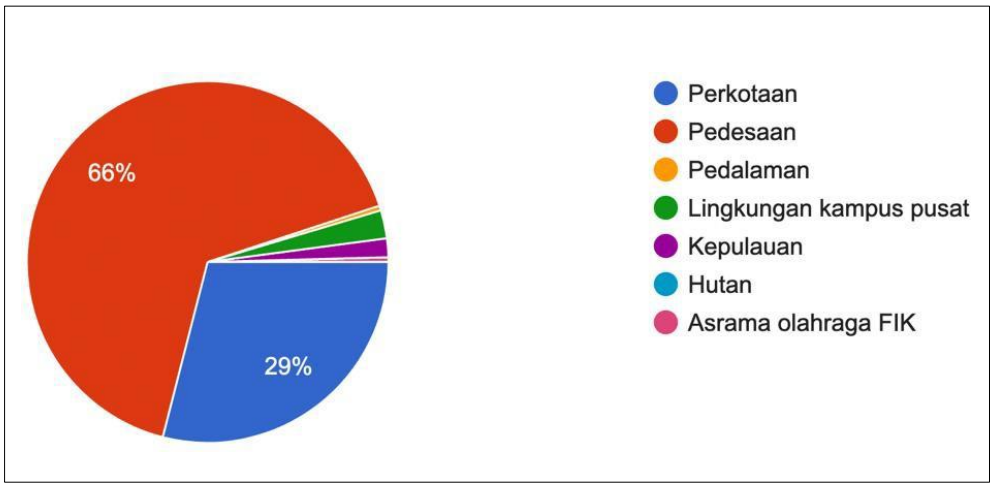

Figure 4. *Diagram Pie of Student Demographics*

c. Learning Media

Learning media functioned as essential infrastructure supporting *hybrid learning*. The most frequently used platforms included *Zoom Meeting*, *WhatsApp Group*, *Google Classroom*, *Google Meet*, *Be Smart*, *Google Form*, and *YouTube*. Less frequently used platforms included podcasts, *Microsoft Teams*, and *Conceptboard*. These results indicate that familiar and user friendly platforms were preferred in *hybrid learning* implementation.

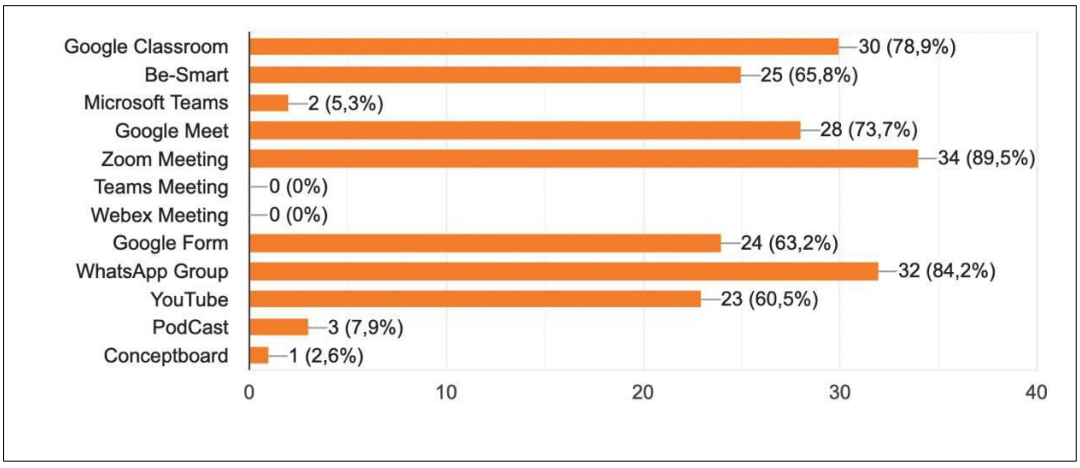

Figure 5. *Chart of Learning Media within Hybrid Learning*

d. CIPP Results

1) Context Evaluation

Context evaluation examined the relevance of program objectives to institutional goals. The results showed that the *hybrid learning* program aligned with the vision of Universitas Negeri Yogyakarta, with high mean scores across all indicators. Course syllabi were designed according to the *hybrid learning* model, and learning outcomes were consistent with program level outcomes.

2) Input Evaluation

Input evaluation assessed facilities, infrastructure, and instructional media. The majority of lecturers consistently used Learning Management Systems such as *Be Smart* and *Google Classroom*. Hardware availability and instructional media were rated as adequate. Synchronous media usage showed high frequency, indicating strong support for *hybrid learning* delivery.

3) Process Evaluation

Process evaluation focused on assessment practices and instructional materials. Assessment models were rated as appropriate, fair, and transparent, although transparency and feedback mechanisms required improvement. Instructional materials were rated as highly adequate, indicating effective content delivery.

4) Product Evaluation

Product evaluation examined learning outcomes, satisfaction, and perceived difficulties. Student grade point averages and satisfaction levels were rated as good. Lecturer and student difficulties were also rated as good, although variability existed due to differences in digital access and instructional readiness. These findings indicate the need for continued professional development and infrastructure enhancement to support effective *hybrid learning* implementation.

CONCLUSION

The conclusions derived from the evaluation of hybrid learning are presented as follows. First, the hybrid learning evaluation model was developed using validated instruments that demonstrate sound construct quality. This is evidenced by acceptable factor loading values, composite reliability scores exceeding 0.7, and Cronbach's alpha coefficients above 0.6, indicating adequate internal consistency and measurement reliability. Second, the implementation of hybrid learning encounters several obstacles. Student related challenges include heterogeneity in residential locations, which contributes to disparities in internet network signal quality. From the lecturers' perspective, limitations remain because not all lecturers possess sufficient technological and media related competencies required for effective hybrid learning implementation. Third, the evaluation results indicate that the context, input, process, and product aspects of hybrid learning are classified in the category of "very good," with an overall mean score of 3.05. This finding reflects a consistently high performance across all evaluated dimensions..

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Development Of Website-Based Moocs Digital History Learning Materials Using A Case Method Approach To Enhance Critical Thinking Skills

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Abstract. Globalization and advancements in information and communication technology profoundly shape contemporary education. Education constitutes a structured process to enhance competencies in both academic and non-academic domains. In Indonesia, improving human resource quality through education is critical to strengthen national competitiveness. High-quality education requires innovative instructional approaches, including the development of digital learning materials that integrate content with technology. Digital learning materials, created, stored, and delivered in digital formats, enhance accessibility, interactivity, multimedia integration, and adaptability, supporting flexible and effective learning experiences. History education, traditionally reliant on conventional methods, often limits student engagement and critical reflection. Massive Open Online Courses provide scalable, open-access learning platforms, while the case method fosters student-centered learning by developing analytical, problem-solving, and decision-making skills. Combining case- based digital materials in history learning seeks to cultivate 21st-century competencies, specifically the 4Cs: critical thinking, creativity, communication, and collaboration. This study adopts a research and development approach based on the ADDIE model to create a MOOCs website for Hindu-Buddha kingdom content. The project aims to produce peer- reviewed publications and secure intellectual property certification, aligned with level 4 TKT outcomes. Observations indicate that History Education students at UNY and UNNES possess moderate factual knowledge but struggle to contextualize events within social, economic, and cultural frameworks. Traditional lecture and textbook reliance constrains critical thinking and reflective skills. Implementing case-method digital learning through MOOCs is expected to improve comprehension, analytical capacity, and 21st-century competencies.

Keywords: digital learning materials; MOOCs; case method; history education; 21st-century skills.

INTRODUCTION

The globalization era has accelerated advancements in information and communication technology (ICT) across all aspects of global society. Education represents a deliberate effort to acquire knowledge and develop individual potential through the provision of necessary guidance and facilities by governmental and educational institutions. Education must remain adaptive and responsive to contemporary developments to produce competent graduates aligned with labor market demands while upholding ethical and moral values (Goodlad, 2015). Advancements in ICT present both challenges and opportunities for educators to design more engaging and effective instructional methods and media. Educators' creativity in developing ICT-based learning methods and media is crucial for delivering informative, interactive, and efficient learning experiences, ultimately influencing student assessment outcomes (Arshad et al., 2018). Integrating and innovating ICT in educational content and processes is expected to enhance the quality of education in Indonesia, in line with the national objective of "Mencerdaskan kehidupan bangsa" as stated in the fourth paragraph of the Preamble to the 1945 Constitution of the Republic of Indonesia and Article 31, Paragraph 1, which guarantees every citizen the right to education. Therefore, quality education constitutes a vital component of national development that every Indonesian citizen is entitled to receive.

One ICT innovation capable of improving educational quality is the development of digital instructional materials. Instructional materials refer to all types of resources employed to support the learning process, primarily aiming to facilitate students' understanding of subject matter, achieve learning objectives, and develop desired skills (Goodlad, 2015). These materials can be delivered through various media, including

text, images, audio, video, and interactive formats. Digital instructional materials, as a form of ICT integration, are instructional resources created, stored, and delivered in digital formats to support learning. Their advantage lies in accessibility through electronic devices such as computers, laptops, tablets, and smartphones. Digital learning resources enable flexible interactions between students and instructors, both inside and outside the classroom, and facilitate content sharing, connectivity, and communication related to learning materials (Arshad et al., 2018). Digital technology represents an integral component of higher education pedagogy, encompassing selected technologies that integrate formal learning contexts and support student learning (Goodlad, 2015). Common forms of digital instructional materials include E-books, MOOCs (Massive Open Online Courses), Flipbooks, educational podcasts, gamified learning, and AR/VR (Augmented Reality/Virtual Reality).

MOOCs are online course platforms designed for open access and large-scale participation, offering multimedia learning content, open discussion forums, and diverse multidisciplinary topics. MOOCs create new learning environments that facilitate educational equity and democracy (Zhao, 2019). Compared with other digital instructional materials, MOOCs provide greater scale and flexibility, offering open and free access for all learners, structured curricula with in-depth learning materials, interactive discussion forums, and practical assignments. They not only promote independent learning but also foster learning communities where participants engage in discussions and knowledge sharing. MOOCs frequently provide official certificates upon course completion, enhancing participants' professional credentials. The flexibility in scheduling allows learners to progress at their own pace without rigid time constraints (Zhao, 2019). Popular MOOC platforms include Coursera, edX, Udemy, and Khan Academy.

History education has traditionally relied on conventional methods using textbooks and blackboards. This approach limits the delivery of static and less interactive content, reducing the appeal and effectiveness of history instruction. History education not only conveys factual knowledge but also cultivates moral values among students. History learning plays a significant role in shaping character and fostering empathy (Retz, 2017). Moreover, it develops critical thinking, analytical, cooperative, and collaborative skills, which are essential competencies in the twenty-first century. Contemporary educational expectations emphasize that students must master knowledge and simultaneously develop critical thinking, creativity, communication, and collaboration skills (Panggabean et al., 2016). Low student achievement in Indonesia can partially be attributed to insufficient training in solving contextual problems requiring reasoning, argumentation, and creativity (Panggabean et al., 2016).

Digital history instructional materials developed using the case method offer a potential solution. The case method, a student-centered learning approach, stimulates critical thinking and problem-solving abilities (Christensen, 2016). This method enables active and critical learning rather than passive listening, allowing students to develop analytical skills, decision-making, and perspective-taking in addressing real-world problems. Case-based learning objectives include content mastery, collaborative problem-solving, enhancement of critical thinking, communication skills, research proficiency, and the ability to interpret, transfer, test, and apply knowledge in varied contexts (Morrison in Suteja et al., 2017). Therefore, the case method significantly contributes to the development of twenty-first-century skills. Integrating ICT and the case method in history instructional materials is expected to provide interactive, innovative resources that enhance learning quality and facilitate students' acquisition of critical twenty-first-century competencies.

RESEARCH METHOD

This study employs a research and development (R&D) design following the ADDIE model, which encompasses Analyze, Design, Development, Implementation, and Evaluation phases (Molenda, 2015) [12]. Data were collected through observation, interviews, focus group discussions (FGD), and documentation. The research was conducted in the History Education study programs at Universitas Negeri Yogyakarta and Universitas Negeri Semarang. The developed digital learning materials, hosted on a website, aim to enhance students' 21st-century skills, particularly the 4C competencies: Critical Thinking, Creativity, Communication, and Collaboration. The study utilizes Massive Open Online Courses (MOOCs) as the primary platform. The development process is represented as a cyclical model, beginning with needs analysis and followed by the creation of the initial prototype in the form of a mock-up. The website is designed to facilitate comprehensive learning of the history of Hindu-Buddhist kingdoms in Indonesia using a case method approach. This approach enables students to develop 4C skills within a single integrated platform.

The website includes several key features. First, it provides historical materials on the establishment of Hindu- Buddhist kingdoms in Indonesia. Second, it offers maps showing the distribution of these kingdoms. Third, it presents maps of maritime trade and navigation routes of the kingdoms. Fourth, the website provides up-to-date information on the preservation of heritage sites from these kingdoms. Fifth, it includes summaries and infographics on the kingdoms. Sixth, it offers 3D video simulations of major historical events, such as wars and struggles for power. Seventh, the platform contains case study-based exercises addressing problems

that occurred in Hindu-Buddhist kingdoms. Finally, it provides problem-solving exercises related to contemporary social issues, integrating the noble values derived from the Hindu-Buddhist period in Indonesia.

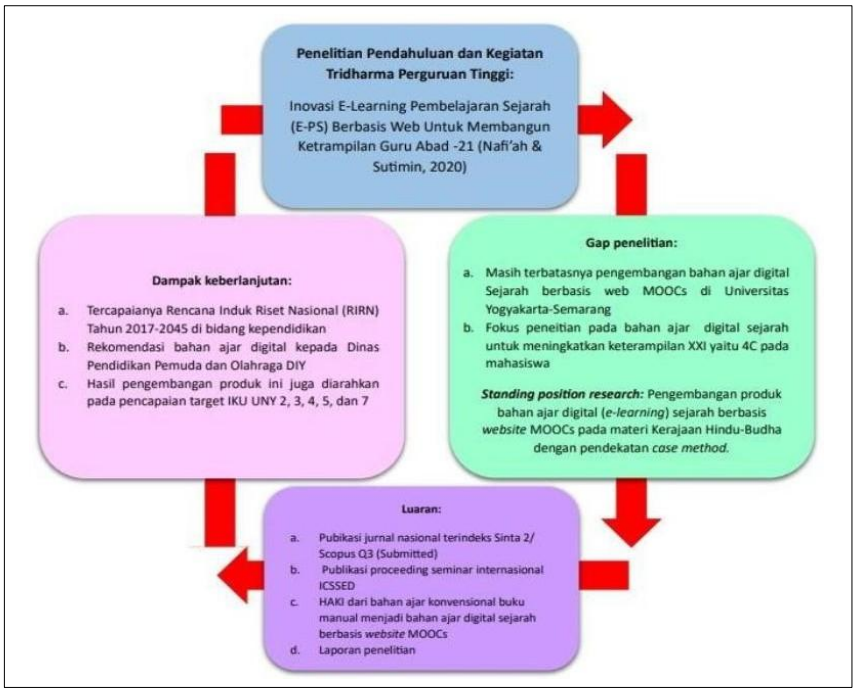

Figure 1. Research Conceptual Framework

At the data analysis stage, the study employed the data analysis techniques proposed by [13], which include data collection, data reduction, data presentation, verification, and conclusion drawing.

Figure 2. Implemantation ADDIE Model

RESULTS AND DISCUSSION

Results

1. *Student Understanding of Hindu-Buddha Kingdom History Material*

The understanding of Hindu-Buddha Kingdom history among students of the History Education Study Program at Universitas Negeri Yogyakarta (UNY) and Universitas Negeri Semarang (UNNES) varies due to multiple internal and external factors. Students generally demonstrate proficiency in factual knowledge, including historical figures, kingdoms, and chronological sequences of events. However, when tasked with relating historical events to contemporary social, economic, and cultural contexts, most students encounter difficulties. This indicates that their comprehension remains predominantly at lower cognitive levels, such as remembering and understanding, and has not fully reached higher-order thinking skills, including analysis, evaluation, and synthesis.

Pretest results on historical literacy reveal that UNY students tend to exhibit stronger understanding of chronological and narrative aspects, whereas UNNES students excel in connecting Hindu-Buddha heritage with local cultural contexts. These differences reflect variations in curriculum emphasis, field experiences, and the presence of historical sites in the vicinity of each university. Both groups, however, show weaknesses in employing critical approaches, particularly in analyzing philosophical values and historical relevance of events from the Hindu-Buddha period.

Focus Group Discussions (FGD) with lecturers and students indicate that most students still rely primarily on textbooks as the main learning source. Interactive digital media, such as animated videos, 3D simulations, or MOOCs, remain underutilized in classical history courses. Consequently, students' understanding tends to be rigid and less contextual. They acknowledge that lecture-dominated methods limit active engagement, hindering the development of critical and analytical thinking skills. A clear gap exists between expected academic achievements and actual student capabilities.

Furthermore, data analysis shows significant differences in understanding based on students' backgrounds. Students actively involved in organizational or historical research activities demonstrate deeper understanding due to habitual engagement in discussion, writing, and presentation. Conversely, more passive students exhibit relatively lower comprehension scores. These findings reinforce the necessity of participatory and case method-based approaches in history education, ensuring students not only master historical facts but also develop reasoning, relational, and problem-solving skills grounded in historical values.

Overall, students' understanding of Hindu-Buddha Kingdom history in UNY and UNNES falls within a moderate category, with variations across universities and individuals. This forms a foundational rationale for developing digital teaching materials based on MOOCs with a case method approach, aiming to enhance historical comprehension while fostering twenty-first-century skills, particularly critical thinking, creativity, communication, and collaboration.

2. *Comparative Analysis of Student Understanding Across Universities*

A comparative test of Hindu-Buddha Kingdom history understanding between UNY and UNNES students reveals significant differences. Statistical analysis shows that although both groups possess adequate foundational knowledge regarding chronological sequences and political development of the Hindu-Buddha Kingdom in Indonesia, notable variations exist in analytical depth and the ability to connect historical values with contemporary societal contexts.

UNY students generally excel in narrative and chronological understanding, particularly in identifying event sequences, prominent figures, and developments of major kingdoms such as Sriwijaya, Mataram Kuno, Kediri, Singasari, and Majapahit. This strength aligns with a curriculum emphasizing mastery of historical facts and narrative construction skills. In contrast, UNNES students demonstrate relatively stronger achievements in interpreting archaeological remains and cultural aspects of the Hindu-Buddha period, largely influenced by their geographical proximity to historical sites such as Candi Gedong Songo, Candi Borobudur, and other locations in Central Java.

T-test analysis of comprehension scores confirms significant differences in conceptual and applicative understanding. UNY students perform better in explaining political and economic developments of the kingdoms, whereas UNNES students excel in social and cultural aspects, including religious systems, societal structures, and local wisdom values formed during the Hindu-Buddha period. Nonetheless, both groups display limitations in critical and reflective analysis, such as comparing the relevance of Hindu-Buddha values to contemporary social issues.

FGD discussions with lecturers further corroborate these findings. Academic achievement is heavily influenced by each program's learning orientation. UNY prioritizes curriculum emphasizing factual and chronological mastery, while UNNES promotes contextual approaches linking history with local cultural

heritage. Consequently, inter- university differences in understanding can be viewed as complementary strengths, though both groups require innovative pedagogical interventions to advance comprehension from factual mastery to critical, creative, and applicative thinking.

The results of this comparative analysis underscore the need for integrating new case method-based learning models via digital platforms such as MOOCs. Such models are expected to bridge inter-university differences, providing UNY and UNNES students with balanced learning experiences: mastering historical facts and chronology while interpreting values, meanings, and historical relevance in contemporary life.

Discussion

1. *Student Understanding of Hindu-Buddha Kingdom History Material*

Research on students' understanding of Hindu-Buddhist kingdoms among History Education students at Universitas Negeri Yogyakarta (UNY) and Universitas Negeri Semarang (UNNES) reveals a complex and diverse pattern. Students generally demonstrate mastery of factual knowledge such as historical figures, kingdoms, and chronology, yet they encounter difficulties in connecting these events to contemporary social, economic, and cultural contexts. This finding aligns with historical learning theories, which suggest that comprehension at lower cognitive levels, including remembering and understanding, is more readily achieved compared to higher-order skills such as analysis, evaluation, and synthesis that require critical and contextual thinking (Wineburg, 2001; VanSledright, 2004).

Differences in pretest results between UNY students, who excel in chronological and narrative aspects, and UNNES students, who are more adept at linking Hindu-Buddhist heritage with local culture, reflect the significance of curriculum design and local context. Djamarah and Zain (2006) emphasize the importance of aligning teaching materials with geographic and cultural conditions to enhance the relevance of historical learning. The proximity of historical sites near the universities also influences understanding, consistent with studies on the impact of learning environments on motivation and history learning outcomes (Lee, 2011). However, weaknesses in applying critical approaches to examine the philosophical values and historical relevance of Hindu-Buddhist kingdoms indicate limited integration of historiography and philosophy of history within the learning process (Carr, 1986; Tosh, 2015). Focus group discussions (FGDs) revealed that lecture-dominated methods and reliance on textbooks as primary sources hinder interactive and contextual learning. Hannum (2009) suggests that interactive digital media, such as animated videos, 3D simulations, and MOOCs, can enhance student engagement and foster critical and analytical thinking skills necessary for modern historical studies.

Variations in understanding based on students' extracurricular engagement, including organizational and research activities, indicate that participatory and case-based learning improves comprehension. Bruner (1996) argues that active learning and discussion deepen understanding while developing critical thinking and problem-solving skills. This approach aligns with twenty-first-century educational demands emphasizing critical thinking, creativity, communication, and collaboration (Trilling & Fadel, 2009). Students' understanding of Hindu-Buddhist kingdoms can thus be categorized as moderate, with variations across institutions and individuals. These findings underscore the need to develop digital learning materials based on MOOCs with a case method approach that not only conveys factual knowledge but also cultivates critical and contextual thinking. This recommendation aligns with historical education literature emphasizing the integration of educational technology to enrich learning experiences and foster deeper historical competence (Bromley, 2007; Lee & Shemilt, 2003).

2. *Comparative Analysis of Student Understanding Across Universities*

The comparative analysis of students' understanding of Hindu-Buddhist kingdoms between History Education students at UNY and UNNES demonstrates significant differences in specific comprehension aspects. UNY students excel in narrative and chronological dimensions, particularly in identifying sequences of events, key figures, and political developments in kingdoms such as Srivijaya, Mataram Kuno, and Majapahit. This strength reflects the curriculum's focus on factual mastery and narrative construction skills, as emphasized by traditional historical pedagogy prioritizing chronology and facts (VanSledright, 2004; Seixas, 2006). Conversely, UNNES students exhibit superior performance in understanding the socio-cultural aspects of Hindu-Buddhist kingdoms, such as archaeological interpretation and religious systems, facilitated by their geographical proximity to historical sites including Borobudur and Gedong Songo. Research indicates that local context and access to authentic historical sources strongly influence contextual and applicable historical understanding (Lee, 2011; Levstik & Barton, 2011).

T-test analysis reveals that UNY students demonstrate advantages in conceptual and applied knowledge of political and economic developments, while UNNES students excel in socio-cultural aspects. These results support the view that curriculum orientation and learning environment characteristics shape distinct yet complementary historical understanding profiles (Barton & Levstik, 2004). Both groups' limitations in critical

and reflective analysis, such as comparing Hindu-Buddhist values with contemporary social issues, indicate restricted higher-order thinking application. This observation aligns with studies emphasizing that factual mastery does not guarantee critical thinking without pedagogical strategies fostering philosophical and historiographical reflection (Wineburg, 2001; Carr, 1986). FGDs with faculty members highlight the importance of integrating the strengths of each program in history instruction.

The factual curriculum emphasis at UNY and the contextual approach at UNNES represent complementary assets that could be merged into an innovative learning model. Trilling and Fadel (2009) stress the necessity of instructional strategies developing twenty-first-century skills, including critical, creative, and communicative thinking, which can be accelerated through interactive digital media and case method implementation. The findings of this comparative analysis support the urgency of developing a flexible and adaptive digital learning model based on case method through MOOCs. This approach can combine narrative and factual strengths with socio- cultural context while facilitating active learning that promotes critical analysis, evaluation, and synthesis of historical understanding (Bruner, 1996; Bromley, 2007).

CONCLUSION

The findings regarding the comprehension levels of students in the History Education Study Program at Universitas Negeri Yogyakarta (UNY) and Universitas Negeri Semarang (UNNES) indicate that, in general, their understanding falls within a moderate category, with variations observed among individuals and between institutions. Students demonstrate adequate mastery of factual knowledge, including historical figures, kingdoms, and chronological events of the Hindu-Buddhist period, yet they encounter difficulties in connecting these events to contemporary social, economic, and cultural contexts. Internal factors, such as learning motivation and active participation in academic and organizational activities, alongside external factors, including curriculum design, teaching methods, and the availability of learning media, significantly influence these outcomes. The majority of students remain reliant on textbooks and lecture-based instruction, resulting in history learning that is rigid, minimally contextual, and limited in fostering critical, analytical, and reflective thinking skills. This situation reveals a clear gap between the expected academic achievements and the actual capabilities of students in practice. Comparative analysis of comprehension levels between UNY and UNNES students highlights significant differences in analytical depth and applied competencies. UNY students tend to excel in narrative and chronological aspects, particularly in identifying the sequence of political and economic events of the kingdoms, whereas UNNES students demonstrate stronger abilities in interpreting Hindu-Buddhist cultural aspects, including religious systems, social structures, and local wisdom reflected in archaeological remains.

Despite each institution exhibiting distinct strengths, both display weaknesses in developing critical and reflective analytical skills, especially in assessing the relevance of Hindu-Buddhist historical values to contemporary societal challenges. Integration of innovative, case-method-based learning models through digital platforms such as MOOCs is therefore essential to enable students to achieve a more comprehensive, contextual, and 21st-century skills-aligned understanding.

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Study Of Internal Quality Assurance System In State University Of Yogyakarta And Azam University, Pakistan

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Abstract. This study examines the implementation of the Internal Quality Assurance System (SPMI) at State University of Yogyakarta (UNY), Indonesia, and Quaid-i-Azam University (QAU), Pakistan, within the framework of international academic cooperation. Employing a qualitative descriptive approach, data were obtained through document analysis, in- depth interviews, and observations to analyze how collaboration between UNY and QAU strengthens educational quality and international competitiveness. The results reveal that the academic partnership, formalized through a Memorandum of Understanding (MoU), emphasizes joint research, faculty and student exchanges, benchmarking, and capacity building in quality assurance. This cooperation facilitates the integration of international frameworks such as AUN-QA and FIBAA at UNY and HEC-based Quality Enhancement Cells (QEC) at QAU, fostering synergy that enhances institutional governance and a culture of quality. The collaboration significantly elevates educational quality at UNY, as indicated by the increasing number of study programs achieving "Excellent" accreditation and the growth of Scopus-indexed research publications. At the same time, QAU benefits from cross-regional benchmarking and stronger engagement with Southeast Asian higher education networks. Despite these advancements, challenges remain, including regulatory differences, limited resources, and language barriers. Nevertheless, these challenges provide opportunities for innovation, particularly in digital transformation and professional development. The study formulates a strategic model to strengthen SPMI at UNY by adopting QAU's best practices, focusing on four key dimensions: structural and governance alignment, capacity development, digital integration, and continuous international benchmarking. This model offers a framework for transforming SPMI into a dynamic and globally oriented system that promotes sustainable academic excellence and supports the internationalization of higher education in Indonesia.

Keywords: Internal Quality Assurance System (SPMI), international academic cooperation, higher education quality, State University of Yogyakarta (UNY), Quaid-i-Azam University (QAU)

INTRODUCTION

Higher education in the globalization era faces increasingly complex challenges, particularly in enhancing academic quality and international competitiveness. Global dynamics require universities to adapt and compete within an open and integrated education system. One widely adopted strategy is the internationalization of higher education, a systematic effort to integrate global dimensions into learning, research, and community service. Internationalization extends beyond the mobility of students and faculty, encompassing the strengthening of Internal Quality Assurance Systems (SPMI) as a key instrument to ensure that higher education quality aligns with global standards (Knight, 2004).

Empirical studies demonstrate that effective implementation of internal quality assurance systems significantly contributes to institutional international competitiveness. Research conducted in Taiwan revealed that the integration of internationalization within SPMI directly enhances higher education quality, particularly in teaching, curriculum, and research dimensions (Chen & Hsu, 2022). Similarly, findings from Vietnam indicate that internationalization serves as a vital strategy for strengthening educational quality, although challenges remain due to limited resources and language proficiency (Hoai et al., 2023). Furthermore, Kareva et al. (2023) emphasized that internationalized quality assurance is a prerequisite for achieving global academic recognition.

In Indonesia, the implementation of SPMI is governed by the Regulation of the Minister of Education and Culture Number 3 of 2020 concerning the National Standards for Higher Education (SN-DIKTI), which mandates that every university establish an integrated and sustainable internal quality assurance system. According to Zulaikha et al. (2022), several public universities in Indonesia have successfully developed quality standards that surpass SN-DIKTI requirements by adopting criteria from international accreditation bodies such as AUN-QA, FIBAA, and ASIIN. Meanwhile, Andriani et al. (2024) assert that the success of SPMI implementation is primarily influenced by three factors: faculty competence, curriculum relevance, and strong institutional support.

As a State University with Legal Entity status (PTN-BH), State University of Yogyakarta (UNY) is mandated to develop an excellent academic system oriented toward global competitiveness. The implementation of SPMI at UNY has been designed in accordance with SN-DIKTI provisions and aims to ensure the quality of the university's tri dharma (education, research, and community service). However, UNY's main challenge lies in aligning SPMI implementation with international standards, particularly in the context of global accreditation and competition within the South Asian and global higher education landscapes (Directorate General of Higher Education, 2021).

At the regional level, Quaid-i-Azam University (QAU) in Islamabad, Pakistan, serves as an exemplary institution in implementing internationally recognized quality assurance systems. QAU's achievement in the QS World University Rankings 2023, placing it at 363rd globally, reflects its success in building a robust academic system with strong international competitiveness. Collaborative academic and research initiatives between UNY and QAU present significant opportunities for knowledge and innovation transfer in strengthening UNY's SPMI, thereby accelerating the internationalization of higher education in Indonesia.

The results of this study are expected to provide a significant contribution to UNY in developing an international- based quality assurance strategy and become a reference for other universities in strengthening global cooperation to improve the quality of higher education in Indonesia. In terms of academic feasibility, this study has a high urgency considering that increasing the competitiveness of Indonesian higher education on a global scale is a national priority. The effective implementation of SPMI not only ensures that national academic quality standards are met, but also supports UNY's involvement in various international accreditation schemes and global rankings (Altbach & Knight, 2007).

From the aspect of methodological feasibility, this research can be conducted through qualitative and quantitative approaches with data collection techniques in the form of SPMI policy document analysis, interviews with stakeholders (rectorate, quality management, lecturers, and students), and comparative studies with QAU which has successfully implemented international quality standards. In terms of resource feasibility, UNY has sufficient capacity to carry out this research considering the support from various related units, including the UNY Quality
Assurance Institute (LPM), the Bureau of Cooperation and International Relations (BKH UNY), as well as lecturers and researchers who have experience in studying the internationalization of higher education. In addition, the cooperation that has been established with QAU provides wider access to conduct comparative studies related to the implementation of international-based SPMI.

Despite the growing emphasis on internationalization within Indonesian higher education, the integration of global collaboration into internal quality assurance systems (SPMI) remains limited and fragmented. State University of Yogyakarta (UNY), as a State University with Legal Entity status (PTN-BH), seeks to enhance its academic quality and global competitiveness through academic cooperation with Quaid-i-Azam University (QAU), Pakistan an institution recognized for its internationally accredited quality assurance practices. However, several critical issues persist:

1. The existing forms and schemes of academic cooperation between UNY and QAU related to the implementation of SPMI have not been systematically identified or evaluated.
2. The extent to which this cooperation contributes to improving UNY's educational quality and international
   competitiveness remains unclear.
3. There is limited understanding of the challenges and opportunities arising from the adaptation of QAU's quality assurance practices within UNY's institutional context.
4. A comprehensive and contextualized model or strategic recommendation for strengthening SPMI based on QAU's
   best practices has yet to be developed.

These issues highlight a significant research gap in understanding how international academic cooperation can serve as a catalyst for strengthening internal quality assurance and advancing the internationalization of higher education institutions in Indonesia. Based on the problems discussed above, the research problems are formulated as

follows.

1. How is the form and scheme of academic cooperation between State University of Yogyakarta (UNY) and Quaid- i-Azam University (QAU) structured in relation to the implementation of the Internal Quality Assurance System (SPMI)?
2. To what extent does this academic cooperation contribute to enhancing the quality of education and improving UNY's international competitiveness?
3. What are the main challenges and opportunities encountered in implementing SPMI through academic collaboration with QAU?
4. How can a strategic model or recommendation for strengthening SPMI be developed for UNY based on QAU's best practices?

RESEARCH METHOD

Comprehensively examine the implementation of the Internal Quality Assurance System (SPMI) and the internationalization of education through collaboration between State University of Yogyakarta (UNY) and Quaid-i- Azam University (Islamabad, Pakistan). A qualitative approach is suitable for exploring complex social phenomena, including educational internationalization strategies (Creswell, 2014), while descriptive research systematically presents factual findings regarding SPMI implementation and its influence on internationalization. The research is conducted at UNY and Quaid-i-Azam University over six months, covering preparation, data collection, analysis, and report preparation. The population comprises university leaders, academic officials, and lecturers involved in SPMI and international cooperation, with a purposive sample of 15–20 individuals who directly engage in education internationalization and quality assurance.

Data are collected through semi-structured in-depth interviews to explore experiences and challenges, observations of internationalization policies and academic practices, and documentation studies of policy documents, cooperation agreements, academic reports, and SPMI-related documents. Thematic analysis is applied following Braun and Clarke (2006), encompassing familiarization, initial coding, theme identification, theme review, definition, and reporting, while validity is ensured through source triangulation and member checking, and reliability is maintained via consistent and systematic documentation. The research flowchart illustrates these procedures, providing a structured framework that facilitates a thorough understanding of SPMI implementation and internationalization initiatives conducted by UNY in collaboration with Quaid-i-Azam University.

RESULTS AND DISCUSSION

1. *Forms and Schemes of Academic Cooperation between UNY and QAU*

The academic cooperation between UNY and QAU is formalized through a Memorandum of Understanding (MoU) that emphasizes joint research, academic exchanges, and capacity building in quality assurance. Both universities harmonize their quality assurance systems with international standards to enhance institutional credibility (Ahmed et al., 2023). UNY implements its Internal Quality Assurance System (SPMI) through the Quality Assurance Institute (Lembaga Penjaminan Mutu) in accordance with the National Standards for Higher Education (SN-Dikti). The university also integrates international frameworks such as AUN-QA and FIBAA to align national and global benchmarks. In contrast, QAU operates its Quality Enhancement Cell (QEC) under the supervision of Pakistan's Higher Education Commission (HEC), focusing on audit mechanisms, curriculum review, and performance evaluation.

The collaboration is reflected through benchmarking workshops, academic audits, and virtual joint seminars that facilitate mutual learning. UNY adopts QAU's Outcome-Based Education (OBE) evaluation model, while QAU integrates UNY's digital quality monitoring tools, including the use of Learning Management Systems (LMS) in internal evaluations (Hoai et al., 2023). This partnership exemplifies a networked collaboration model that is formalized institutionally and implemented through faculty-level initiatives. The Faculties of Education, Science, and Social Sciences play pivotal roles in conducting joint research and co-publication projects, serving as practical mechanisms for quality enhancement and international academic visibility (Chen & Hsu, 2022).

2. *Impact of Cooperation on Educational Quality and Competitiveness*

The cooperation between UNY and QAU has significantly enhanced both institutional and academic quality. At UNY, the exchange of best practices has strengthened internal audit mechanisms, leading to an increase in study

programs attaining "Excellent" accreditation status between 2022 and 2024. These results indicate that international benchmarking promotes internal consistency and supports the implementation of evidence-based quality assurance (Andriani et al., 2024). This collaboration has also elevated teaching quality and research performance. Faculty members have developed a deeper understanding of international pedagogical frameworks and data-driven assessment models, which has contributed to higher levels of student engagement and improved research productivity. Furthermore, the establishment of joint academic activities, including online seminars, visiting lectureships, and collaborative research, has resulted in a growth of publications in Scopus-indexed journals.

For QAU, partnerships with UNY and other ASEAN universities have expanded its international collaborations, thereby strengthening its global presence and improving its standing in the QS World University Rankings (QS Top Universities, 2023). This cooperation has also enhanced QAU's capacity for cross-cultural curriculum development and facilitated the introduction of new courses incorporating regional comparative perspectives (Nizamani et al., 2022). Overall, the evidence demonstrates that collaboration-based quality assurance produces mutual institutional benefits. UNY has achieved higher accreditation outcomes, while QAU has strengthened its internationalization capacity. These developments affirm that academic cooperation serves as a catalyst for institutional transformation within the global higher education landscape (Altbach & de Wit, 2020).

3. *Challenges and Opportunities in Implementing SPMI through International Collaboration*

Although the partnership has produced measurable progress, several challenges persist in the implementation of SPMI across the two institutions.

a. Institutional and Regulatory Differences

The primary challenge arises from differences in regulatory systems. Indonesia's National Standards for Higher Education (SN-Dikti) emphasize continuous improvement through the PPEPP cycle, which consists of Determination, Implementation, Evaluation, Control, and Improvement. In contrast, Pakistan's Higher Education Commission (HEC) framework prioritizes audit performance and accreditation indicators. Harmonizing these systems necessitates structural adaptation and intercultural understanding (Bernhard, 2021).

b. Limited Funding and Human Resources

Both universities encounter resource limitations, particularly in financing faculty mobility, developing digital infrastructure, and providing professional training. Insufficient research funding often undermines the long-term sustainability of international programs. Additionally, faculty members emphasize the need for further training in global communication and academic writing to meet international publication standards (Ahmed et al., 2023).

c. Cultural and Communication Barriers

Language proficiency and cross-cultural communication occasionally impede effective coordination. Nevertheless, the adoption of English as a lingua franca has alleviated several of these challenges. The mutual commitment to open dialogue and respect for institutional diversity has further reinforced the cooperation process (Kareva et al., 2023).

d. Opportunities for Growth

Despite these challenges, substantial opportunities emerge from the collaboration. The partnership enables the development of joint accreditation programs, mutual supervision of postgraduate research, and training-of-trainers initiatives for quality auditors. The integration of digital technologies, including Learning Management Systems (LMS), data analytics, and AI-based quality monitoring, offers a transformative pathway to modernize the SPMI framework at UNY (Jarodi, 2024).

4. *Strategic Model for Strengthening SPMI Based on QAU's Best Practices*

Drawing on comparative findings, a Strategic Model for Internationalized SPMI is proposed for UNY, inspired by QAU's best practices. This model integrates governance restructuring, capacity development, and digital transformation.

a. Structural and Governance Alignment

UNY should adopt a Quality Enhancement Cell (QEC)-style structure within its Quality Assurance Institute to centralize policy formulation and audit coordination. Institutional autonomy and effective cross-faculty coordination are essential to maintain the continuity of quality assurance cycles and ensure alignment with both national and international frameworks.

b. Capacity Development and Quality Culture

Regular capacity-building programs for faculty and staff can enhance their understanding of quality standards and international benchmarking practices. QAU's Quality Assurance Clinics serve as a valuable model for UNY to establish internal communities of practice that foster a quality-oriented culture extending beyond

administrative compliance.

c. Digital Integration and Transparency

Both universities emphasize the importance of technological integration within the SPMI framework. A digitalized quality assurance system enables real-time performance monitoring, transparent reporting, and data- driven decision-making, aligning with the global transition toward smart governance in higher education.

d. International Benchmarking and Continuous Improvement

UNY's next strategic step is to institutionalize international benchmarking as an integral component of the SPMI enhancement phase. Conducting periodic comparative studies with QAU and other globally ranked universities will ensure the system remains adaptive and responsive to evolving academic standards.

5. Comparative Analysis between UNY and QAU

TABLE 1. *Comparative Analysis between UNY and QAU*

Aspect	UNY	QAU
Quality Framework	SN-Dikti integrated with AUN-QA	HEC Quality Assurance
Framework **Organizational Structure**		Quality Assurance Institute
(LPM)	Quality Enhancement Cell (QEC) **Accreditation Focus**	Internal
audit and national evaluation	External international benchmarking	
Strengths	Digital integration,	Global research collaboration
	academic transparency	
Challenges	Limited global ranking exposure	Funding and governance constraints
Cooperation Outcome	Improved accreditation	Broadened regional network and co-
and		publication
	benchmarking	

The comparison shows that UNY excels in digital and administrative efficiency, while QAU demonstrates strength in international research and ranking visibility. The collaboration therefore allows complementary exchange and mutual institutional learning.

CONCLUSION

Based on the research objectives, the findings indicate that academic cooperation between UNY and QAU is institutionalized through a formal MoU and operationalized via joint research, faculty and student exchanges, and capacity building programs that integrate institutional level policy direction with faculty level implementation while aligning internal quality assurance mechanisms through the respective roles of LPM and QEC. This cooperation contributes to educational quality and international competitiveness by strengthening accreditation performance, enhancing academic staff competence, refining curriculum development, and increasing global academic visibility for UNY, while simultaneously enabling QAU to engage in Southeast Asian benchmarking and to achieve reciprocal improvements in research output and academic reputation.

The implementation of SPMI within this collaborative framework encounters constraints related to differences in national higher education systems, limited resources, and cross cultural dynamics, yet these conditions also generate opportunities for structured professional development, adoption of digital quality assurance practices, collaborative accreditation initiatives, and reinforcement of institutional capacity. In response to these findings, a strategic model is proposed for UNY that draws on QAU best practices by emphasizing organizational realignment, systematic capacity development, digital integration, and international benchmarking in order to position SPMI as an adaptive and internationally competitive quality assurance system.

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Pls-Sem Modeling Analysis Factors Influencing The Research Competence Of Graduate Students In Indonesia

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Abstract. Graduate students face persistent challenges in publishing articles in reputable international journals, largely due to limited research competence. Weak research capability is reflected in low writing quality, which frequently leads to editorial rejection and delays in degree completion. In Indonesia, empirical studies on graduate students' research competence remain scarce, limiting the availability of evidence for formulating policies or developing publication oriented research skill models. This condition necessitates empirical investigation of factors associated with and influencing research competence. Accordingly, a research team from Universitas Negeri Yogyakarta, Universitas Terbuka, and Universitas Negeri Surabaya initiates a prospective study to examine both external and internal determinants of graduate students' research competence. External factors include learning activities, instructor support, and institutional practices, while internal factors encompass learner autonomy and academic self efficacy. The study adopts a sequential mixed methods approach integrating a hybrid questionnaire design and partial least squares structural equation modeling. Data are collected using literature review, questionnaires, and focus group discussions. Instrument development proceeds through concept analysis, item production, scale construction, and evaluation to ensure validity and reliability. The final analysis tests the proposed model using data from eight hundred graduate students across three autonomous public universities in Yogyakarta, West Java, and East Java. The findings are expected to inform the development of learning models that strengthen graduate students' research competence. The study targets one publication in the Indonesian Journal of Science and Technology and a Technology Readiness Level at Level Three.

Keywords: graduate students; research competence; external and internal factors; learning models; mixed methods approach

INTRODUCTION

Publish or Perish is closely associated with research capability, which constitutes a complex challenge faced by higher education institutions. The capacity to produce articles in reputable international journals has fundamental implications as a performance metric in academia because it contributes directly to institutional reputation and economic standing [1]. Research output, teaching quality, and internationalization are also core indicators used in one of the most prominent global university ranking systems, namely the QS World University Rankings (QS WUR) [2]. Institutions with strong research performance therefore tend to occupy higher positions in the QS WUR. According to QS WUR 2024 data, the leading university in Indonesia declined from rank 231 to 237, while Indonesia continues to lag behind neighboring ASEAN countries such as Malaysia at rank 65 and Singapore at rank 8. This situation is concerning in light of the Indonesia Vision 2045, which requires universities to demonstrate strong research performance to stimulate innovation, advance knowledge development, and enhance national competitiveness and economic growth [3].

Research on research capability among postgraduate students has expanded substantially over the past decade. At the global level, recent studies have identified management, collaboration, and policy as factors

contributing to research performance [4], [5], [6]. Informal discussions with heads of research and community service institutes at several autonomous public universities in Yogyakarta and Central Java further indicate that empirical investigations of the factors shaping research capability have not yet been conducted. Existing initiatives to strengthen postgraduate research capability include dissemination activities, workshops, funding schemes, and incentives. These efforts, however, have not produced optimal outcomes in improving student publication output, which remains constrained particularly in the submission and acceptance process of reputable international journals. Such constraints frequently delay timely graduation, indicating that empirical exploration is essential as a foundation for designing policies that accelerate research capability development.

Previous studies also demonstrate that research capability development is influenced by both internal factors at the student level and external factors at the institutional or educational level. Students' competence in using digital tools constitutes a critical internal factor. Proficiency in digital tools such as reference searching, access to online classes, and collaborative learning environments, together with self efficacy, perseverance, research engagement, self regulation, research literacy, and writing comfort, significantly contributes to research capability [7], [8], [9], [10]. External factors include educator student relationships, institutional support, academic culture, and research training as key elements [10], [11], [12], [13]. Additional external factors such as funding, resource allocation, research grants, and incentives are also regarded as crucial in supporting research capability [5], [14], [15], [16], [17]. Furthermore, policy frameworks, management systems, organizational commitment, and the work environment contribute to enhanced research performance [4], [5], [17], [18], [19]. Effective improvement of research capability therefore requires synergy between students' internal capacities, particularly digital proficiency and research literacy, and sustained external support through strategic policies, adequate funding, and a supportive academic environment.

Most existing studies have been conducted in international contexts that differ substantially from the characteristics of Indonesian academia, which limits their direct applicability to policy development. Scholars emphasize that higher education policies should be grounded in empirical data derived from the specific context in which the policies are implemented [20], [21]. Research on research capability in Indonesia remains limited. Several studies indicate that postgraduate academic success is closely associated with research skills, as the ability to conduct research effectively enhances writing quality, academic performance, and overall task completion [22]. Students also frequently encounter difficulties in understanding research methodology due to language barriers and complex technical terminology, despite possessing basic competencies in reading, writing, and information searching [23]. Doctoral candidates face additional technical challenges in academic writing and non technical challenges related to collaboration and communication, which necessitate improvements in academic policy and quality assurance within postgraduate programs [24]. Various strategies to enhance research capability have been implemented, including the application of the Research Skill Development framework to strengthen problem solving and critical analysis skills [25] and the use of the Research Team Based Learning model to develop research skills effectively [26]. Nevertheless, these studies have not yet examined the complex relationships among factors that collectively contribute to postgraduate students' research capability in the Indonesian context.

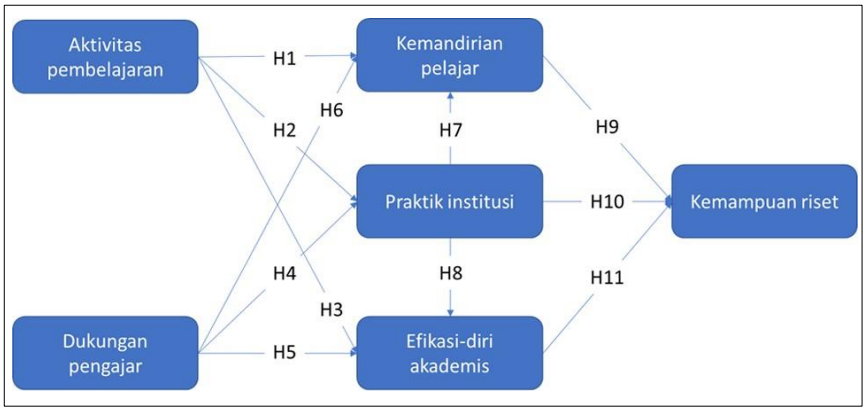

FIGURE 1. *Conceptual Model*

The present study is initiated as a prospective inquiry to address the identified research gap and to generate novel contributions to the advancement of scholarly knowledge. The exploratory findings are expected to provide a strategic foundation for designing policy models and training programs aimed at strengthening future research capacity. The proposed model has the potential to be disseminated across broader contexts, thereby enhancing both the quantity and quality of research performance among academics in Indonesia. In this regard, Partial Least Square Structural Equation Modeling is considered a robust analytical approach for examining interrelated factors that influence research capacity within higher education institutions characterized by high structural complexity. Based on this rationale, a conceptual model is formulated and presented in Figure 1 as the central hypothesis of the study.

The study hypothesizes that students' research capacity is significantly influenced by both external and internal factors. External factors include interactive learning activities, consistent instructor support, and structured institutional practices that foster a conducive academic environment. Dynamic learning activities promote collaboration and the effective use of information technology to enrich research methodologies. Instructor support functions as a source of guidance and motivation that facilitates a deeper understanding of research concepts. Institutional practices, encompassing academic policies and resource allocation, enable the provision of adequate research facilities. Internal factors, such as learner autonomy and academic self efficacy, play a decisive role in shaping students' engagement and persistence in conducting research. High levels of autonomy allow students to manage time effectively and establish realistic research targets, while strong self efficacy enhances confidence in addressing research related challenges. The interaction between external support and internal commitment establishes a stable foundation for sustained research development. In line with the research background, the research team formulates the following research questions.

1. How can a valid and reliable instrument be developed to measure interacting factors that influence postgraduate
   students' research capacity?
2. How can a model of relationships among factors affecting postgraduate students' research capacity be developed
   using Partial Least Square Structural Equation Modeling?
3. How do the results of hypothesis testing inform the evaluation of the proposed model through Partial Least Square Structural Equation Modeling?

RESEARCH METHOD

This study employs an exploratory sequential mixed methods design that integrates a hybrid questionnaire approach and Partial Least Squares Structural Equation Modeling as the principal analytical framework [27], [28]. The procedure is conducted in three stages. The hybrid questionnaire approach is adopted to ensure instrument development grounded in theoretical foundations, respondent perspectives, expert judgment, and statistical rigor [27]. Partial Least Squares Structural Equation Modeling is subsequently applied because it is suitable for exploratory inquiry and capable of modeling complex causal relationships among variables [29], [30], [31], [32]. Questionnaire development uses purposive sampling with explicit respondent criteria. The primary respondents are master's and doctoral students who have completed proposal seminars and research methodology courses, while supervisors and heads of study programs contribute secondary data. For the Partial Least Squares Structural Equation Modeling analysis, the study targets 800 postgraduate students from three state universities with legal entity status in West Java, Yogyakarta, and Central Java. This strategy reflects the concentration of postgraduate populations on Java Island and represents prevailing academic conditions in Indonesian postgraduate education.

The research instruments include questionnaires, interviews, and focus group discussions, with data analyzed using SmartPLS 4 and SPSS 23. Instrument development begins with the construction of a nomological network through a theoretical framework that specifies the research variables and their definitions. Item generation follows this framework, after which experts and researchers jointly develop the first questionnaire prototype. An act nomination stage involving prospective respondents produces a second prototype. Face validity is then assessed by experts, followed by prototypicality ratings from respondents. Items receiving strong evaluations from both groups are retained in the third prototype. The evaluation phase includes a pilot study with at least 50 respondents [33]. Data are assessed using reliability criteria exceeding 0.708, convergent validity above 0.5, and discriminant validity of at most 0.85 [27], resulting in a valid and reliable final closed ended questionnaire. Survey data collected through Google Form are analyzed using Partial Least Squares Structural Equation Modeling. The analysis begins with model specification through the construction of inner and outer models and the path model.

Outer model evaluation examines composite reliability, convergent validity, and discriminant validity [34], [35]. Inner model evaluation then assesses the structural relationships and tests the hypotheses using collinearity diagnostics, coefficients of determination, cross validated redundancy, path coefficients, and relevance testing of significant relationships [34], [35]. The intended output of this study is a scholarly article submitted to the Indonesian Journal of Science and Technology, a Scopus indexed journal in the first quartile and ranked within the top five percent percentile.

RESULTS AND DISCUSSION

Results

1. Measurement Model Assessment

The first stage of Partial Least Squares Structural Equation Modeling (PLS-SEM) involves assessing the measurement model to determine the reliability and validity of the constructs employed in this study. Specifically, the reflective measurement model evaluation addresses indicator loadings, internal consistency reliability, and convergent validity, which are essential prerequisites for analyzing structural relationships among constructs.

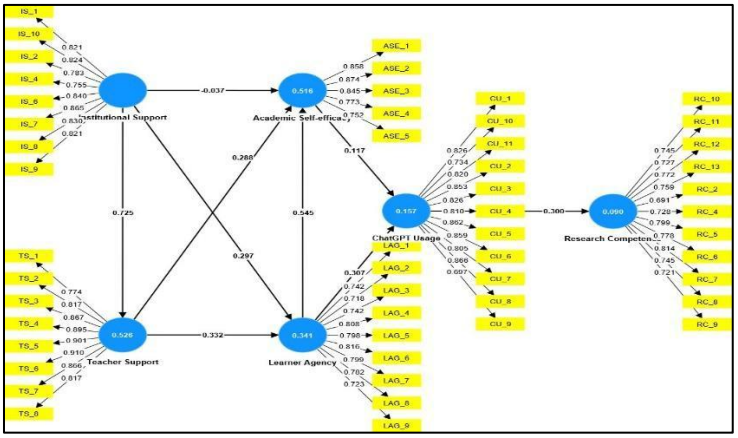

Figure 2. Model Specification

As presented in Figure 2 and Table 1, each indicator loading was evaluated to ensure item reliability, guided by the recommended threshold of 0.70, indicating that the construct explains more than 50% of indicator variance [29]. Furthermore, internal consistency reliability was assessed using Cronbach's alpha (α) and Composite Reliability (CR), both of which should ideally exceed 0.70 to denote satisfactory construct reliability [29]. Convergent validity, indicating the degree to which a construct converges to explain the variance of its indicators, was confirmed through the Average Variance Extracted (AVE) criterion, where AVE values above 0.50 suggest adequate convergent validity [29]. Following the successful establishment of reliability and convergent validity, discriminant validity analysis was subsequently conducted to complete the measurement model assessment.

TABLE 1. Indicator loading, Internal Consistency Reliability, and Convergent Validity Value

Construct	Outer Loadings	α	CR	AVE
IS_1	0.821	0.929	0.930	0.669
IS_2	0.783			
IS_4	0.755			
IS_6	0.840			
IS_7	0.865			
IS_8	0.830			
IS_9	0.821			
IS_10	0.824			
TS_1	0.774	0.948	0.949	0.735
TS_2	0.817			
TS_3	0.867			

TS_4	0.895			
TS_5	0.901			
TS_6	0.91			
TS_7	0.866			
TS_8	0.817			
ASE_1	0.858	0.879	0.891	0.675
ASE_2	0.874			
ASE_3	0.845			
ASE_4	0.773			
ASE_5	0.752			
LAG_1	0.742	0.914	0.915	0.594
LAG_2	0.718			
LAG_3	0.742			
LAG_4	0.808			
LAG_5	0.798			
LAG_6	0.816			
LAG_7	0.799			
LAG_8	0.782			
LAG_9	0.723			
CU_1	0.826	0.949	0.952	0.666
CU_2	0.853			
CU_3	0.826			
CU_4	0.810			
CU_5	0.862			
CU_6	0.859			
CU_7	0.805			
CU_8	0.866			
CU_9	0.697			
CU_10	0.734			
CU_11	0.820			
RC_2	0.691	0.925	0.936	0.568
RC_4	0.728			
RC_5	0.799			
RC_6	0.778			
RC_7	0.814			
RC_8	0.745			
RC_9	0.721			
RC_10	0.745			
RC_11	0.727			
RC_12	0.772			
RC_13	0.759			

Remark: Institutional Support (IS), Teacher Support (TS), Academic Self-efficacy (ASE), Learner Agency (LAG), ChatGPT Usage (CU), Research Competence (RC)

Indicator loadings illustrate the correlation strength between indicators and their corresponding constructs, providing evidence of item reliability. Table 1 presents the loading values for each indicator, showing that nearly all indicators exceeded the recommended threshold of 0.70, reflecting appropriate item reliability and robustness within the constructs. Specifically, for Institutional Support (IS), indicator loadings ranged between 0.755 and 0.865; for Teacher Support (TS), loadings ranged from 0.774 to 0.910; for Academic Self-Efficacy (ASE), loadings ranged between 0.752 and 0.874; and Learner Agency (LAG) presented values between 0.718 and 0.816. Additionally, indicators for ChatGPT Usage (CU) showed loadings between 0.697 and 0.866, while Research Competence (RC) ranged between 0.691 and 0.814. Notably, two indicators (CU_9 = 0.697 and RC_2 = 0.691) were slightly below the strict threshold of 0.70, yet they were retained since the loadings remained above

0.40, making them acceptable given the high AVE values of their constructs [36]. Overall, these results affirm that the items used effectively capture the dimensions of institutional and teacher support, learner autonomy, academic self-efficacy, AI technology use, and research competence relevant to doctoral students in Indonesia.

The internal consistency reliability and convergent validity of the constructs were evaluated to further validate the reflective measurement model. As shown in Table 1, all constructs exhibited excellent internal consistency reliability, with Cronbach's alpha (α) values ranging from 0.879 (ASE) to 0.949 (CU), exceeding the recommended threshold of 0.70 [36]. Likewise, Composite Reliability (CR) scores corroborated these findings, with values ranging betwee 0.891 (ASE) and 0.952 (CU), surpassing the established threshold of 0.70 and confirming that all constructs consistently measure the intended theoretical domains. Convergent validity was determined by examining the AVE values, which ranged between 0.568 (RC) and 0.735 (TS), surpassing the acceptable minimum threshold of 0.50 proposed by Hair et al. (2021). These results indicate that each construct explains over 50% of its indicators' variance, reflecting substantial convergent validity. Thus, the measurement model demonstrates that the employed indicators reliably and validly represent the underlying constructs, such as institutional support, academic self-efficacy, learner agency, and students' engagement with ChatGPT, contributing significantly to the development of research competence among Indonesian doctoral students.

Following the verification of convergent validity, discriminant validity was assessed to ensure constructs were distinct and not excessively correlated with one another. Discriminant validity was examined using the Heterotrait- Monotrait (HTMT) ratio, a stringent criterion that requires values to be less than 0.85 to demonstrate adequate discriminant validity among constructs [37]. Table 2 displays the HTMT values obtained for this study, revealing that all construct pairs showed values below the recommended threshold of 0.85, confirming discriminant validity. Specifically, the HTMT values ranged from 0.214 (Teacher Support and ChatGPT Usage) to 0.772 (Teacher Support and Institutional Support), indicating acceptable distinctions between constructs.

TABLE 2. *Heterotrait-Monotrait Ratio*

Academic Self-efficacy					
ChatGPT Usage	0.349				
Institutional Support	0.508	0.230			
Learner Agency	0.753	0.412	0.581		
Research Competence	0.506	0.301	0.718	0.586	
Teacher Support	0.606	0.214	0.772	0.585	0.613

Importantly, the highest HTMT value was observed between Teacher Support (TS) and Institutional Support (IS), reflecting their close conceptual relationships yet remaining well within acceptable limits. The lowest HTMT value (0.214) between Teacher Support and ChatGPT Usage indicates minimal conceptual overlap, highlighting their distinctiveness in influencing research competence. Collectively, these findings underscore that each construct in this research, such as learner agency, institutional and teacher support, academic self- efficacy, and the use of ChatGPT, captures unique aspects pertinent to strengthening Indonesian graduate students' research competence, justifying their independent consideration in further structural analyses.

2. Structural Model Assessment

After confirming reliability and validity through the measurement model, the analysis proceeds to the structural model assessment as the second stage in Partial Least Squares Structural Equation Modeling (PLS-SEM). This stage includes testing for multicollinearity, evaluating hypothesized relationships through path analysis, and interpreting the explanatory power and relevance of the structural model through coefficients of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2).

The multicollinearity among the exogenous constructs was assessed using Variance Inflation Factor (VIF) values to ensure structural relationships were free from bias due to high correlations among predictors. Table 3 presents the VIF values for all predictor constructs, which ranged from 1.000 to 2.275, comfortably below the threshold value of
3.3 [38]. Specifically, Institutional Support exhibited VIF values of 2.242 when predicting Academic Self-efficacy and 2.108 when predicting Learner Agency and Teacher Support. Teacher Support showed a VIF value of 2.275 when predicting Academic Self-efficacy and 2.108 for Learner Agency, indicating low risk of multicollinearity. Additionally, Academic Self-efficacy and Learner Agency each had VIF values below 2 (ranging from 1.518 to 1.873), confirming independence among these predictors. The construct ChatGPT Usage showed a

VIF value of exactly 1.000, representing perfect absence of multicollinearity concerns. These results confirm that multicollinearity does not pose a threat to the validity of structural path relationships, ensuring the robustness of subsequent hypothesis testing within the structural model.

TABLE 3. *Variance Inflation Factor*

	Academic Self-efficacy	ChatGPT Usage	Institutional Support	Learner Agency	Research Competence	Teacher Support
Academic Self-efficacy		1.873				
ChatGPT Usage					1.000	
Institutional Support	2.242			2.108		1.000
Learner Agency	1.518	1.873				
Research Competence						
Teacher Support	2.275			2.108		

The evaluation of hypothesized relationships began with examining the influence of Institutional Support (IS) on Academic Self-efficacy (ASE), Learner Agency (LAG), and Teacher Support (TS). As indicated in Table 4 and Figure 2, the relationship between Institutional Support and Academic Self-efficacy (H1) was not statistically significant ($\beta = -0.037$; $t = 0.507$; $p = 0.612$), leading to the rejection of this hypothesis. Conversely, the hypothesized relationship between Institutional Support and Learner Agency (H2) was positively significant ($\beta = 0.297$; $t = 3.186$; $p = 0.001$), suggesting that stronger institutional support notably promotes graduate students' autonomous engagement and self- directed learning behaviors. Moreover, the path from Institutional Support to Teacher Support (H3) demonstrated a robustly positive and significant effect ($\beta = 0.725$; $t = 18.253$; $p < 0.001$), revealing a crucial institutional role in enhancing the support provided by teachers. These findings highlight that although institutional resources and environments strongly facilitate teacher effectiveness and learner autonomy, they alone are insufficient to directly improve academic self-efficacy among Indonesian doctoral students.

TABLE 4. *Path Analysis Result*

	Path	β	Mean	SD	T Statistics	P Values	Significance
H1	Institutional Support -> Academic Self-efficacy						
H2	Institutional Support -> Learner Agency	0.297	0.308	0.093	3.186	0.001	Supported
H3	Institutional Support -> Teacher Support	0.725	0.726	0.040	18.253	0.000	Supported
H4	TeacherSupport -> Academic Self-efficacy	0.288	0.290	0.077	3.758	0.000	Supported
H5	TeacherSupport -> Learner Agency	0.332	0.324	0.102	3.251	0.001	Supported
H6	Learner Agency -> Academic Self-efficacy	0.545	0.545	0.059	9.191	0.000	Supported
H7	Learner Agency -> ChatGPT Usage	0.307	0.310	0.067	4.617	0.000	Supported
H8	Academic Self-efficacy -> ChatGPT Usage	0.117	0.118	0.071	1.652	0.099	Rejected
H9	ChatGPT Usage -> Research Competence	0.300	0.310	0.052	5.716	0.000	Supported

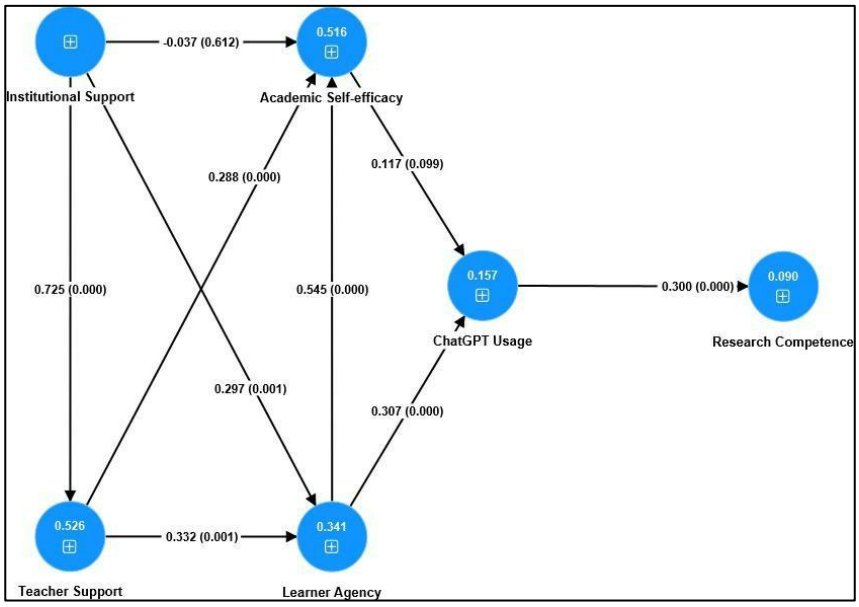

FIGURE 3. *Final Model*

The subsequent hypotheses tested relationships involving Teacher Support, Learner Agency, Academic Self-efficacy, and ChatGPT Usage. The analysis (Table 4) indicated that Teacher Support significantly and positively predicted both Academic Self-efficacy (H4: $\beta = 0.288$; $t = 3.758$; $p < 0.001$) and Learner Agency (H5: $\beta = 0.332$; $t = 3.251$; $p = 0.001$). These results imply that effective teacher mentoring significantly enhances students' beliefs in their academic abilities and fosters proactive learning engagement. Likewise, Learner Agency strongly influenced Academic Self-efficacy (H6: $\beta = 0.545$; $t = 9.191$; $p < 0.001$), highlighting that autonomous learning capabilities substantially reinforce doctoral students' self-efficacy beliefs. Additionally, Learner Agency positively predicted ChatGPT Usage (H7: $\beta = 0.307$; $t = 4.617$; $p< 0.001$), indicating that more autonomous doctoral students are better positioned to strategically utilize AI tools such as ChatGPT to support their research practices. Collectively, these findings emphasize that structured teacher guidance and learner autonomy significantly shape academic self-efficacy and promote effective AI-assisted research behaviors among Indonesian doctoral students.

The final hypotheses evaluated the pathways from Academic Self-efficacy to ChatGPT Usage and subsequently from ChatGPT Usage to Research Competence. Results (Table 4) indicated that the hypothesized relationship between Academic Self-efficacy and ChatGPT Usage (H8) was not significant ($\beta = 0.117$; $t = 1.652$; $p = 0.099$), suggesting that self-efficacy alone does not necessarily translate into increased adoption of AI technology. On the other hand, ChatGPT Usage demonstrated a significant positive effect on Research Competence (H9: $\beta = 0.300$; $t= 5.716$; $p < 0.001$), confirming that increased engagement with AI tools substantially contributes to the development of doctoral students' research skills. This result underscores the strategic importance of AI-assisted tools, like ChatGPT, in building robust research competence among Indonesian doctoral students. Therefore, while self-efficacy is pivotal in doctoral students' academic development, it does not independently drive AI-tool usage; instead, learner autonomy appears more influential in facilitating effective engagement with advanced AI technologies.

The structural model's explanatory and predictive capabilities were assessed through coefficients of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2). As shown in Table 5, Academic Self-efficacy ($R^2 = 0.516$) and Teacher Support ($R^2 = 0.526$) exhibited strong explanatory power, whereas Learner Agency showed moderate ($R^2 = 0.341$), ChatGPT Usage modest ($R^2 = 0.157$), and Research Competence weak ($R^2 = 0.090$) explanatory capabilities [29].

TABLE 5. *Coefficient determination (R^2)*

	R-square	R-square adjusted	Consideration
Academic Self-efficacy	0.516	0.511	Strong

ChatGPT Usage	0.157	0.151	Modest
Learner Agency	0.341	0.337	Moderate
Research Competence	0.090	0.087	Weak
Teacher Support	0.526	0.524	Strong

The effect size analysis (Table 5) revealed Institutional Support's substantial influence on Teacher Support ($f^2 = 1.108$) and Learner Agency's strong influence on Academic Self-efficacy ($f^2 = 0.405$). Other predictors showed small or very small effects, highlighting their relatively limited individual impacts despite significance. Predictive relevance (Q^2), presented in Table 8, indicated meaningful predictive accuracy across constructs, with values ranging from 0.046 (Research Competence) to 0.382 (Teacher Support), all above zero, affirming the model's acceptable predictive relevance [36].

TABLE 6. *Effect size (f^2)*

Path	f-square	Effect size
Academic Self-efficacy -> ChatGPT Usage	0.009	Very Small
ChatGPT Usage -> Research Competence	0.099	Small
Institutional Support -> Academic Self-efficacy	0.001	Very Small
Institutional Support -> Learner Agency	0.064	Small
Institutional Support -> Teacher Support	1.108	Large
Learner Agency -> Academic Self- efficacy	0.405	Large
Learner Agency -> ChatGPT Usage	0.060	Small
Teacher Support -> Academic Self- efficacy	0.075	Small
Teacher Support ->Learner Agency	0.079	Small

TABLE 7. *Predictive Relevance (Q^2)*

	SSO	SSE	Q^2 (=1-SSE/SSO)
Academic Self-efficacy	1555	1031	0.337
ChatGPT Usage	3421	3079	0.100
Institutional Support	2488	2488	0.000
Learner Agency	2799	2245	0.198
Research Competence	3421	3262.638	0.046
Teacher Support	2488	1538.015	0.382

Finally, multigroup analysis (MGA) was conducted comparing doctoral and master's students (Table 8), revealing differences across groups. Significant differences emerged in paths like Institutional Support to Learner Agency (H2) and Teacher Support to Academic Self-efficacy (H4), being significant for master's but not doctoral students. Notably, the Learner Agency to ChatGPT Usage path (H8) showed significant differences in both groups but with varying magnitudes (Doctor: $p=0.007$; Master: $p<0.001$), emphasizing nuanced differences in AI-tool engagement between educational levels. These results suggest tailored interventions are essential at doctoral and master's levels, reflecting their unique academic needs and resource utilization patterns.

TABLE 8. *Bootstrapping for path coefficients comparison (Master Vs Doctor)*

Path	Doctor		Master	
	t value	p value	t value	p value
H1 Institutional Support -> Academic Self-efficacy	0.900	0.368	0.089	0.929
H2 Institutional Support -> Learner Agency	1.009	0.313	3.464	0.001
H3 Institutional Support -> Teacher Support	8.116	0.000	19.003	0.000
H4 Teacher Support -> Academic Self- efficacy	0.722	0.470	3.456	0.001
H5 Teacher Support -> Learner Agency	1.701	0.089	2.909	0.004
H6 Learner Agency -> Academic Self- efficacy	9.698	0.000	5.915	0.000
H7 Learner Agency -> ChatGPT Usage	2.687	0.007	3.801	0.000
H8 Academic Self-efficacy -> ChatGPT Usage	0.828	0.408	1.281	0.200
H9 ChatGPT Usage -> Research Competence	4.436	0.000	4.807	0.000

Discussion

The findings of this study confirmed seven out of nine hypotheses examining multi-dimensional pathways influencing research competence among Indonesian graduate students. Specifically, institutional support significantly predicted learner agency (H2: $\beta = 0.297$, $p = 0.001$) and teacher support (H3: $\beta = 0.725$, $p = 0.000$), but it did not significantly predict academic self- efficacy (H1: $\beta = -0.037$, $p = 0.612$). Teacher support positively influenced both academic self-efficacy (H4: $\beta = 0.288$, $p = 0.000$) and learner agency (H5: $\beta = 0.332$, $p = 0.001$). Learner agency substantially predicted academic self-efficacy (H6: $\beta = 0.545$, $p = 0.000$) and ChatGPT usage (H7: $\beta = 0.307$, $p = 0.000$). Academic self-efficacy, however, was not significantly related to ChatGPT usage (H8: $\beta = 0.117$, $p = 0.099$). Lastly, ChatGPT usage positively influenced research competence (H9: $\beta = 0.300$, $p = 0.000$). These findings illuminate essential interactions among institutional, pedagogical, psychological, and technological factors affecting graduate research competence.

The absence of a significant relationship between institutional support and academic self- efficacy (H1: $\beta = -0.037$) contrasts sharply with existing literature, which generally suggests a positive relationship [39]. A possible explanation for this discrepancy could lie in the Indonesian graduate context, where institutional resources may not align precisely with students' specific academic needs, particularly related to self-efficacy in research practices. Institutional support might focus more explicitly on logistical or financial assistance rather than directly enhancing students' personal beliefs in their academic capabilities. Conversely, significant positive relationships between institutional support and learner agency (H2: $\beta = 0.297$) and institutional support and teacher support (H3: $\beta = 0.725$) align well with prior studies. Institutional support has been shown to foster learner agency by empowering students through technological integration and facilitating active engagement with learning materials [40]. Furthermore, institutional support strongly influenced teacher support, confirming the importance of robust institutional environments in promoting teacher satisfaction, professional development, and responsiveness [41]. Therefore, while direct effects on self-efficacy may not materialize explicitly, institutional support indirectly shapes research competence through learner agency and enhanced teacher capacity.

Teacher support positively influenced academic self-efficacy (H4: $\beta = 0.288$) and learner agency (H5: $\beta = 0.332$). This finding concurs with previous research that consistently underscores teacher support as a crucial driver of students' self-belief and autonomous learning behaviors [42]. Teacher support likely enhances academic self-efficacy by providing emotional encouragement and motivational guidance, thus reinforcing students' confidence in their research capabilities [43]. Moreover, the mediating mechanisms involving achievement goals and academic emotions might further explain this relationship, with supportive interactions positively affecting students' psychological resources [44]. Teacher support's strong positive influence on learner agency further highlights the role of autonomy- supportive pedagogies, promoting resilience, engagement, and self-regulated learning [45]. Specifically, autonomy- supportive teachers foster agency by creating learning environments that encourage independent exploration and decision-making, critical elements for doctoral-level research practices in Indonesia. These insights underscore the necessity for targeted teacher professional development aimed at enhancing teachers' capacities to provide meaningful, autonomy-supportive experiences to graduate students, thus effectively promoting both self- efficacy and learner agency.

The findings indicated that learner agency significantly enhanced academic self-efficacy (H6: $\beta = 0.545$, $p = 0.000$) and influenced the use of ChatGPT (H7: $\beta = 0.307$, $p = 0.000$). This significant impact can be logically interpreted through the lens of self-regulation and autonomy inherent in learner agency. As Gupta et al. (2024) and Code (2020) noted, learner agency cultivates essential skills such as self-efficacy, resilience, and decision-making. When graduate students engage actively with their learning processes, setting clear academic goals and monitoring their own progress, they naturally experience heightened self-efficacy, aligning with previous findings by Rutenberg et al. (2022). Additionally, self-efficacy serves as a crucial mediator between learner agency and academic outcomes [47], [49], as it fosters perseverance and adaptability, critical attributes for graduate students navigating complex research tasks. Moreover, learner agency facilitates proactive use of AI tools like ChatGPT, enabling students to tailor their learning experiences, receive personalized feedback, and effectively manage their research activities, as discussed by Xu et al. (2023). Effective integration of ChatGPT further supports critical thinking and creativity, essential elements that reinforce learner autonomy and enhance the overall research competence among graduate students [51].

Contrary to expectations, academic self-efficacy did not significantly predict ChatGPT usage (H8: $\beta = 0.117$, $p = 0.099$). This unexpected finding suggests that self-efficacy alone may not suffice to drive the adoption of novel technologies like ChatGPT, despite evidence from Wu and Ho (2025) indicating self-efficacy's role in technology acceptance. It is plausible that students with high self-efficacy might rely more on their capabilities and less on external technological assistance, indicating a potential resistance or ambivalence towards integrating AI

tools. However, ChatGPT usage significantly enhanced research competence (H9: $\beta = 0.300$, $p = 0.000$), aligning with prior studies by Shahat et al. (2025), who demonstrated improvements in research skills and self-directed learning behavior following ChatGPT integration. This finding underscores the practical value of ChatGPT as a supportive tool, assisting students with tasks such as literature summarization and idea generation, thus streamlining complex research processes and improving efficiency [54]. However, to maximize its impact, appropriate training and ethical considerations remain essential, as highlighted by Khalifa et al. (2024).

The multigroup analysis comparing doctoral and master's students yielded insightful distinctions. Teacher support significantly influenced academic self-efficacy among master's students ($t = 3.456$, $p = 0.001$), but this relationship was not statistically significant for doctoral students ($t = 0.722$, $p = 0.470$). This difference suggests master's students might be more dependent on structured guidance from teachers, whereas doctoral students, expected to possess higher autonomy and research maturity, may not perceive teacher support as critical to their self-efficacy. This interpretation aligns with previous research highlighting varying impacts of teacher support across educational contexts [42], [43]. Additionally, teacher support significantly affected learner agency in master's students ($t = 2.909$, $p = 0.004$) but was marginally insignificant for doctoral students ($t = 1.701$, $p = 0.089$). This finding reinforces the importance of autonomy-supportive teaching in enhancing agency and engagement, particularly for students transitioning to independent research roles [45]. These results emphasize the necessity for tailored pedagogical approaches addressing distinct developmental needs of master's and doctoral students to effectively cultivate their research competencies.

These findings carry important practical implications for higher education institutions in Indonesia. Universities should invest in robust institutional support mechanisms, including targeted training programs, structured supervisory relationships, and resources facilitating proactive student engagement with AI tools. Educational policies must promote autonomy- supportive teaching practices, recognizing the distinct needs of master's and doctoral cohorts. Nevertheless, the study's limitations must be acknowledged, including the reliance on self- reported measures and the cross-sectional design, which limits causality inference. Future research could employ longitudinal designs or experimental approaches to better understand the evolving role of learner agency and AI integration over time. Additionally, qualitative explorations into student perceptions of ChatGPT use could enrich quantitative insights. In conclusion, fostering learner agency and strategic use of AI tools emerges as a critical pathway to enhancing graduate students' research competence, contributing significantly to the broader goal of building a sustainable and impactful academic research culture.

CONCLUSION

This study demonstrates that research competence among Indonesian graduate students in science and technology is shaped by the interaction of institutional support, teacher support, academic self efficacy, learner agency, and the use of AI assisted tools such as ChatGPT. Institutional and teacher support indirectly strengthen research competence by enhancing learner agency and academic self efficacy, while learner agency also promotes strategic use of ChatGPT, which shows a direct positive effect on research competence despite its nonsignificant association with academic self efficacy. These findings extend theoretical perspectives on learner agency and academic self efficacy by clarifying the role of institutional and pedagogical contexts, and they offer practical guidance for higher education institutions to strengthen support systems, autonomy supportive supervision, structured integration of AI tools, and differentiated pedagogical approaches for master's and doctoral students, while encouraging future longitudinal, qualitative, and comparative studies to deepen understanding of AI use in graduate research.

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Adversity Ability Assessment Model For Measuring Historical Thinking Skills And Creative Thinking Skills

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Abstract. This study aims to develop an adversity capability assessment model to measure students' historical thinking and creative thinking skills. Recognizing the role of adversity capability in fostering historical and creative cognition, an assessment model is necessary to evaluate these skills within history learning contexts. The proposed model is intended to provide detailed insights into students' ability to endure academic challenges and their development of historical and creative thinking. Such insights enable history teachers to design adaptive learning aligned with students' needs. The research objectives are to 1) develop an adversity capability assessment instrument for historical and creative thinking, 2) examine the quality of the instrument, 3) design the adversity capability assessment model, and 4) evaluate its effectiveness. The research employs an integrated development method combining the ADDIE model with the Djemari-Mardapi instrument development model. Data collection involves interviews, observations, literature review, questionnaires, and tests. Data analysis assesses content validity (V-Aiken and qualitative), construct validity (confirmatory factor analysis), reliability (Cronbach's alpha), and model practicality. Expected outputs include a validated assessment model prototype, a Scopus-indexed journal article in Paramita, an intellectual property document, and the first-year research report. The instrument demonstrated strong validity, reliability, and high respondent acceptance. Technical refinements and digital implementation are recommended. The model provides a systematic framework for evaluating students' ability to manage adversity and engage in complex cognitive processes.
Keywords: assessment model; adversity competence; historical thinking skills; creative thinking skills; history learning.

INTRODUCTION

History learning in twenty-first-century education extends beyond the mere presentation of past events and aims to cultivate critical thinking skills to address global challenges. In this regard, adversity quotient is relevant to history learning [1,2]. Adversity quotient refers to the capacity to endure, adapt, and overcome challenges [3]. In educational contexts, students with high adversity quotient demonstrate greater resilience in facing academic difficulties and exhibit persistence in seeking solutions to various problems [4,5]. In history learning, adversity quotient serves as a crucial factor in fostering a deep understanding of complex historical events. For instance, comprehending historical events thoroughly requires students to engage with diverse, sometimes contradictory, sources, consider multiple perspectives, and analyze cause-and-effect relationships critically [6]. Students with high adversity quotient manage these challenges more effectively than those with lower levels [7,8,9]. Adversity quotient therefore not only supports learning resilience but also enhances historical and creative thinking skills.

Historical thinking enables students to interpret and understand history based on evidence, perspectives, and the connections between past events and their contemporary implications [10,11,12]. This skill demands strong analytical abilities, appreciation of multiple viewpoints, and persistence in resolving complex problems [13,14,15]. Conversely, creative thinking allows students to generate novel interpretations of historical events, synthesize information from various sources, and relate historical knowledge to present contexts innovatively [16]. Creative thinking also facilitates the identification of alternative solutions to historical problems while connecting them to contemporary challenges [17,18]. Adversity quotient plays a central role in developing both capacities [19,20]. Students with high adversity quotient are better equipped to handle the challenge of analyzing diverse historical information, interpreting implicitdata, and constructing evidence-based critical thinking [21, 22, 23]. Adversity quotient thus strengthens students'
learning endurance in history and promotes more creative and analytical thinking.

A key challenge in history learning lies in assessing students' abilities comprehensively, encompassing not only cognitive recall of facts but also historical thinking, creative thinking, and resilience in facing learning difficulties [24)]. Current assessment practices predominantly focus on evaluating factual and conceptual understanding, neglecting how students overcome challenges in the thinking process. The absence of assessments capable of measuring adversity quotient limits understanding of how students persist in acquiring deep historical knowledge [25,26,27]. Consequently, an assessment model is required that evaluates not only students' learning outcomes but also their thinking processes when confronting challenges.

Given the importance of adversity quotient in developing historical and creative thinking, an assessment model is necessary to measure this capacity in the context of history learning. Such a model is expected to provide a comprehensive depiction of students' resilience in facing academic challenges and their ability to cultivate historical and creative thinking skills during the process. This model enables history educators to gain detailed insight into students' learning characteristics, thereby supporting the design of adaptive and student-centered instruction. The research questions addressed in this study are 1) How can an adversity quotient assessment model be developed to measure students' historical and creative thinking skills? 2) What are the results of the quality testing of an adversity quotient assessment instrument in measuring students' historical and creative thinking skills? 3) What is the design of an adversity quotient assessment model to measure students' historical and creative thinking skills? 4) What are the outcomes of testing the quality and effectiveness of the adversity quotient assessment model in measuring students' historical and creative thinking skills?

RESEARCH METHOD

This study employed the ADDIE model in combination with Djemari Mardapi's instrument development model to produce an adversity capability assessment model that measures students' historical and creative thinking abilities [28,29]. This model enables history teachers to evaluate students' adversity capability and historical-creative thinking skills. The quality of the assessment instrument was determined through content and empirical validity testing. Content validity was supported by experts in educational measurement and evaluation in history, history education specialists, educational psychology experts in history learning, language experts, and practitioners, namely history teachers. Empirical validity was tested using confirmatory factor analysis (CFA) [30–32]. Instrument reliability was established through the Cronbach Alpha approach [33]. The conceptual framework of the adversity capability assessment model (Figure 1) was developed based on Stoltz's theory regarding adversity capability [3] and Seixas [13] and Wineburg's [34] theories regarding historical thinking and creative thinking in history learning. This strategy focuses on developing a scientifically validated assessment model to measure students' historical and creative thinking abilities. The development model employed in this study integrates the research and development steps proposed by Branch [37] with the test instrument development framework by Djemari Mardapi [29]. The study focuses on creating an assessment model for adversity capability to measure historical and creative thinking abilities in a practical manner. The stages of development are illustrated in the following figure 1.

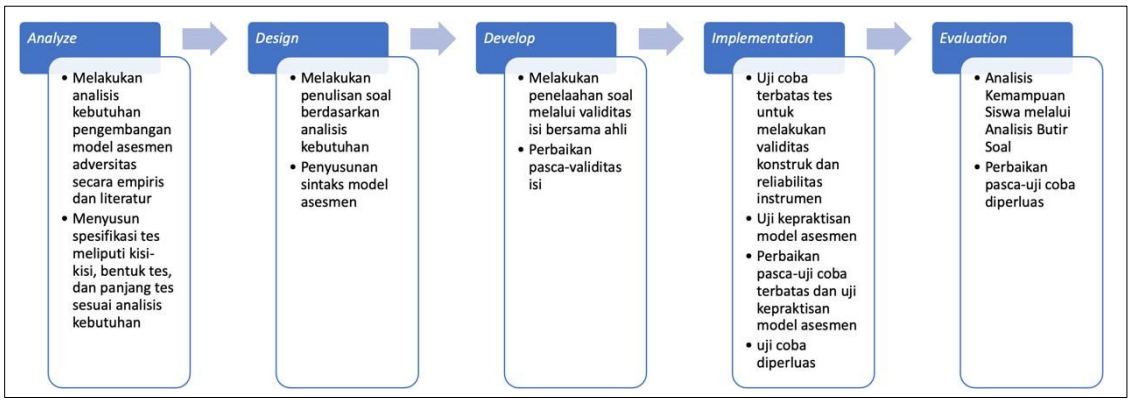

FIGURE 1. *ADDIE Model*

Data in this study are collected through interviews, observations, literature review, questionnaire distribution, and tests. The trial aims to examine the validity, reliability, and practicality of the adversity competence assessment model in measuring students' historical thinking and creative thinking abilities. The trial is conducted in both limited and extensive phases. The limited trial evaluates the quality of the assessment instrument items and the model regarding validity, readability, and practicality. It involves seven experts for content validity and 100 high school students selected purposively for construct validity. The limited trial is followed by an extensive trial, involving at least 300 high school students purposively selected, to assess the reliability, readability, and practicality of the model. The research is conducted at six high schools in Central Java Province and the Special Region of Yogyakarta.

Data analysis aims to confirm the content validity, construct validity, reliability, and practicality of the model. Content validity is examined quantitatively using the Aiken's V index (V-Aiken) and qualitatively [38–40] with seven experts, including educational measurement experts, history learning evaluation experts, history education experts, educational psychology experts, language experts, and two history teachers as practitioners. An item is considered content-valid quantitatively if V-Aiken > 0.6 [31]. Qualitative indicators of content validity are presented in Table 7. Construct validity is examined using Confirmatory Factor Analysis (CFA), with items considered valid if the loading factor > 0.40 [30,31,41] and the model meets the fit criteria presented in Table 8 [42]. Reliability is estimated using Cronbach's Alpha > 0.6 [31], and all analyses are conducted using R-Studio. The valid and reliable model is subsequently tested for practicality, which includes feasibility and effectiveness. Feasibility is evaluated by estimating the mean and standard deviation of ideal scores. Effectiveness is assessed by examining the percentage of responses regarding the use of the adversity competence assessment model.

RESULTS AND DISCUSSION

In the first year, the research team conducted several activities, including the development of a prototype assessment model comprising the instrument blueprint, scoring guidelines, and the assessment model framework, the validation of the assessment through content and construct validity, and the verification of the reliability of the developed instrument. During the prototype blueprint development, a literature review was conducted to construct the instrument theoretically. This process resulted in the formulation of conceptual definitions, operational definitions, and indicators for the variables of adversity capability, historical thinking skills, and creative thinking skills. The developed items were initially validated qualitatively by experts and subsequently validated quantitatively using the Aiken approach. Four experts participated in the study, including specialists in educational measurement and evaluation, history education, learning psychology, and a history teacher. In the qualitative expert validation process, 15 of the 24 developed items were confirmed valid with minor recommendations for improvement. Items that were qualitatively validated were revised and quantitatively tested using the Aiken approach. The results of the quantitative validation are presented in Figure 2.

	Penilai				S1	S2	S3	S4	Σ	N(C-1)	V	Keterangan
Butir	1	2	3	4								
Butir_1	4	4	3	4	3	3	2	3	11	12	0,9166667	tinggi
Butir_2	3	3	3	4	2	2	2	3	9	12	0,75	sedang
Butir_3	3	3	2	4	2	2	1	3	8	12	0,6666667	sedang
Butir_4	4	4	4	3	3	3	3	2	11	12	0,9166667	tinggi
Butir_5	4	4	4	4	3	3	3	3	12	12	1	tinggi
Butir_6	2	2	2	3	1	1	1	2	5	12	0,4166667	sedang
Butir_7	4	4	4	4	3	3	3	3	12	12	1	tinggi
Butir_8	3	4	4	4	2	3	3	3	11	12	0,9166667	tinggi
Butir_9	3	4	4	4	2	3	3	3	11	12	0,9166667	tinggi
Butir_10	4	3	3	4	3	2	2	3	10	12	0,8333333	tinggi
Butir_11	4	4	4	4	3	3	3	3	12	12	1	tinggi
Butir_12	4	4	4	3	3	3	3	2	11	12	0,9166667	tinggi
Butir_13	4	3	3	4	3	2	2	3	10	12	0,8333333	tinggi
Butir_14	3	3	3	4	2	2	2	3	9	12	0,75	sedang
Butir_15	3	3	3	4	2	2	2	3	9	12	0,75	sedang
Total	52	52	50	53								

$$V = \frac{\sum s}{n(c-1)}$$

RUMUS INDEKS VALIDITAS BUTIR AIKEN

V = indeks kesepakatan rater

s = skor yang ditetapkan setiap rater dikurangi skor terendah dalam kategori

n = banyaknya rater

c = banyaknya kategori yang dapat dipilih rater

FIGURE 2. *Aiken's Validity Results*

Items validated through the Aiken approach received minor notes from the experts. After validation, the items were empirically tested to establish construct validity using confirmatory factor analysis (CFA). The construct validity results indicated that 12 out of 15 instrument items were valid, with factor loadings above 0.40 (Table 1).

Overall, the CFA model fit estimations satisfied the three indicators of CFI, TLI, and RMSEA, as shown in Table 2. These findings demonstrate that all items were valid and the model was fit. The subsequent step involved reliability estimation, which
yielded a value of 0.84, confirming the instrument's reliability.

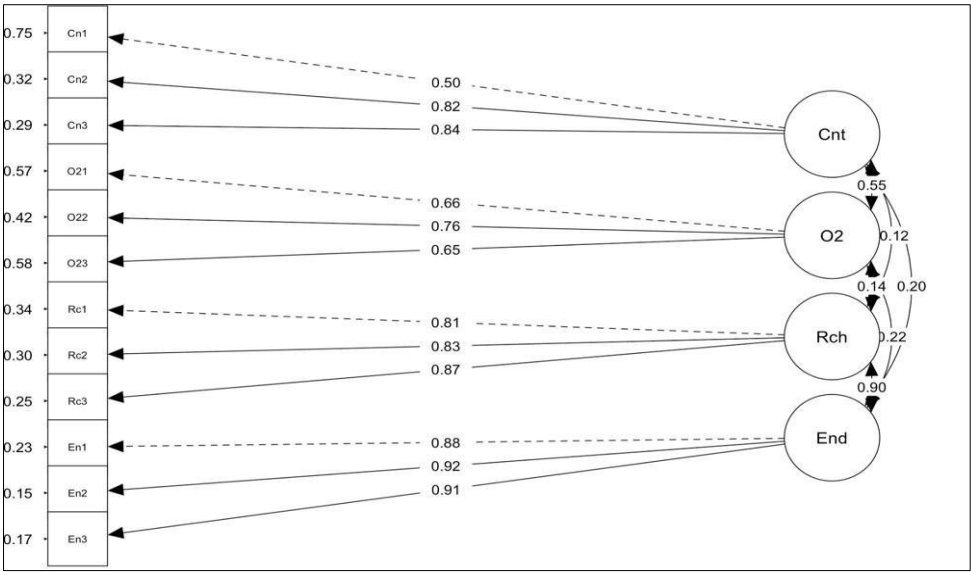

FIGURE 3. *Construct Validity Estimation*

TABLE 1. *CFA Loading Factor*

No.	Indicator	Item	Loading Factor	Situation
1	Controll	Item 1	0.50	*Historical Thinking*
		Item 2	0.82	*Historical Thinking*
		Item 3	0.84	*Creative Thinking*
2	Origin and Ownership (O2)	Item 4	0.66	*Historical Thinking*
		Item 5	0.76	*Creative Thinking*
		Item 6	0.65	*Creative Thinking*
3	Reach	Item 7	0.81	*Historical Thinking*
		Item 8	0.83	*Historical Thinking*
		Item 9	0.87	*Creative Thinking*
4	Endurance	Item 10	0.88	*Historical Thinking*
		Item 11	0.92	*Creative Thinking*
		Item 12	0.91	*Creative Thinking*

These findings confirm that IntegraESP operates according to its design, with high respondent acceptance. Technical improvements are suggested for lengthy items in Language Skill and repetitive items in Implementation, while the overall instrument is practical and relevant. A key recommendation is transitioning to a digital format to enhance data collection and processing efficiency.

TABLE 2. *Fit Model Estimation*

No.	Fit Model Indicator	Value	Description
1	CFI	0.991 (n > 0.90)	fit
2	TLI	0.988 (n > 0.90)	fit
3	RMSEA	0.034 (n < 0.08)	fit

CONCLUSION

The research successfully developed an adversity quotient assessment model capable of measuring students' historical and creative thinking skills. The instrument demonstrated strong validity and reliability, confirming its suitability for educational assessment purposes. The model's framework effectively integrates theoretical constructs with practical indicators for historical and creative thinking. Empirical testing indicated that respondents accepted the instrument well, highlighting its feasibility and relevance in classroom settings. Technical refinements, including item length adjustments and digital implementation, are recommended to enhance usability and efficiency. Overall, the assessment model provides a systematic approach to evaluating students' ability to manage adversity while engaging in historical and creative cognitive processes. This model offers a foundation for future research and application in educational assessment.

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A Study Of The Effectiveness Of The Tracer Study Model At Universitas Negeri Yogyakarta In Supporting The Achievement Of Iku

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Abstract. IKU 1n higher education functions as a principal performance indicator for evaluating the implementation of educational activities. IKU 1 reflects institutional performance in conducting tracer study using instruments developed by the Directorate General of Higher Education. This study examines the achievement of tracer study at Universitas Negeri Yogyakarta in attaining IKU 1, the institutional model applied in implementing tracer study, the strengths and limitations of the models used by Universitas Negeri Yogyakarta and Universitas Negeri Malang in achieving IKU 1, and the formulation of an ideal conceptual model that is effective and efficient for implementing tracer study at Universitas Negeri Yogyakarta. This research employs a descriptive qualitative approach. Data sources consist of qualitative and quantitative data obtained from the Center for Tracer Study, the Directorate of Quality Assurance, and Quality Assurance Units. Data were collected through Focus Group Discussion and document analysis of tracer study results. Data validity was ensured through informant review and triangulation of data, methods, and theory. Data analysis followed an interactive model comprising data collection, data display, data reduction, and data verification. The findings indicate that Universitas Negeri Yogyakarta achieved high performance in IKU 1, attaining first rank in 2022 and 2023 and maintaining achievement above 80 percent in 2024. The applied model is program study based, coordinated centrally, and implemented periodically, demonstrating structured strengths alongside identified limitations that inform the proposed ideal conceptual model.
Keywords: model tracer study; IKU; alumni; Universitas Negeri Yogyakarta.

INTRODUCTION

The paradigm shift in higher education management toward market oriented educational objectives necessitates the measurement of educational customer satisfaction across all stakeholders. Higher education institutions are regarded as having quality when they are able to provide service satisfaction to their stakeholders in a sustained and future oriented manner. Stakeholder satisfaction with service processes and outcomes generates positive psychological effects that contribute to institutional benefits, whereas dissatisfaction produces adverse consequences.

Stakeholder involvement plays a critical role in the evaluation of graduate competencies. Competence refers to individual capabilities required to perform tasks or professional duties, grounded in knowledge, skills, and attitudes aligned with prescribed performance standards (Pusdiknakes, 2005). Graduates are defined as individuals who have completed the educational process and fulfilled graduation requirements of a diploma study program, as stipulated in the Diploma Study Program Accreditation Handbook (2009).

As direct outputs of the educational process, high quality graduates demonstrate mastery of academic competencies, including *hardskill* and *soft skill*, as articulated in quality objectives and evidenced through graduate performance in professional and disciplinary contexts within society (BAN PT, 2009).

Graduate competencies are categorized into three types according to Kepmendiknas Number 045 of 2002. These include core competencies that characterize graduates, supporting competencies that reinforce core competencies in achieving final graduate outcomes, and additional competencies that provide distinctive or competitive advantages within a study program.

Competency dimensions comprise five interrelated domains. These include *task skills*, referring to the ability to perform occupational duties in accordance with professional practice and ethics standards; *task management skills*, encompassing planning, organizing, and evaluating work activities effectively and efficiently; *contingency management skills*, involving appropriate decision making and problem solving based on *critical thinking*; *job or role environment skills*, reflecting contributions to maintaining safe, healthy, and secure work environments through individual, family, and community empowerment in *safety and health promotion*; and *transfer or adaptation skills*, denoting the capacity to apply knowledge and skills to new situations, including collaboration and communication abilities (Pusdiknakes, 2005).

Graduate competencies of the Diploma III program are directed toward individuals capable of independently performing both routine and unfamiliar tasks within their professional field, assuming responsibility for their work, and conducting supervision and guidance based on managerial skills. The Diploma III program requires a minimum of 110 and a maximum of 120 credit units, completed within at least six and no more than ten semesters (BAN PT, 2009). Diploma IV graduates are expected to perform complex professional tasks, demonstrate planning and problem solving abilities, assume independent responsibility at a specified level, possess managerial competencies, and continuously adapt to developments in science and technology within their field of expertise (BAN PT, 2009).

Graduate performance evaluated through *Tracer Study* according to the diploma program accreditation instrument includes integrity related to ethics and morality, disciplinary expertise as core competence, *English* proficiency, information technology utilization, communication ability, teamwork capacity, and self development (BAN PT, 2009). Graduate evaluation contributes substantially to the improvement of graduate quality, particularly through feedback obtained from graduate employers regarding performance outcomes.

Graduate tracking constitutes an empirical research approach that generates valuable information for evaluating educational programs. Findings from such studies support institutional quality assurance by enabling continuous program improvement based on graduate feedback (Schomburg, 2003). The relevance of graduate tracking studies for curriculum policy formulation and program development has been widely recognized (Pace, 1979).

Graduate tracking studies function to evaluate curriculum effectiveness, identify program strengths and weaknesses, and produce fundamental recommendations for improvement. These studies assess curriculum relevance to labor market demands and the extent to which academic programs prepare graduates for workplace transitions, as demonstrated by Delaney (2000). Alumni perspectives tend to be more objective due to their independent relationship with the institution, thereby providing valuable evaluative insights (Khalil, 1990). Schomburg (2003) proposes that graduate tracking studies serve as a foundation for future program and activity planning.

Graduate tracking studies also examine professional success indicators, including career trajectories, employment status, and income levels, alongside the relevance of acquired competencies to workplace requirements. Graduate job satisfaction represents a significant indicator of program success, as identified by Cabrera, de Vries, and Anderson (2008). Graduate tracking studies therefore play an essential role in measuring higher education outputs and outcomes. Methodological approaches to graduate tracking vary widely, ranging from simple surveys to extensive longitudinal research requiring substantial resources, with accumulated experiences offering valuable institutional learning opportunities (Schomburg, 2003).

Higher education institutions require systematic evaluation of labor market competency demands to reduce disparities between academic preparation and workplace realities. Structural changes including educated unemployment, competency mismatches, low productivity, limited communication between education and labor sectors, global socio economic and political shifts, and rapid scientific and technological advancement have transformed qualification and competency requirements for workforce entry. Graduate contribution to development aligned with educational relevance can be assessed through *Tracer Study*. *Tracer Study* findings enable institutions to evaluate educational effectiveness in preparing students for professional engagement. *Tracer Study* refers to graduate tracking conducted one to three years after graduation to assess educational outcomes, including transition to employment, self assessment of competency acquisition, evaluation of learning processes, institutional contributions to competency development, and socio biographical data of graduates (DIKTI, 2011).

Data collection represents a major challenge in implementing *Tracer Study*. Many institutions continue to rely on manual methods such as paper questionnaires and telephone interviews, which incur high costs, delivery uncertainty, and limited respondent accessibility. To address these constraints, electronic based graduate tracking systems known as *E Tracer Study* have been developed. Although several Indonesian universities have implemented *E Tracer Study*, utilization remains limited (Renny, Chandra, Ruhama, & Sardjono, 2013).

E Tracer Study enables institutions to assess graduate employment alignment with academic disciplines, job

waiting periods, initial salary levels, and alumni feedback for curriculum improvement. Electronic implementation increases efficiency in questionnaire distribution and data collection. Optimal implementation occurs between six months and two years after graduation, as studies conducted beyond three years risk retrospective bias and reduced relevance, while studies conducted immediately after graduation function as *exit study* and fail to capture stable employment transitions. Therefore, the development of a comprehensive *E Tracer Study* service is required to support curriculum improvement, detailed alumni tracking, and assessment of graduate user satisfaction. Based on the background and problem identification, the research questions are formulated as follows.

1. How is the performance of *Tracer Study* at Universitas Negeri Yogyakarta in achieving IKU 1.
2. What model is implemented by Universitas Negeri Yogyakarta in conducting *Tracer Study*.
3. What are the strengths and limitations of the *Tracer Study* model implemented by Universitas Negeri Yogyakarta in achieving IKU 1.
4. What conceptual ideal model is effective and efficient for implementing *Tracer Study* at Universitas Negeri Yogyakarta.

RESEARCH METHOD

This study employs a descriptive qualitative approach to examine an effective and efficient tracer study model at Universitas Negeri Yogyakarta within the context of educational policy research, emphasizing processes, meanings, and stakeholder perceptions through a flexible and adaptive qualitative design that remains open to emerging interactions throughout the research process. Qualitative data are prioritized because they are context specific, multi interpretable, and require interpretation rather than nomothetic generalization, with data sources comprising oral accounts, documents, and texts, including official archives related to learning programs, curricula, assessment instruments, and relevant records, which are interpreted through careful textual reading that considers authorial intent, sociocultural conditions, and intended audiences while maintaining analytical distance (Waluyo, 2000).

Data collection techniques include in depth interviewing that allows focused yet open exploration of facts and opinions and positions key informants as central sources of evidence and access to additional data while remaining cautious of interpersonal bias by corroborating information across sources (Yin, 1996), direct observation through passive participation in formal and informal academic activities to enrich contextual understanding and support empirical credibility (Sutopo, 1996; Dabbs, 1996), document recording through content analysis to capture both explicit and implicit meanings within archival materials and communication processes (Krippendoff, 1991), and Focus Group Discussion involving policymakers, experts, practitioners, and tracer study implementers to formulate an ideal effective efficient model that supports IKU 1.

Data validity is ensured through informant review to align researcher interpretation with participant meaning through dialogic feedback (Miles and Huberman, 1992) and triangulation of sources, methods, and theories to reduce systematic bias and strengthen verification across perspectives and evidence bases (Patton, 1980; Patton, 1983). Data analysis follows an interactive model consisting of data reduction, data display, and conclusion drawing or verification conducted cyclically alongside data collection, applying an empirico inductive logic distinct from hypotetico deductive quantitative analysis, where reduction sharpens and organizes qualitative data through selection, abstraction, and transformation, presentation structures information to enable analytical inference and action, and conclusions are drawn in an open and critical manner (Miles and Huberman, 1984; Sutopo, 1996; Patton, 1983).

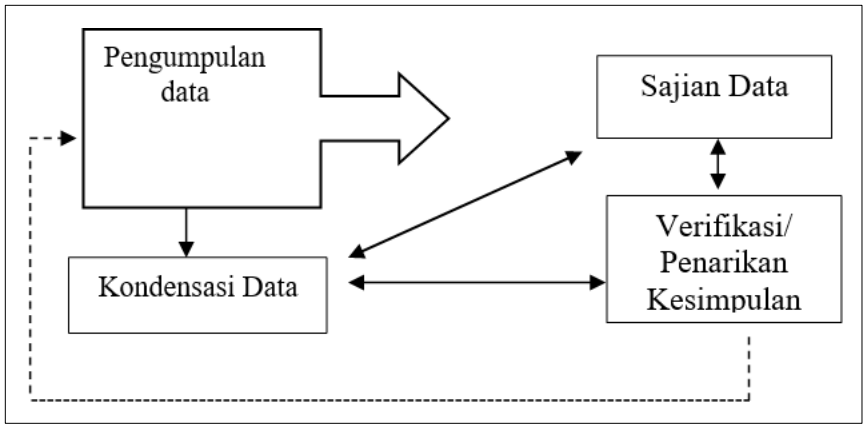

Figure 1. *Analysis Data by Miles and Huberman*

RESULTS AND DISCUSSION

Universitas Negeri Yogyakarta has demonstrated strong performance in tracer study implementation for achieving IKU 1. In 2022 and 2023, Universitas Negeri Yogyakarta ranked first nationally in IKU 1 attainment with a high percentage score, while in 2024 the achievement remained above 80 percent despite not reaching the top rank. This performance reflects the effectiveness of the tracer study model adopted by the university. The tracer study model at Universitas Negeri Yogyakarta follows the national higher education instrument issued by Dikti and is implemented at the program study level under the coordination of the university tracer study center. Program studies conduct monthly tracer activities targeting alumni. The model operates through a tiered mechanism involving program studies, faculty level workshops, and university level workshops. This layered structure enables systematic coordination while maintaining program specific engagement. Evaluations of centralized implementation in 2022 and 2023 and the current tiered approach indicate that the conceptual model functions efficiently and aligns with institutional roles and responsibilities.

Tracer study serves as a strategic mechanism for evaluating higher education outcomes and supporting quality assurance processes. It provides information on the relationship between higher education and the professional labor market, assesses educational relevance, informs stakeholders, and fulfills accreditation requirements. In curriculum development, tracer study plays a critical role at the initial stage by providing empirical feedback derived from alumni experiences. Graduate employability and educational relevance can be examined through tracer study by collecting systematic information from alumni. Tracer study captures relationships among educational inputs, learning processes, educational outputs, and post graduation outcomes, including labor market transition and societal contribution (Schomburg, 2016). This approach has been widely adopted in both developed and developing countries and typically tracks graduates during the first one to three years of their professional careers (Budi & Dinan, 2015).

Higher education institutions require tracer study to obtain structured feedback from alumni for improving educational systems and governance. Alumni data provide insights into learning conditions, educational provision, instructional processes, and competency acquisition. Tracer study also generates information on professional knowledge, skills, motivation, values, employment transition, and societal contribution, enabling institutions to evaluate alignment between higher education and professional practice while supporting accreditation processes (Budi & Dinan, 2015). The target respondents in this study consist of graduates from the 2021 cohort or TS minus two, in accordance with Ministry of Education policy. Survey items follow the minimum indicators provided on the official tracer study platform of Kemdikbud and the Universitas Negeri Yogyakarta tracer system accessible at the official university website. Universities, faculties, and program studies actively encourage alumni participation through direct outreach. Data collected comprise primary data obtained from alumni and graduate employers using structured questionnaires analyzed through descriptive percentage techniques.

The tracer study system at Universitas Negeri Yogyakarta was first introduced in 2015 and underwent several revisions to align with national tracer study standards. In 2020, system updates included workplace and location variables. In February 2022, the university engaged survey teams consisting of lecturers, administrative staff, and

students to personally contact non responding alumni through email and personalized WhatsApp communication. Higher education learning processes contribute to shaping graduate competencies and professional readiness. Educational outcomes reflected in alumni knowledge, skills, and competencies, combined with early career work conditions, provide essential feedback for institutional improvement. Tracer study is optimally conducted one to three years after graduation, as alumni at this stage possess sufficient professional exposure to evaluate the relevance of their education. Extended tracer studies conducted four to five years after graduation enable identification of career development patterns.

Tracer study fulfills multiple institutional objectives, including institutional development, accreditation support, evaluation of educational relevance, and dissemination of information to students, parents, lecturers, and administrators. Alumni data provide insights into social biography, educational structure, curriculum implementation, competency acquisition, socio cultural context, employment conditions, and labor market dynamics. Tracer study functions as a bridge between institutional research and organizational development. The resulting data support quality assurance evaluation, alumni career services, educational marketing, and academic research, including analyses of educational mismatch, skill alignment, and professional success.

The primary objective of tracer study is to assess graduate quality in the labor market. Specific objectives include identifying graduate competency profiles, evaluating curriculum relevance to labor market needs, assessing curriculum contribution to disciplinary development, and supporting accreditation processes (Schomburg, 2003). These objectives position tracer study as a strategic and mandatory activity for higher education institutions. Tracer study methodology consists of three main stages, namely concept and instrument development, data collection, and data analysis with report writing. Instrument development includes defining objectives, designing cohorts and tracking strategies, determining technical procedures, and finalizing questionnaires. Data collection emphasizes survey team training, questionnaire distribution, and response monitoring. Data analysis involves coding, data entry, quality control, statistical analysis, report preparation, and dissemination to stakeholders.

Tracer study implementation may vary based on institutional culture, utilizing methods such as institutional records, national registers, alumni associations, company records, media, internet platforms, personal networks, and snowball techniques. Current practices emphasize online questionnaires due to cost efficiency, reduced staffing needs, faster data processing, and higher response potential. Tracer study constitutes a graduate tracking study conducted approximately two years after graduation to evaluate educational outcomes, including labor market transition, competency acquisition, learning process evaluation, and socio biographical inputs. Its objectives include monitoring educational outcomes, assessing institutional contribution to workforce competencies, and supporting graduate transition monitoring as required by Ditjen DIKTI.

Beyond institutional benefits, tracer study contributes to strengthening alignment between higher education and industry. It provides horizontal and vertical job matching information that supports curriculum improvement and workforce preparation. Industry stakeholders benefit from tracer study findings by aligning training programs with graduate competency profiles, while higher education institutions utilize the data to enhance curriculum relevance, academic services, and alumni networks.

CONCLUSION

Based on the research findings, the tracer study performance of Universitas Negeri Yogyakarta in achieving IKU 1 demonstrates a consistently high level of attainment, as evidenced by first place rankings in 2022 and 2023 with substantial percentages and a continued achievement exceeding 80 percent in 2024 despite not securing the top rank. The tracer study model implemented by Universitas Negeri Yogyakarta adheres to Dikti instruments and is organized at the study program level under the coordination of a centralized tracer study unit, with monthly tracer activities conducted by each study program. This model exhibits both strengths and limitations, particularly through its layered operational mechanism involving study programs, faculty level workshops, and university level workshops. An ideal conceptual model is considered effective and efficient for implementing the tracer study at Universitas Negeri Yogyakarta, as it integrates evaluations of the advantages and limitations of a centralized approach under the Directorate during 2022 and 2023 and a current tiered implementation aligned with the respective roles of each institutional unit.

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Optimization Of Mooc-Ai For Professional-Academic Competency Training To Enhance Faculty Research Performance In Indonesia

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Abstract. Publish or Perish has emerged as a prevailing phenomenon in academia, directly influencing research performance. Research performance, in turn, significantly contributes to prestigious university rankings such as the QS World University Rankings (QS WUR). Leading Indonesian universities rank 237, considerably lower than Singapore (8) and Malaysia (65), signaling a critical need for strategic improvement. This gap is particularly relevant to Indonesia 2045, where research performance plays a central role in advancing the Asta Cita program and achieving Sustainable Development Goals (SDG 4, 9, 17). However, research on developing prototypes to optimize research performance in Indonesia remains limited. Addressing this gap, this study aims to develop and refine a massive open online course (MOOC) integrated with artificial intelligence (AI) to enhance professional-academic competencies and support faculty research optimization. The study applies the ADDIE model (Analyze, Design, Development, Implementation, Evaluation) with participants including early-career lecturers, program heads, and LPPM directors at state universities with legal independence (PTN-BH) across five provinces. Over two years, the first year focuses on analysis, design, and development, resulting in a prototype tested in real-world contexts. The second year emphasizes implementation and evaluation, producing a refined prototype. The study targets multiple research outputs. In the first year, the deliverables include one AI-integrated MOOC prototype tested in practice and one intellectual property right (HKI) registration. In the second year, the outputs consist of one officially validated AI-integrated MOOC and one published feasibility study report. Additionally, the targeted competency measurement level (TKT) is six, reflecting advanced professional-academic proficiency.
Keywords: MOOC; AI; higher education; research performance; ADDIE

INTRODUCTION

Research productivity remains a critical determinant of institutional performance in higher education, particularly in the context of Publish or Perish. The ability to produce publications in reputable international journals directly influences academic metrics, institutional reputation, and economic standing [1]. Research output, learning quality, and internationalization constitute major criteria in global university rankings such as the QS World University Rankings (QS WUR) [2]. Indonesian universities, however, have experienced a decline in QS WUR 2024, with the top university falling from rank 231 to 237, lagging behind regional peers such as Malaysia (rank 65) and Singapore (rank 8), despite national ambitions under Indonesia 2045 to achieve optimal research performance to drive innovation and economic growth [3]. Previous studies demonstrate that a supportive research climate fosters collaboration and funding access, while individual competencies and research outcomes significantly enhance research performance [4]. Informal consultations with directors of research and community service institutions in DIY and Central Java reveal a lack of practical products to enhance professional-academic competencies, particularly for early-career faculty, contributing to stagnation in research performance. Addressing this gap, this study proposes the development of an.

AI-integrated Massive Open Online Course (MOOC) to optimize professional-academic competencies and research productivity.

Recent studies indicate that research performance is influenced by both internal and external factors within educational institutions. Globally, external factors such as organizational vision, institutional research culture, and infrastructure play a central role in shaping research outcomes [8, 9, 10, 11]. Proficiency in

digital tools represents a critical internal factor. Competence in utilizing digital platforms, including reference search, access to online classes, and collaboration within virtual learning environments, along with self-efficacy, perseverance, research engagement, self-regulation, research literacy, and writing confidence, significantly contributes to research capability [12, 13, 14, 15]. External factors, including institutional support, academic culture, and targeted research training, constitute essential elements (15–18). Financial resources, resource allocation, research grants, and incentive schemes are considered pivotal in enhancing research performance [8, 19, 20, 21, 22]. Furthermore, organizational policies, management systems, institutional commitment, and work environment further influence research productivity [8, 11, 22, 23, 24]. Strategic leadership patterns play a crucial role in fostering an academic culture within institutions [25, 26, 27, 28, 29, 30]. Overall, advancing research competence requires the integration of internal capabilities with external institutional support through strategic policies, adequate funding, and a conducive academic environment.

In addition, several studies have explored strategies to enhance research skills. Training and professional development improve research self-efficacy, thereby boosting productivity [31]. Providing research resources alongside strategies, leadership, academic identity, and collaboration serves as a key approach to enhancing research output [32,33]. Ocampo [34] demonstrates that effective allocation of funding, mentoring programs, incentives, and external collaborations constitutes a critical strategy for improving university research performance. Moreover, several publications provide international guidance on research and publication practices [35, 36]. However, prior studies primarily focus on international contexts that differ from the Indonesian academic environment. Existing findings and resources do not fully address the needs of early-career faculty. Research gaps remain, particularly regarding practical solutions to enhance research performance. To address these gaps, the present study aims to develop an AI-integrated massive open online course (MOOC) prototype to enhance the professional-academic competencies of early-career faculty as an optimized strategy to improve research performance. The research outcomes are expected to contribute novel insights to the academic literature and offer practical benefits by equipping early-career faculty with essential competencies and supportive ecosystems. The resulting prototype is anticipated to provide long-term benefits by increasing both the quantity and quality of academic publications among Indonesian scholars. In line with the research background, the research team formulates the following research questions.

1. How can an AI-integrated MOOC prototype be developed?
2. How effective is the prototype in enhancing early-career faculty's professional-academic competencies to optimize research performance?

RESEARCH METHOD

The study employs the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) [5], recognized for its flexibility and suitability in instructional product development [6]. Collaboration with Cakrawala Pendidikan, a Scopus-indexed journal in Indonesia, will provide expertise, research facilities, networks, and support. The first year focuses on developing MOOC content covering professional research competencies, including research topic selection, roadmap development, proposal writing, budgeting, and academic networking, alongside academic competencies such as manuscript preparation, journal submission, reporting, and research dissemination. The second year emphasizes implementation, evaluation, and refinement of the prototype.

FIGURE 1. *Model of ADDIE*

The first year of the study focuses on the Analysis, Design, and Development stages, which serve as the foundation for the model. The analysis stage examines learners' needs, learning contexts, and performance gaps. This stage includes: validating competency gaps in knowledge, learning resources, and cognitive aspects; identifying learning objectives that are clear and measurable based on the identified gaps; exploring learner profiles, including prior knowledge, learning styles, and demographic characteristics; identifying available learning resources, including materials, technology, facilities, and educator profiles; selecting the

appropriate learning mode, whether online, offline, or blended; and preparing a project plan encompassing timeline, resources, and expected outputs. The output of this stage is an analytical overview containing empirical information on research gaps, objectives, target learners, and required resources.

The design stage builds on the analysis stage by focusing on comprehensive learning planning to formulate a blueprint. This stage involves task inventory, defining detailed competency targets and standards, developing assessment strategies to measure learner competency development, and calculating return on investment to justify program feasibility. The output is a design brief that includes a clear roadmap for developing learning materials, specifying objectives, activities, assessments, and testing. The development stage entails creating and organizing learning materials. It includes content creation for modules and media for both learners and instructors, developing supporting media to enhance learning experiences, conducting formative revisions through limited trials to identify weaknesses, and performing pilot testing to gather learner feedback. The output is a prototype ready for implementation. The expected outcome at the end of the first year is an AI-integrated MOOC prototype tested in a real context and one intellectual property registration (HKI) issued. The second year focuses on Implementation and Evaluation. The implementation stage launches the learning program prototype to ensure accessibility, learner engagement, and instructor readiness. This involves instructor preparation to effectively deliver learning materials, learner orientation with access to preliminary materials, and preparing the learning environment with necessary technological and logistical support. The output is the operational prototype supported by an appropriate learning environment.

The evaluation stage is iterative, exploring critical feedback for product revision before and after implementation. It includes establishing evaluation criteria to measure program success in terms of achievement, engagement, and learner satisfaction; selecting evaluation instruments such as surveys, quizzes, tests, and observations; and conducting both formative evaluation during development and summative evaluation after implementation using feedback from learners, instructors, and stakeholders. The output is an evaluation plan to measure program effectiveness and identify areas for continuous improvement. The expected outcome at the end of the second year is an AI-integrated MOOC product validated by an official institution and a published feasibility study report. Overall, the research anticipates producing one AI-integrated MOOC prototype and one intellectual property registration in the first year, followed by one institutionally validated AI-integrated MOOC and one published feasibility study in the second year.

RESULTS AND DISCUSSION

Results

1. Development of the AI-Integrated MOOC Prototype

The first research objective was to develop an AI-integrated MOOC prototype designed to enhance early-career faculty's professional-academic competencies. Using the ADDIE instructional design model, the development process systematically progressed through the Analysis, Design, and Development stages. The analysis stage identified substantial competency gaps among early-career faculty, particularly in research planning, proposal development, academic writing, journal selection, and publication strategies. These gaps were exacerbated by limited access to structured, practice-oriented training and insufficient institutional mentoring. The needs analysis also revealed strong demand for flexible, technology-supported learning environments that accommodate faculty workload and diverse research backgrounds.

Based on these findings, the design stage produced a structured learning blueprint consisting of clearly defined learning outcomes, competency indicators, learning activities, and assessment strategies. The MOOC curriculum was organized into integrated modules covering (1) research topic formulation and roadmap development, (2) proposal and grant writing, (3) research implementation and budgeting, (4) academic networking and collaboration, (5) manuscript preparation, (6) journal targeting and submission strategies, and (7) research dissemination and reporting. Artificial intelligence features were embedded to support adaptive feedback, automated writing assistance, recommendation systems for journals, and personalized learning pathways. During the development stage, learning materials were produced in multimedia formats, including video lectures, interactive assignments, AI-assisted writing tools, formative quizzes, and reflective tasks. Limited trials and pilot testing indicated that the prototype was technically functional, pedagogically coherent, and aligned with the identified competency needs. Feedback from pilot users suggested that the AI features enhanced clarity, reduced cognitive load, and improved learning efficiency. The primary output of this stage was a fully functional AI-integrated MOOC prototype, accompanied by an intellectual property registration (HKI).

FIGURE 2. *Media of MOOC*

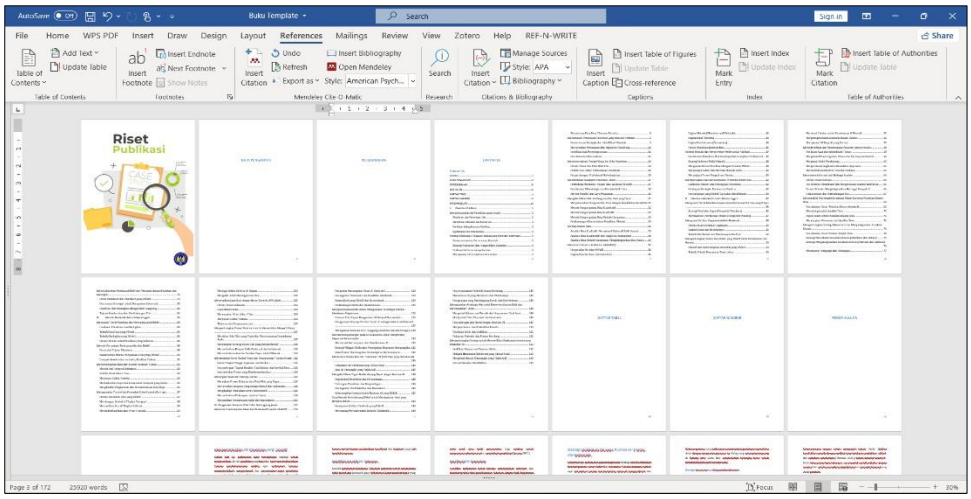

Figure 3. Prototype of a Research and Publication Model

2. *Effectiveness of the MOOC Prototype in Enhancing Professional-Academic Competencies*

The second research objective examined the effectiveness of the MOOC prototype in enhancing professional- academic competencies related to research performance. Evaluation results from pilot implementation indicated measurable improvements across several competency domains. Participants demonstrated increased competence in research design, proposal structuring, academic writing, and journal submission strategies. Improvements were also observed in research self-efficacy, confidence in manuscript preparation, and engagement with scholarly publication processes. Learning analytics showed high completion rates, sustained participation, and frequent use of AI-assisted features, particularly for writing feedback and journal recommendation tasks. Overall, the findings indicate that the AI-integrated MOOC prototype effectively supported the development of both professional and academic competencies, suggesting its potential as a scalable and sustainable strategy to enhance faculty research performance in the Indonesian higher education context.

Discussion

The findings of this study demonstrate that an AI-integrated MOOC can function as an effective instructional intervention for enhancing early-career faculty research competencies. This result aligns with technology-enhanced learning theory, which posits that digital learning environments can improve professional competence when they are adaptive, learner-centered, and contextually relevant [37]. The integration of AI features, such as personalized feedback and automated recommendations, supports adaptive learning principles, enabling learners to receive targeted assistance based on their individual needs [38]. From a human capital development perspective, research competence is a form of strategic academic capital that directly influences institutional productivity and competitiveness [39]. The structured and competency-based design of the MOOC aligns with this perspective by systematically strengthening individual research capabilities that contribute to broader institutional outcomes.

The observed improvement in research self-efficacy and writing confidence among participants supports social cognitive theory, which emphasizes self-efficacy as a critical determinant of performance and persistence in complex tasks [40, 41]. AI-supported feedback mechanisms reduced uncertainty in academic writing and publication processes, thereby strengthening participants' belief in their research capabilities. Additionally, the MOOC facilitated the development of academic identity, particularly among early-career

faculty. academic identity formation is closely linked to engagement in authentic research practices and communities of practice. The MOOC's emphasis on real- world research tasks and publication-oriented outcomes provided participants with meaningful opportunities to enact and internalize their roles as researchers [42].

The effectiveness of the MOOC prototype also reflects the importance of aligning individual capacity-building initiatives with institutional support structures. Prior studies highlight that research productivity is shaped by the interaction between individual competencies and organizational environments, including leadership, policy, and infrastructure [43, 44]. By collaborating with an established academic journal and embedding the MOOC within a supportive research ecosystem, this study addressed both internal and external determinants of research performance. Furthermore, the use of MOOCs responds to the growing need for scalable and inclusive professional development models in higher education. Recent literature emphasizes that MOOCs, when designed for professional learning rather than mass participation alone, can effectively support continuous academic development [45, 46].

The findings have significant implications for higher education policy and faculty development in Indonesia. Given the persistent challenges in research productivity and international publication performance, AI-integrated MOOCs offer a cost-effective and scalable alternative to conventional training programs. This approach aligns with national strategic goals to enhance research output and global competitiveness.

Moreover, the study addresses a critical gap in prior research by providing a context-specific and practice-oriented solution tailored to early-career faculty in developing higher education systems. Unlike generic international guidelines, the proposed MOOC integrates local academic contexts with global publication standards, thereby increasing its relevance and applicability.

CONCLUSION

The present study demonstrates that an AI-integrated MOOC effectively enhances the professional-academic competencies of early-career faculty, thereby supporting improved research performance. The development and implementation of the prototype addressed identified competency gaps in research planning, proposal writing, manuscript preparation, and publication strategies, while AI features provided personalized feedback, adaptive learning pathways, and practical guidance. Participants exhibited increased research self-efficacy, writing confidence, and engagement with scholarly publication processes. These findings underscore the importance of integrating individual capacity-building initiatives with supportive institutional structures, including academic networks, leadership, and digital infrastructure. Overall, the AI-integrated MOOC presents a scalable, context-specific, and sustainable approach to strengthening faculty research competencies, contributing both to individual professional development and broader institutional research productivity.

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Assistance In Developing Diagnostic Assessment Instruments For The Merdeka Curriculum For Senior High School Teachers In Bantul

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Abstract. This community service program aimed to enhance teachers' knowledge and skills in developing diagnostic assessment instruments aligned with the Kurikulum Merdeka. The target participants were members of the High School Subject Teacher Forum (MGMP) in Bantul. The training was conducted over two consecutive days, employing three approaches: counseling, training, and mentoring. The implementation of the training involved several stages. First, information regarding teachers' understanding and practices of diagnostic assessment in Bantul was collected. This data was obtained through interviews with teachers and a pre-test to assess their initial comprehension of diagnostic assessment instrument development. Second, participants received instructional content on diagnostic assessment through interactive lectures supported by presentation slides. The theoretical sessions were followed by demonstrations on instrument development and interactive discussions including question-and-answer sessions. Third, teachers engaged in practical exercises to design and develop diagnostic assessment instruments with guidance from the community service team to address challenges encountered during the process. Subsequently, teachers presented the instruments they developed and received evaluations and feedback from the community service team. The success of the training was evaluated based on teachers' ability to produce diagnostic assessment instruments that conformed to the principles of the Kurikulum Merdeka. The program enhanced history teachers' understanding of diagnostic assessment within Kurikulum Merdeka, improving their ability to design valid instruments and analyze results to guide learning. Structured training and mentoring supported implementation in Bantul schools, while motivation and expert guidance facilitated adoption. Time constraints and limited prior knowledge influenced reliance on summative assessments.
Keywords: diagnostic assessment; teacher professional development; kurikulum merdeka; training and mentoring; instrument design.

INTRODUCTION

The implementation of the Kurikulum Merdeka, initiated by the Ministry of Education, Culture, Research, and Technology, seeks to provide educators with flexibility in designing learning processes that align with students' needs and characteristics (Kemendikbudristek, 2022). A central component of this curriculum is diagnostic assessment, which functions to identify students' initial competencies, learning barriers, and potential within a subject area (Gunawan et al., 2021). Nevertheless, secondary school teachers in Bantul encounter challenges in developing diagnostic assessment instruments that adhere to the principles of the Kurikulum Merdeka.

Initial observations and interviews with several teachers in Bantul reveal that most educators lack a comprehensive understanding of how to construct diagnostic assessment instruments aligned with student characteristics and curriculum principles. This limitation arises from factors such as insufficient training opportunities, limited reference materials, and inadequate guidance in implementing assessments within the classroom (Putri & Santoso, 2023). Moreover, prevailing assessments remain primarily summative, emphasizing final outcomes rather than mapping students' initial competencies. Technical difficulties in constructing diagnostic assessment instruments further exacerbate the problem. Teachers often face challenges in determining appropriate assessment indicators, designing suitable test items, and analyzing assessment results to inform instructional strategies (Rahmawati et al., 2021). Without a solid grasp of this process, assessments risk failing to provide an accurate representation of students' learning needs.

The partners in this study are secondary school teachers in Bantul who require guidance in developing

diagnostic assessment instruments based on the Kurikulum Merdeka. The primary challenges faced by these partners include: first, limited conceptual understanding, as many teachers have not fully grasped the principles of diagnostic assessment within the Kurikulum Merdeka, making it difficult to design effective instruments (Wibowo & Nugraha, 2022); second, restricted technical skills, since teachers struggle to construct valid and reliable assessment items and to analyze results for instructional improvement (Suryani et al., 2022); third, insufficient training and guidance, given that few opportunities specifically address the development of Kurikulum Merdeka-based diagnostic assessment instruments, particularly in Bantul; and fourth, a tendency to employ summative assessments, as teachers are more accustomed to summative approaches than to assessments aimed at mapping initial student competencies (Handayani, 2021). This study addresses the following research questions:

1. What is the level of teachers' understanding regarding the concept of diagnostic assessment within the Kurikulum Merdeka?
2. How proficient are teachers in designing valid and reliable diagnostic assessment items and analyzing the results to improve learning?
3. To what extent are training and guidance available for developing Kurikulum Merdeka-based diagnostic assessment instruments, particularly in Bantul?
4. What factors contribute to teachers' preference for summative assessment over diagnostic assessment in classroom practice?

RESEARCH METHOD

The community service program aimed to enhance teachers' competence in developing diagnostic assessment instruments aligned with the principles of Kurikulum Merdeka. Diagnostic assessment serves a crucial role in learning by identifying students' initial abilities, potential, and learning challenges, enabling teachers to design instructional strategies tailored to individual needs. Despite its importance, many teachers face difficulties in constructing valid and reliable assessment instruments. Therefore, the program was implemented through structured counseling, training, and mentoring to provide teachers with both conceptual understanding and practical skills in producing high-quality diagnostic assessments. The main stages included counseling to convey the foundational concepts, functions, and relevance of diagnostic assessments with theoretical explanations and subject-specific examples; training to equip participants with technical skills in selecting assessment indicators, measuring student abilities, and utilizing various instruments such as diagnostic tests, interviews, and observations; and mentoring to support teachers in adapting assessment instruments to student characteristics and classroom needs while addressing challenges collaboratively. The methodology integrated lectures, discussions, practical exercises, and reflection sessions, wherein presentations, interactive discussions, hands-on practice, and reflective evaluations facilitated comprehension, problem identification, and strategy formulation. Program evaluation involved pre-tests to measure initial understanding of diagnostic assessment concepts and instrument development, formative assessment during the training to provide immediate feedback, and post-tests to determine knowledge and skill improvements, with pre- and post-test comparisons serving to assess training effectiveness. Post-program evaluation utilized training response questionnaires, with success indicators including a minimum of 70% attendance, positive participant feedback, and at least 70% of teachers demonstrating the ability to develop diagnostic assessment instruments accurately and in accordance with Kurikulum Merdeka principles.

RESULTS AND DISCUSSION

Results

1. *Target Audience of the PPM Activities*

The community service program targeted history teachers who are members of the History Subject Teacher Working Group (MGMP) in Bantul. The activities were conducted at SMA N 2 Banguntapan Bantul, involving a total of 30 participants. The resource persons for this program were experienced lecturers from Universitas Negeri Yogyakarta, specializing in the preparation of assessment instruments and instructional materials.

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Figure 1. MGMP History Participants in Bantul

2. *Activity Outcomes*

The community service program focused on mentoring the development of diagnostic assessment instruments to support the history learning process in schools. Assessment, in essence, constitutes the collection of data regarding students' progress and learning outcomes, encompassing attitudes, skills, and knowledge, which can subsequently assist teachers in addressing learning challenges using minimum standards (Marhaeni, 2020). The program involved two stages to enhance teachers' competence and professionalism in preparing diagnostic assessment instruments. The first stage comprised the delivery of materials related to diagnostic assessment preparation to the MGMP history teachers in Bantul. The second stage consisted of guided, hands-on practice in preparing diagnostic instruments by the participants. The methods employed throughout the program included interactive lectures supported by PowerPoint presentations.

Figure 2. Implementation of Diagnostic Assessment Preparation

Following the material delivery, the resource persons and the community service team facilitated discussions to clarify topics that remained unclear from the previous presentation and to identify challenges faced by participants in implementing diagnostic assessments during instruction. The findings revealed several obstacles encountered by teachers in preparing classroom instruments, including: the selection of assessment instruments, data collection techniques, data analysis methods, and assessment reporting formats. The program implementation at SMA N 2 Banguntapan demonstrated a relatively high level of enthusiasm, reflected in participants' active engagement and involvement throughout the activities. Participants actively absorbed the material through discussions and interactive questions, and exhibited creativity in collaboratively addressing challenges during the diagnostic instrument preparation exercises. These outcomes align with Slameto (2014), who asserted that the effectiveness and efficiency of training models are influenced by determinants such as positive behavior, clarity and meaningfulness of tasks, as well as cooperative attitudes and participant

enthusiasm.

3. *Supporting and Inhibiting Factors*
   a. Supporting Factors
      1) High motivation among participants to become professional history teachers, indicated by their active questioning and engagement in discussions during material delivery and training sessions.
      2) Expertise of the community service team, which corresponded to the objectives of the training program.

   b. Inhibiting Factors
      1) Teachers' tight schedules, which caused some participants to arrive late.
      2) Limited understanding among teachers regarding the preparation of diagnostic assessment instruments.

4. *Evaluation*

The program was implemented in an integrated and participatory manner, from preparation to evaluation. Feedback from all 30 participating MGMP history teachers indicated a positive response. During the material delivery, many teachers asked questions, reflecting their interest in enhancing professionalism in preparing diagnostic assessment instruments. Although participants initially experienced difficulties during the hands-on preparation process, these challenges were largely resolved with guidance. Through the combination of material delivery and practical training, history teachers significantly improved their understanding of diagnostic assessments and independently began preparing higher-quality diagnostic instruments. The effectiveness and success of this program provide a foundation for improving the quality of history teachers in Bantul.

Discussion

The implementation of the community service program targeting history teachers in Bantul demonstrated significant progress in enhancing teacher competence in diagnostic assessment preparation. Participants, comprising members of the History Subject Teacher Working Group (MGMP), actively engaged in both material delivery and hands-on practice, which facilitated a comprehensive understanding of diagnostic assessments. These findings corroborate the notion that professional development initiatives grounded in interactive and participatory methods promote teacher engagement and skill acquisition (Slameto, 2014). The structured mentoring and collaborative exercises enabled teachers to translate theoretical knowledge into practical applications, reflecting an alignment with contemporary approaches in teacher professional development that emphasize active learning and contextualized practice (Brookhart, 2021; Marhaeni, 2020).

The program's focus on diagnostic assessment preparation supports the role of formative and diagnostic assessments in identifying students' cognitive and non-cognitive competencies, learning gaps, and instructional needs. Diagnostic assessments serve as critical tools for mapping individual differences in student readiness, allowing teachers to implement differentiated learning strategies (Black & Wiliam, 2018; Heritage, 2013; Shute & Zapata- Rivera, 2019). The participants' engagement in designing diagnostic instruments indicates the practical applicability of assessment theory, encompassing cognitive, non-cognitive, and formative evaluation dimensions (Duckworth & Yeager, 2015; Pellegrino et al., 2016; Wiliam, 2022). By translating these theoretical concepts into classroom instruments, teachers demonstrated an enhanced ability to construct assessments that measure students' understanding, skills, and attitudes systematically, which aligns with the objectives of the Kurikulum Merdeka to support holistic, learner-centered instruction (Kemendikbudristek, 2022; Putri & Rahmawati, 2023; Suyanto, 2023).

Several supporting factors contributed to the program's success, including participants' intrinsic motivation to develop as professional history educators and the expertise of the community service team, which ensured alignment between training content and instructional objectives. Conversely, inhibiting factors, such as teachers' tight schedules and limited prior understanding of diagnostic assessment preparation, presented challenges that were mitigated through guided practice and mentoring. These observations reflect the broader literature on teacher training, which highlights the influence of participant motivation, resource availability, and structured guidance on the effectiveness of professional development programs (Slameto, 2014; Arikunto, 2022).

The evaluation results indicated that teachers' competence in preparing diagnostic instruments improved significantly, as evidenced by their ability to independently develop higher-quality assessments. This outcome underscores the importance of integrating material delivery with practical exercises, which facilitates the internalization of complex concepts and the translation of knowledge into actionable instructional strategies (Brookhart, 2021; Wiliam, 2022). The process of collaborative discussion and problem-

solving during the program further reinforced participants' analytical skills, enabling them to address challenges in assessment design, including instrument selection, data collection, analysis, and reporting. These practices are consistent with the principles of effective diagnostic assessment, which require valid and reliable instruments, alignment with learning objectives, and systematic evaluation of student performance (Anderson & Krathwohl, 2021; Arikunto, 2022; Sudjana, 2023).

Furthermore, the integration of technology and digital platforms in diagnostic assessment, although not extensively applied in this program, represents a promising avenue for enhancing assessment efficiency, personalization, and data- driven instructional decisions (OECD, 2022; Siagian & Rahmawati, 2023). Empowering teachers with both theoretical knowledge and practical skills in diagnostic assessment positions them to implement differentiated learning strategies, remedial interventions, and enrichment activities, which collectively contribute to improved learning outcomes. Strengthening teacher competence in diagnostic assessment is therefore essential for advancing instructional quality in history education, consistent with the vision of Kurikulum Merdeka to foster adaptive and student-centered learning environments (Widodo & Kartika, 2022).

CONCLUSION

The community service program effectively enhanced history teachers' comprehension of diagnostic assessment within the Kurikulum Merdeka, enabling them to recognize its role in identifying student readiness and learning needs. Teachers demonstrated increased proficiency in designing valid and reliable diagnostic instruments and in analyzing results to inform instructional decisions. Training and guided practice provided a structured framework that supported the development and application of assessment tools, particularly in the context of Bantul schools. Despite these improvements, time constraints and limited prior knowledge influenced some teachers' continued reliance on summative assessments. High motivation, active engagement, and expert guidance were critical factors that encouraged teachers to adopt diagnostic approaches. Overall, the program indicates that targeted support and mentoring can significantly strengthen teachers' assessment competence and shift classroom practices toward more formative and diagnostic strategies.

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Community Empowerment Through Culture And Local History-Based Educational Tourism

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Abstract. This community service program aims to empower the residents of Kampung Emas Seyegan through the management of tourism grounded in local culture and history. The primary challenges include the absence of structured tourism management and limited competencies in business management and marketing. The proposed interventions focus on capacity building through training to enhance community skills in producing high quality local products, including batik, handicrafts, and traditional foods. After basic competencies are established, the program facilitates access to affordable and quality raw materials. Further training addresses business management, covering financial management, inventory control, and efficient human resource management to support structured enterprise operations. Participants are also guided in developing clear and feasible business plans, followed by business mentoring to implement learned managerial strategies. Digital marketing training is provided to promote local products and tourism packages through social media platforms such as Instagram, Facebook, and TikTok. The program seeks to improve product quality, market reach, and regional tourism potential. Targeted outcomes include the development of culture based tourism packages, increased local product sales, and improved community literacy and quality of life. The program was conducted on 29 September 2025 with 26 participants. The results indicate improved production skills, business management capacity, and digital promotion practices. Local communities produced marketable products, initiated online marketing, and established a tourism awareness group to manage culture and history based tourism sustainably.
Keywords: Community Empowerment, Educational Tourism, Culture, Local History.

INTRODUCTION

Kampung Emas Seyegan, located in Sleman Regency, Daerah Istimewa Yogyakarta, possesses substantial cultural and historical assets that constitute a strategic foundation for community based economic development. Despite the richness of local traditions, historical narratives, and heritage sites, community members experience constraints in transforming these assets into productive economic resources. This condition primarily reflects limited understanding of how cultural and historical potential can be utilized as the basis for sustainable economic activities. The challenge is intensified by inadequate tourism facilities and the absence of systematic capacity building related to professional management of culture and history based tourism enterprises. Although a considerable proportion of residents demonstrate potential to engage in entrepreneurial activities, they require structured assistance in production processes, business management, and marketing practices. Without such support, existing resources remain underutilized and economic participation remains limited.

The cultural and historical characteristics of Kampung Emas Seyegan provide a strong foundation for the development of educational tourism rooted in local heritage. Historical sites, oral histories, and living cultural practices can function as distinctive attractions that offer learning oriented visitor experiences. However, tourism management practices in the village have not yet reached an effective level, largely due to limited community knowledge in destination governance and insufficient skills in packaging tourism products that align with visitor expectations. Business management and marketing capacity represent additional structural barriers for community members seeking to establish tourism based enterprises. Many locally produced goods and tourism services have not been marketed effectively, while financial management practices remain informal and inefficient. In this context, targeted assistance for community business groups, particularly UMKM operating within the tourism sector, is required to enhance productivity, organizational capacity, and business independence.

Capacity building through tourism management training constitutes a critical strategy for addressing these challenges. Training focused on identifying cultural and historical assets, managing tourism destinations,

and improving service quality, including tour guide competence, supports the development of organized tourism packages and service standards that meet visitor needs. Empirical studies demonstrate that effective cultural tourism management contributes to enhanced visitor satisfaction and increased destination attractiveness, which in turn generates positive economic impacts for local communities, as evidenced by Prayag & Hosany (2014) and Richards (2018). The availability of supporting infrastructure also plays a decisive role in shaping visitor experiences. Facilities such as rest areas, sanitation units, and clear informational signage contribute to visitor comfort and spatial order within tourism destinations. Research indicates that adequate tourism infrastructure strengthens destination appeal and supports local tourism development by increasing visitor satisfaction and functional efficiency, as emphasized by Setiawan & Aksan (2019).

Sustainable tourism entrepreneurship further requires competencies in business and financial management. Training in cash flow management, budgeting, financial reporting, and business planning enables community members to operate tourism enterprises with greater efficiency and accountability. The empowerment of small scale tourism enterprises through managerial capacity building has been shown to improve competitiveness and operational performance, particularly within local tourism economies, as reported by Damanik & Yulianto (2021). Marketing capacity constitutes another essential component of tourism based economic development. Digital and offline marketing strategies enable community enterprises to expand market reach and increase sales performance. The utilization of social media platforms such as Instagram, Facebook, and TikTok, combined with offline collaboration and participation in promotional events, enhances visibility and market access. Previous studies confirm that digital marketing strategies facilitate broader market penetration and contribute to increased tourist visitation and product demand, as demonstrated by Amin & Murni (2022) and Telfer & Sharpley (2016).

For community groups with limited direct involvement in tourism services, skill based empowerment through handicraft and local batik production offers alternative income generating opportunities. The development and marketing of locally distinctive products as tourist souvenirs support household level economic participation. Evidence from Suman and Haque (2020) indicates that local skill empowerment initiatives contribute to improved livelihoods and the production of marketable goods with cultural value. Research on community based cultural and historical tourism development consistently highlights the role of training and mentoring in strengthening service quality and destination competitiveness. Experiences from tourism villages in Yogyakarta demonstrate that structured tour guide training and business management support have increased tourist arrivals and community economic welfare, as documented by UNWTO (2017). These findings provide a theoretical and empirical foundation for the planned development initiatives in Kampung Emas Seyegan, with the objective of fostering professional tourism management, productive community enterprises, and the preservation of cultural and historical heritage as sustainable tourism assets. The research problems are formulated as follows.

1. What challenges arise from the limited knowledge and skills of the Kampung Emas Seyegan community in managing culture and local history based tourism destinations, particularly in relation to tourism business management practices such as tour package development, site organization, and the provision of facilities aligned with visitor needs, and how do these limitations constrain the optimal development of local tourism potential?
2. How does ineffective business management and marketing among small scale enterprises in Kampung Emas Seyegan, including insufficient utilization of social media and digital platforms for product promotion as well as weak financial management practices, hinder product distribution and restrict the capacity of local enterprises to improve their performance?

RESEARCH METHOD

The implementation method for community empowerment through culture and local history based educational tourism in Kampung Emas Seyegan is designed to address productive economic challenges in local tourism management through coordinated and systematic stages focused on production, management, and marketing. The program begins with community outreach to emphasize the role of local products as tourism commodities and to identify feasible products such as handicrafts, local batik, and traditional food souvenirs through the active involvement of artisans, farmers, and local entrepreneurs. Production capacity is strengthened through skills training delivered by competent experts or local craftsmen, followed by facilitated access to affordable and appropriate raw materials to ensure market compliant product quality. Entrepreneurial sustainability is reinforced through structured training in financial management, inventory control, and human resource management to support organized tourism and business operations. The program subsequently assists participants in developing clear business plans that articulate short term and long term objectives and implementation strategies, complemented by continuous business mentoring to support the application of managerial competencies. Marketing development addresses constraints in market access through digital marketing training utilizing platforms such as Instagram, Facebook, and TikTok to enhance product and

tourism promotion, alongside conventional marketing training through events, exhibitions, and bazaars and guidance on price determination aligned with market purchasing power. Community members of Kampung Emas Seyegan serve as active partners throughout planning, implementation, evaluation, and sustainability monitoring stages to ensure contextual relevance and local ownership. Program evaluation is conducted during implementation and after completion through community and visitor satisfaction surveys and economic data analysis, followed by a structured handover process and long term mentoring to support independent program continuity. The proposing team, consisting of lecturers and students with expertise in management, tourism, and community development, contributes through technical training, mentoring, outreach, literacy training, and field research, while students gain practical learning experiences that may be recognized as academic credit aligned with relevant coursework in community service, management, and tourism.

Materials to ensure market compliant product quality. Entrepreneurial sustainability is reinforced through structured training in financial management, inventory control, and human resource management to support organized tourism and business operations. The program subsequently assists participants in developing clear business plans that articulate short term and long term objectives and implementation strategies, complemented by continuous business mentoring to support the application of managerial competencies. Marketing development addresses constraints in market access through digital marketing training utilizing platforms such as Instagram, Facebook, and TikTok to enhance product and tourism promotion, alongside conventional marketing training through events, exhibitions, and bazaars and guidance on price determination aligned with market purchasing power. Community members of Kampung Emas Seyegan serve as active partners throughout planning, implementation, evaluation, and sustainability monitoring stages to ensure contextual relevance and local ownership. Program evaluation is conducted during implementation and after completion through community and visitor satisfaction surveys and economic data analysis, followed by a structured handover process and long term mentoring to support independent program continuity. The proposing team, consisting of lecturers and students with expertise in management, tourism, and community development, contributes through technical training, mentoring, outreach, literacy training, and field research, while students gain practical learning experiences that may be recognized as academic credit aligned with relevant coursework in community service, management, and tourism.

RESULTS AND DISCUSSION

1. *Implementation of Activities*

The Community Service Program entitled *Pemberdayaan Masyarakat melalui Wisata Pendidikan Berbasis Budaya dan Sejarah Lokal di Kampung Emas Seyegan* was implemented in sequential stages using a participatory approach that positioned local residents as primary actors in optimizing cultural and historical assets for educational and sustainable tourism development. This approach aligned community empowerment with local resource utilization to support long term tourism management. The program was conducted on 29 September 2025 and involved 26 residents of Kampung Emas Seyegan, including small business owners, artisans, tourism managers, community leaders, and youth representatives. The implementation consisted of several interconnected stages.

The initial stage focused on program socialization, emphasizing the objectives, benefits, and implementation phases of the program. Participants were introduced to the concept of culture and history based educational tourism and the strategic role of community participation in destination management. This session applied participatory discussion methods to identify tangible cultural assets, historical narratives, and local products with tourism potential. The second stage involved production skill enhancement training aimed at strengthening local economic capacity. Training materials included the production of local distinctive products such as batik featuring Kampung Emas motifs, handicrafts using natural materials, and traditional food processing. Additional sessions addressed product packaging techniques and quality improvement to meet tourism market standards. These activities were facilitated by academic experts and regional creative industry practitioners.

The third stage addressed business and financial management to improve operational sustainability. Participants received training in basic financial recording, capital management, profit sharing mechanisms, inventory management, and group based human resource management through village owned enterprises or tourism cooperatives. This training enabled participants to manage tourism related businesses in a structured and accountable manner. Business plan development constituted the fourth stage of implementation. The facilitation team assisted participants in preparing tourism and local product business plans covering market potential analysis, promotional strategies, and long term development planning. These documents served as the institutional foundation for establishing the Tourism Awareness Group of Kampung Emas Seyegan.

Digital marketing training was conducted as the fifth stage to expand market reach. Participants were trained to utilize social media platforms such as *Instagram*, *Facebook*, and *TikTok* for tourism and product promotion. The training emphasized content creation through photographs, videos, and narrative descriptions, as well as

digital branding strategies for cultural based educational tourism packages. The final stage consisted of evaluation and sustainability planning. The evaluation assessed skill acquisition, entrepreneurial attitude changes, and community readiness to independently manage tourism activities. This stage ensured that program outcomes aligned with long term community based tourism objectives.

2. *Results of Program Implementation and Theoretical Discussion*

The outcomes of the Community Service Program were reflected in improved community capacity, institutional formation, and the development of culture and history based tourism products supported by empirical findings in tourism and community empowerment literature. Capacity building outcomes indicated that all 26 participants demonstrated measurable improvement in production skills and business management understanding. Participants successfully produced batik, handicrafts, and local culinary products with improved quality standards and tourism oriented packaging. These findings support research indicating that structured training enhances destination attractiveness and visitor satisfaction through improved service and product quality, as emphasized by Prayag & Hosany (2014) and Richards (2018).

Institutional strengthening emerged through the establishment of a joint business group and the Tourism Awareness Group, which functioned as a coordination platform for tourism management and promotion. Community based institutional formation has been identified as a critical factor in sustainable cultural tourism governance and local economic resilience. The preparation of comprehensive tourism and local product business plans represented a significant output of the program. These documents included SWOT analysis, marketing strategies, and long term development projections, providing a strategic framework for funding proposals to local governments and private partners. This outcome aligns with findings by Damanik & Yulianto (2021), who emphasized that structured business planning enhances efficiency and competitiveness in tourism based micro enterprises.

Digital literacy outcomes showed that participants were able to manage official tourism social media accounts and regularly upload promotional content highlighting local products, Kampung Emas history, and cultural education activities. Digital marketing effectiveness in expanding market access and increasing visitor engagement has been consistently supported by Amin & Murni (2022) and Telfer & Sharpley (2016). Social and economic impacts included strengthened collective cooperation, increased community pride in cultural heritage, and the emergence of new income opportunities. Several participants reported receiving online orders and direct purchases from visiting tourists. These outcomes reinforce findings by Suman & Haque (2020), which indicate that skill based empowerment contributes to improved livelihoods and marketable local products.

The program outcomes also correspond with broader empirical evidence from community based tourism initiatives in Yogyakarta, where guide training and enterprise management interventions have contributed to increased tourist arrivals and improved community welfare, as reported by UNWTO (2017). The consistency between program outcomes and prior research confirms the relevance of participatory training and mentoring in cultural tourism development.

3. *Achievement of Program Outputs*

The field activities were fully implemented on 29 September 2025 with the participation of 26 community members. A draft article targeting a Sinta 4 indexed journal is currently under preparation and focuses on program outcomes and impact analysis. A draft paper for an international conference proceeding at ICERI is also being prepared to disseminate findings at a global level. The final report and financial report are in full preparation and comply with the required format of LP2M and DRTPM.

4. *Evaluation and Sustainability Planning*

Evaluation results indicate that the Community Service Program enhanced community capacity in production skills, business management, and digital marketing. Sustainability requires continued mentoring in institutional strengthening of business groups and the Tourism Awareness Group, expansion of collaboration networks with local governments and tourism stakeholders, diversification and quality enhancement of local products, and consolidation of community based digital promotion strategies. Sustained support from higher education institutions and local stakeholders is expected to enable Kampung Emas Seyegan to develop as an independent, competitive, and culturally sustainable educational tourism destination grounded in local history and cultural identity.

CONCLUSION

The Program Pengabdian kepada Masyarakat focused on community empowerment through culture and local history based educational tourism in Kampung Emas Seyegan demonstrates that structured capacity building effectively addresses challenges arising from limited community knowledge and skills in tourism destination management and small scale enterprise practices. The involvement of 26 community members contributed to measurable improvements in tourism business management, including tour package development, site organization, and the alignment of facilities with visitor needs, which had previously constrained the optimal utilization of local tourism potential. The program also strengthened production skills,

product quality, and basic financial management, while enhancing the use of digital media for marketing, thereby mitigating barriers related to ineffective promotion, limited product distribution, and weak business governance among local enterprises. The establishment of local institutions such as Pokdarwis and community business groups further supported independent tourism management, reinforced local cultural identity, and fostered collective engagement, positioning Kampung Emas Seyegan on a sustainable pathway toward educational tourism development oriented to community welfare.

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Training On National Journal Article Writing For Junior High School Teachers In Yogyakarta City

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Abstract. This community service activity aimed to enhance junior high school teachers' understanding, skills, and motivation in Yogyakarta City in writing scientific articles that meet national journal standards. The activity was motivated by the low level of teachers' scientific publications, despite the fact that most teachers had conducted classroom action research. The program was implemented through a two-day intensive training (16 instructional hours) consisting of introductory lectures on academic article writing, hands-on manuscript development, and intensive mentoring in the use of reference management software. The participants comprised 30 teachers from various junior high schools in Yogyakarta City. The results indicated that 27 teachers successfully produced draft scientific articles, and 18 of these drafts were assessed as ready for publication after minor revisions. Questionnaire-based evaluation further showed that 92% of participants perceived the training as highly relevant to their needs, while 85% reported increased confidence in writing scientific articles after completing the program. In addition to producing article drafts, the activity also generated a training module and a plan for further publication in national journals and conference proceedings. In conclusion, the training proved effective in improving teachers' competencies in scientific article writing and in strengthening the academic culture within schools. This activity aligns with the implementation of the Tri Dharma of Higher Education, particularly community service, and supports the achievement of Sustainable Development Goal (SDG) 4 on quality education. The sustainability of the program is expected to be realized through continuous mentoring and the replication of similar activities in other schools.

Keywords: Scientific article writing; Junior high school teachers; Community service; Professional development; SDG 4

INTRODUCTION

In the twenty first century, teacher competence has increasingly emphasized technological mastery as a central element for supporting effective learning that aligns with contemporary student needs. Hussin (2018) argues that teachers must fundamentally possess nine twenty first century skills to adapt to the learning styles of Generation Z, including complex problem solving, critical thinking, creativity, human management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility. These competencies reflect the increasing integration of technology into educational practice and daily professional life. The shifting demands on teacher competence are closely related to changes in student characteristics and learning styles shaped by technology as an integral component of educational environments. Strengthening teachers professional competence has therefore become a critical priority within the national education system. Bahiroh et al. (2020) emphasize that educational components such as curriculum, infrastructure, funding, and time allocation cannot function effectively when the core element of educational delivery, namely teachers professional competence, fails to meet established standards.

In addition to technological mastery and twenty first century skills, the ability to write scientific papers constitutes an essential competence that teachers must develop. Widodo (2021) notes that scientific writing functions as a form of professional development that enhances teachers pedagogical knowledge. Law Number 20 of 2003 concerning the National Education System stipulates that teachers primary duties include lesson preparation, instructional implementation, assessment of learning outcomes, research activities, and community service. Research activities are intended to improve instructional practices and contribute to enhanced student learning outcomes, and teachers commonly employ action research to refine their teaching methods.

Scientific writing is also a formal requirement for teachers seeking promotion within the functional career system, encompassing papers, best practice reports, scientific articles, and academic journals. Despite this requirement, many teachers encounter substantial obstacles in writing and publishing scientific work.

Tynjälä (2018) identifies limited understanding of article structure, weak academic writing skills, and restricted access to high quality references as primary barriers. Fullan and Hargreaves (2016) further indicate that insufficient institutional support and the lack of systematic training constrain the development of teachers academic capacity. Previous studies have also shown that many teacher professional development activities remain traditional in orientation and insufficiently aligned with practical classroom needs. Huijboom et al. (2020) and Reynders et al. (2015) report that training programs are often inconsistent and rarely evaluated in terms of their impact on instructional practice. Opfer and Pedder (2016) highlight that limited relevance between training content and teachers actual challenges represents a major impediment to competence development. Pohan et al. (2021) demonstrate that low levels of scientific writing competence among teachers stem not only from individual factors but also from uneven access to training and professional development programs, particularly in disadvantaged regions.

Addressing these challenges requires systematic and continuous training programs to strengthen teachers scientific writing skills, particularly at the junior high school level in Yogyakarta City. Universitas Negeri Yogyakarta has therefore designed a training program to equip teachers with foundational and advanced competencies in scientific article writing, including topic selection, research framework development, manuscript preparation in accordance with academic standards, and strategies for publication in national journals. This program integrates a practice based learning approach that enables teachers to directly develop articles under expert guidance (Kolb, 2015). The implementation of this program is expected to increase the volume of scientific publications produced by junior high school teachers in Yogyakarta City and to contribute to the overall improvement of educational quality. The program aligns with national policies that promote teacher capacity building in research and scientific publication, as mandated by the Teacher and Lecturer Law and policies issued by the Ministry of Education, Culture, Research, and Technology. The initiative is intended to function not only as a short term intervention but also as part of a systematic effort to strengthen academic culture among educators.

Yogyakarta City, as a national center of education, has a substantial pool of teachers with the potential to produce scientific work, yet the current level of junior high school teacher publications remains limited. Organizing scientific journal article writing training is therefore essential to enhance teachers capacity to produce publishable manuscripts in national journals. Through this training, teachers are expected to acquire not only technical writing skills but also a more critical and innovative academic mindset in responding to educational challenges in the digital era. Increased teacher engagement in research and publication is associated with improved instructional quality, as research active teachers tend to demonstrate greater reflective and innovative teaching practices (Hattie, 2009). Community service initiatives in the form of this training program thus represent a strategic step toward developing a more research oriented and innovation driven educational ecosystem.

RESEARCH METHOD

The training program on scientific journal article writing for junior high school teachers in Yogyakarta City is designed through a structured sequence of preparation, implementation, and evaluation to strengthen teachers' academic writing capacity. The preparation phase includes an initial survey to identify participants' baseline knowledge of journal article writing, determination of participants and training location, development of instructional materials in the form of modules, handouts, and presentation slides, and arrangement of facilities to support effective training. The implementation phase is conducted through three integrated sessions comprising instruction on the fundamentals of scientific articles, including journal characteristics, article structure, and publication relevance, application of journal writing techniques in instructional and research contexts aligned with teachers' professional experience, and supervised writing practice with direct mentoring to ensure manuscript quality. The training applies lectures to convey foundational concepts, interactive discussions to facilitate the exchange of experiences and challenges, and practical activities to develop publishable scientific articles. Evaluation is conducted during and after the training using questionnaires and observation to assess participant engagement, comprehension, application of material, and perceived benefits, with success indicators including high participant motivation, adequate understanding of scientific article writing, and sustained writing practice. The strategic target audience consists of junior high school teachers in Yogyakarta City, selected based on situational analysis indicating the need to enhance competencies in scientific article writing for national journal publication, and the program is implemented over a four month period to support the production of high quality scientific articles.

RESULTS AND DISCUSSION

Results

1. *Preparation Stage*

The community service activity in the form of a National Journal Article Writing Training for junior secondary school teachers in Yogyakarta City commenced with a structured preparation stage designed to ensure effective implementation. The service team conducted a preliminary survey to identify teachers' needs and their initial level of understanding of scientific article writing. The survey results indicated that most teachers had experience conducting classroom action research, yet only a limited proportion were able to transform their research findings into journal article manuscripts. The primary obstacles included insufficient understanding of scientific article structure, limited mastery of academic writing techniques, and minimal experience with publication processes in national journals.

The preparation stage constituted a critical phase for aligning the activity with identified needs and objectives. The service team from Universitas Negeri Yogyakarta administered an online questionnaire to junior secondary school teachers in Yogyakarta City to assess their baseline competence in scientific writing. The questionnaire was completed by fifty teachers and revealed that sixty five percent had conducted classroom action research, twenty percent had written articles based on their research findings, and only five percent had progressed to publication in national journals. These findings reinforced the rationale for providing targeted support through structured training in national journal article writing.

In addition to the needs assessment, coordination was carried out with school administrators and the Yogyakarta City Education Office. Based on this coordination, thirty junior secondary school teachers were selected as training participants. Participant selection considered teaching experience, interest in writing, and school representation. To support the training process, the team prepared learning resources including a training module, instructional handouts, evaluation instruments, and participant worksheets. The module provided systematic guidance on scientific article writing, covering topic selection, outline development, data processing, and publication strategies.

2. *Implementation Stage*

The training was conducted over two full days with a total duration of sixteen instructional hours at a partner junior secondary school in Yogyakarta City equipped with adequate meeting facilities. The implementation was organized into three main sessions.

a. First Session Material Presentation on Scientific Article Writing

The resource persons delivered material on the role of scientific publication in enhancing teacher professionalism, the structure of national journal articles, principles of academic writing, and publication ethics. Participants were also introduced to various accredited national journals indexed in Sinta.

b. Second Session Article Writing Practice

Participants selected topics relevant to their classroom teaching practices and developed article outlines encompassing the title, abstract, introduction, literature review, and methodology. During this session, participants utilized the results of classroom action research or classroom based studies as the primary source of their manuscripts.

c. Third Session Intensive Mentoring

The resource persons provided close guidance to participants in developing complete article drafts. Participants were introduced to reference management applications such as Mendeley and Zotero to support accurate citation practices. At this stage, participants were also trained to adapt their manuscripts to the templates of national journals.

3. *Participant Engagement*

Participant engagement was notably high throughout the activity. Nearly all participants actively asked questions, engaged in discussions, and shared their experiences related to challenges in academic writing. Of the thirty participants, twenty seven teachers successfully produced draft scientific articles, while three teachers remained at the stage of developing article outlines. Among the twenty seven collected drafts, eighteen manuscripts were assessed as suitable for minor revision and ready for submission to national journals. This outcome indicates that the training produced tangible outputs in the form of scientific article manuscripts authored by teachers.

4. *Activity Evaluation*

Evaluation was conducted continuously during and after the implementation of the activity. Observational data indicated that more than ninety percent of participants actively engaged in each session. At the conclusion of the activity, participants completed an evaluation questionnaire. A summary of the

questionnaire results is presented in the following table.

TABLE 1. *Results of the Participant Satisfaction Questionnaire*

Assessed Aspect	Percentage Rated Very Good and Good
Relevance of training materials to teachers' needs	92 percent
Clarity of presentation by the resource persons	90
percent Appropriateness of the training methods	88
	percent
Technical mentoring in article preparation	87
percent Self confidence after the training	85
	percent
Overall satisfaction with the activity	94 percent

The questionnaire results indicate that the training was perceived as highly relevant to participants' professional needs. Participants further reported that the instructional approach integrating lectures, discussions, and hands on practice effectively supported the development and mastery of scientific article writing skills.

5. *Output*

The activity outputs demonstrate concrete and measurable contributions to academic capacity building. These outputs include the following.

a. Twenty seven draft scientific articles produced by junior secondary school teachers in Kota Yogyakarta.
b. A structured training module on scientific article writing.
c. A scientific article derived from the community engagement activity prepared for submission to the ABDIMAS journal.
d. A proceedings article to be presented at the ICERI international seminar.
e. The establishment of sustainable collaboration between UNY and junior secondary schools in Kota Yogyakarta to support ongoing development of scientific writing competencies.

Discussion

The national journal article writing training for junior high school teachers in Yogyakarta City addresses concrete needs related to the enhancement of teacher professionalism. Preliminary findings indicate that many teachers have conducted classroom action research, yet the results remain undocumented in the form of published scholarly articles. This condition reflects a gap between teachers' research practices and their publication competencies. The training is therefore highly relevant to teachers' professional needs and aligned with the mandate of the Teacher and Lecturer Law, which emphasizes professional development through the production of scholarly work. The effectiveness of the training is reflected in the high level of participant engagement throughout all sessions. Most teachers demonstrated strong enthusiasm through discussions, question and answer activities, and hands on article drafting practices. Evaluation results show that 92 percent of participants perceived the materials as highly relevant to their needs, while 85 percent reported increased confidence in writing after completing the training. These findings indicate that the program not only provided theoretical understanding but also strengthened teachers' motivation to write. This outcome is consistent with the findings of Daryanto et al. (2022), who argue that practice based training significantly improves academic writing skills.

Beyond technical writing skills, the training contributed to the development of teachers' critical thinking dispositions. The article writing process encouraged teachers to reflect on classroom learning experiences, process research data, and present findings in a systematic manner. This activity reinforced a reflective culture within the teaching profession. Hattie (2009) notes that teachers who routinely engage in research based reflection tend to demonstrate greater innovation in developing instructional strategies. The training therefore influenced both writing competence and the quality of classroom practices. The program also highlights the importance of institutional support in facilitating teachers' academic writing. Many participants reported limited familiarity with journal article formats, particularly in relation to citation practices, literature review construction, and the use of reference management applications. Intensive mentoring enabled participants to address these challenges more effectively. This finding supports Pohan et al. (2021), who emphasize that low levels of teacher publication are influenced not only by individual factors but also by limited access to high quality training. Through this program, teachers received structured support to strengthen their professional competencies.

Despite these positive outcomes, several challenges require attention. Time constraints limited some participants' ability to complete full article manuscripts. In addition, variations in writing proficiency affected the pace at which participants produced article drafts. Teachers with weaker foundational writing skills required more intensive assistance. These conditions indicate the need for follow up initiatives such as writing clinics or sustained online mentoring to ensure that drafted articles are fully prepared for publication. The activity made a meaningful contribution to the improvement of educational quality. Teachers who are capable of writing and publishing scholarly articles enhance not only their personal competencies but also the development of educational knowledge. Teacher authored articles can serve as references for other educators, enrich the literature on instructional practice, and strengthen research ecosystems at the school level. The program therefore generated dual impacts by improving teacher quality and reinforcing a research oriented culture within schools.

The training is closely connected to the achievement of the Sustainable Development Goals target 4 on quality education. By strengthening teachers' capacities to write and publish scholarly work, the program contributes to the development of human resources in education. Teachers who are accustomed to academic writing tend to be more open to innovation, more critical in evaluating instructional practices, and better prepared to meet twenty first century demands. This perspective aligns with Hussin (2018), who emphasizes the importance of twenty first century competencies, including critical and reflective thinking. From the perspective of the Tri Dharma of Higher Education, the activity demonstrates strong synergy among education, research, and community service. The training was designed based on research findings related to teachers' needs while simultaneously delivering tangible contributions to educational quality in the community. For lecturers, the activity provided opportunities to develop scholarly expertise, strengthen publications, and expand professional networks with schools. The training therefore represents an integrative implementation of the Tri Dharma.

The long term implication of this activity is the establishment of a scholarly publication culture among junior high school teachers. When teachers consistently write articles derived from classroom research, the volume of teacher generated publications is expected to increase substantially. This development positions teachers not only as practitioners but also as researchers who contribute to knowledge production. Program sustainability may also foster supportive communities of teacher writers engaged in collaborative publication processes. With continued university support, a research and publication based educational ecosystem can be cultivated.

Overall, the national journal article writing training for junior high school teachers in Yogyakarta City produced positive impacts on teachers' understanding, skills, and motivation in academic writing. Although certain challenges remain, the program established a strong foundation for developing an academic culture among teachers. Continued mentoring is expected to support sustained productivity in scholarly publication. Ultimately, the activity enhances individual teacher capacity while contributing to the improvement of educational quality.

CONCLUSION

The community service activity in the form of a National Journal Article Writing Training for junior secondary school teachers in Yogyakarta City was implemented effectively and generated demonstrable outcomes, particularly in enhancing teachers' academic writing capacity and professional engagement. The program achieved its primary objective by strengthening participants' understanding, technical skills, and motivation to produce scientific articles that comply with national journal standards. High participant engagement was evident through active involvement in discussions, practical sessions, and manuscript development, resulting in 27 teachers producing draft articles, of which 18 were assessed as ready for minor revision and subsequent publication. Questionnaire based evaluation indicated that 92 percent of participants perceived the training as aligned with their professional needs, while 85 percent reported increased confidence in writing scholarly articles after completing the program. The activity also produced concrete outputs, including article drafts, structured training modules, and a follow up plan oriented toward publication in national journals and conference proceedings. In addition, the training contributed to the reinforcement of teacher professionalism, the cultivation of academic culture within schools, and the fulfillment of higher education commitments through the Tri Dharma Perguruan Tinggi, as well as alignment with Sustainable Development Goals target 4 on quality education. Collectively, these outcomes indicate that structured scientific writing training constitutes an effective strategy for fostering teacher productivity and reflective practice in the continuous development of instructional processes.

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Instructional Leadership Training: Practical Strategies For Empowering Teachers To Enhance The Quality Of Vocational High School Education In The Special Region Of Yogyakarta

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Abstract. This program aims to enhance the quality of learning in Vocational High Schools (SMK) in the Special Region of Yogyakarta (DIY) by strengthening principals' instructional leadership and teachers' pedagogical roles. Effective instructional leadership is essential for fostering innovative, industry-aligned learning; however, challenges persist in both understanding and applying leadership strategies in school contexts. The training, conducted on August 8-9, 2025, provided principals and teachers with practical skills and actionable strategies to empower teachers, develop industry-relevant teaching methods, and promote collaboration with the business/industrial sector (DUDI). Participants demonstrated notable improvements in understanding instructional leadership concepts and implementing them through school-based action plans, collaborative teaching, and integration of industry-aligned approaches. The program also produced draft outputs for academic dissemination, including a scientific article for a Sinta 4-indexed journal (Jurnal Abdimas Pendidikan) and a conference paper for the International Conference on Educational Research and Innovation (ICERI). These findings principals' leadership competence improves through structured, interactive training integrating theory and practice. By fostering collaboration, mentoring teachers, engaging stakeholders, supervising learning, and partnering with industry, principals enhance vocational education quality. Comprehensive instructional leadership combining managerial, pedagogical, and collaborative skills strengthens innovation, teacher performance, and school-industry linkages.
Keywords: instructional leadership; vocational education; teacher empowerment; school-industry linkages.

INTRODUCTION

Education has an important role in producing independent Human Resources (HR). Through education, it is expected that students can develop their potential so that after graduation they are ready to plunge into the world of work or even create new job fields. This is very relevant especially for Vocational High Schools (SMK), which have an education system that combines theory and practice. The quality of learning in SMK greatly affects the preparation of students for the world of work, because they not only learn theory, but also directly practice the skills they learn. Therefore, the quality of learning in vocational schools must always be improved in order to produce high-quality graduates who are ready to compete in the world of work.

Although education has an important role in producing independent human resources, ironically, Vocational High School (SMK) is the number two contributor to unemployment in the Special Region of Yogyakarta (DIY). Based on the release of the Central Statistics Agency (BPS) DIY, the TPT figure for August 2023 is 3.69 percent. The number is down compared to August 2021 which is 4.56 percent, and August 2022 is 4.06 percent. The second highest TPT is at the Vocational High School level (SMK) as much as 4.49 percent [1]. This shows that although SMK students get education that combines theory and practice, there are still challenges in connecting learning in SMK with the needs of the working world directly. One of the causes is the lack of involvement of the school principal as instructional leadership.

Instructional leadership is a concept in which the principal does not only act as an administrator, but also as a leader who is actively involved in improving the quality of learning in schools. The involvement of school principals in instructional leadership is very important, especially in vocational schools, because they can guide and empower teachers in developing the skills and knowledge needed by students to enter the world of work. However, in many cases, school principals focus more on administrative and managerial tasks, so they pay less attention which is sufficient in the learning aspect. This can result in the lack of curriculum development in accordance with the needs of the industry, the lack of monitoring of the quality of learning, as well as the lack of support and guidance for teachers in improving the quality of their teaching.

In the context of government programs to improve the quality of learning in Vocational High Schools (SMK), the approach emphasized by the Minister of Education and Culture (Mendikbud) Nadiem Makarim regarding instructional leadership can be a strong foundation. The Minister of Education emphasized that the principal must be an instructional leader, who focuses on improving the quality of learning in schools. One of the programs that is relevant to the concept of instructional leadership is the development of Sekolah Penggerak. These schools are expected to be able to be an example in applying effective learning leadership, which involves not only the principal, but also the teachers in it. This concept is in line with the government's efforts to improve the quality of student learning throughout Indonesia. The Minister of Education also emphasized that the principal must be a mentor for the teachers in the school, not just be responsible for administration and operational management. Thus, school principals can lead changes in the learning process, improve the quality of teachers, and overall, improve the quality of learning in SMK [2].

Improvement related to the principal's function as a learning leader and teacher's professionalism teacher is indeed key in improving the quality of learning in DIY Vocational High School. This can be done through structured coaching, leadership competency development, and relevant training to improve the principal's ability to lead learning.

1. How can the development of the principal's leadership competence be improved?
2. How to improve the principal's ability to build a good working relationship with teachers?
3. What are the needs and challenges of learning in SMK that the principal needs to understand?
4. How can principals involve themselves in the process of learning management?
5. What is the effective strategy to involve entrepreneurs in the learning process at SMK:?

RESEARCH METHOD

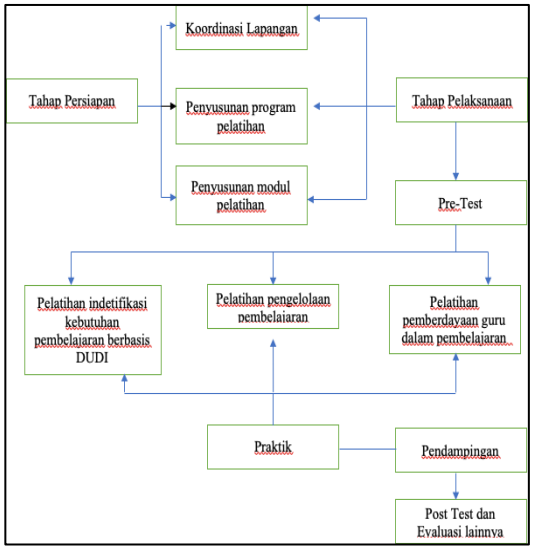

FIGURE 1. *Activity Implementation Phase*

The Student Creativity Program (PKM) targets 25 school principals in the Special Region of Yogyakarta (DIY), emphasizing their pivotal role in enhancing learning quality in vocational secondary schools (SMK) through instructional leadership training. The implementation process comprises three stages. The preparation stage involves coordinating with relevant stakeholders, developing a detailed training plan with objectives, materials, methods, and schedules, and preparing training modules to facilitate participant comprehension. The implementation stage encompasses three training types: identifying learning needs aligned with the business and industry sector (DUDI), managing learning processes effectively through appropriate methods and media, and empowering teachers to conduct industry-relevant instruction. The subsequent stage addresses practice, support, post-training assessment, and comprehensive program evaluation, enabling principals to apply learned concepts, receive mentorship, measure knowledge acquisition, and assess overall training effectiveness. The evaluation plan incorporates pre- and post-tests, participant questionnaires, direct observation, interviews, long-term impact assessments on teacher performance, student learning outcomes, and organizational culture, as well as external evaluations from stakeholders such as DUDI. This structured and multi-layered approach is designed to generate precise and relevant insights into the efficacy of the instructional leadership training program in enhancing principals' competencies in SMK.

RESULTS AND DISCUSSION

Results

The Community Service Program (PKM) entitled "Instructional Leadership Training: Practical Strategies for Teacher Empowerment to Improve the Quality of Learning in Vocational High Schools (SMK) in the Special Region of Yogyakarta" aimed to enhance principals' and teachers' capacity in implementing effective instructional leadership. The program focused on strengthening academic leadership competencies to improve learning quality in alignment with industry needs. It was conducted on August 8-9, 2025, with approximately 40 participants comprising principals and teachers from several vocational high schools in the Special Region of Yogyakarta (DIY). The training employed an interactive face-to-face model combining lectures, group discussions, simulations, and case studies to facilitate active learning and engagement.

The program was implemented through a sequence of stages beginning with preparation and coordination. During this stage, the organizing team collaborated with the Yogyakarta Education Office and partner SMKs to identify participants, finalize schedules, and secure the training venue. Training modules were designed to cover instructional leadership concepts, teacher empowerment strategies, and innovations in industry-based learning. The training implementation stage spanned two days. On the first day, participants engaged with fundamental concepts and principles of instructional leadership, explored the principal's role as an instructional leader, and examined data-driven decision-making in teaching and learning. The second day consisted of workshops on practical applications of instructional leadership strategies, support in developing school-based action plans (Rencana Tindak Lanjut), and reflection sessions to evaluate participants' learning outcomes. The final stage involved evaluation and follow-up, which employed questionnaires and focus group discussions to assess participants' understanding and readiness to apply instructional leadership. Online mentoring was also provided to support the continued implementation of practices in participants' schools.

The program achieved full completion in accordance with its planned schedule and objectives. Participants demonstrated substantial improvement in their understanding of instructional leadership concepts and their role in enhancing learning quality. They were able to identify applicable strategies, including reflective supervision, teacher collaboration, and project-based learning tailored to industry requirements. Each school produced a school-based action plan detailing concrete steps for implementing instructional leadership practices, such as strengthening professional learning communities (PLCs), enhancing academic supervision, and fostering partnerships with the business and industrial sectors (Dunia Usaha dan Industri, DUDI). The program also generated several academic and administrative outputs, including a draft scientific article intended for submission to a Sinta 4-indexed journal, a draft conference paper for the International Conference on Educational Research and Innovation (ICERI), and draft final and financial reports as part of accountability documentation for the funding institution. Initial impacts of the program included heightened awareness among principals and teachers regarding the significance of instructional leadership in fostering a collaborative and innovative learning culture, accompanied by participants' expressed commitment to apply and sustain these practices in their schools.

Several factors contributed to the program's success, including strong institutional support from the Yogyakarta Education Office and partner schools, high enthusiasm and active engagement of participants, and the availability of competent resource persons specializing in educational leadership and instructional management. Challenges such as the limited duration of training sessions and the varying prior knowledge of participants regarding instructional leadership were mitigated through extended online mentoring and follow-up discussions. To ensure sustainability and broader impact, follow-up plans were established, including online mentoring and monitoring of school action plan implementation for three months post-training, publication of program outcomes in accredited scientific journals and international conference proceedings, and the development of a collaborative network among vocational high schools in Yogyakarta to facilitate knowledge sharing and best practices in instructional leadership and innovative teaching.

Discussion

The findings of this study demonstrate that the *Instructional Leadership Training* program significantly enhanced principals' and teachers' understanding and application of instructional leadership in vocational high schools in the Special Region of Yogyakarta. Consistent with previous literature, effective instructional leadership in vocational schools encompasses the principal's ability to lead the learning process, support teacher professional development, and establish an effective learning environment [3][4]. The program's focus on interactive training methods, including lectures, group discussions, simulations, and case studies, facilitated the active engagement of participants and promoted the practical application of leadership strategies, aligning with Hallinger's assertion that leadership for learning is critical for achieving school learning goals [5].

The development of school-based action plans (*Rencana Tindak Lanjut*) as a program outcome reflects the participants' capacity to operationalize instructional leadership principles. Each action plan incorporated strategies such as strengthening professional learning communities (PLCs), enhancing academic supervision, and fostering partnerships with the business and industrial sectors (DUDI), which is consistent with the notion that collaborative and shared leadership enhances instructional quality in vocational schools [6]. These results also demonstrate the importance of principals' understanding of learning principles, as emphasized by Lunenburg, enabling them to guide teachers in adopting effective teaching methods and making data-informed decisions to improve student learning outcomes [7].

The program further highlights the critical role of principals in addressing stakeholder expectations, particularly industry and societal needs, to develop a curriculum relevant to producing job-ready graduates [8][9]. Participants' ability to identify strategies such as reflective supervision, teacher collaboration, and project-based learning demonstrates alignment with this aspect of instructional leadership. Moreover, the use of continuous evaluation, reflection sessions, and follow-up mentoring reflects the literature's emphasis on data-driven decision-making and ongoing assessment of learning processes to inform instructional improvement [10][11][12].

Challenges encountered during the program, including limited training duration and varied prior knowledge among participants, underscore the necessity of extended support mechanisms, such as online mentoring, to ensure the sustainability of instructional leadership practices. The findings indicate that integrating managerial, pedagogical, and leadership skills, as highlighted in the literature, enables principals to foster a collaborative and innovative school culture, which contributes to the improvement of learning quality in vocational schools. Overall, this study reinforces the view that effective instructional leadership requires a comprehensive approach that combines theoretical understanding with practical application, stakeholder engagement, and continuous evaluation to produce meaningful improvements in vocational education.

CONCLUSION

The findings demonstrate that principals' leadership competence can be strengthened through structured and interactive training programs integrating theoretical knowledge with practical applications, including workshops, case studies, and reflection sessions. Principals enhance their capacity to cultivate positive relationships with teachers by promoting collaborative environments, supporting professional learning communities, and providing ongoing mentoring. Addressing the challenges and requirements of vocational high school learning necessitates that principals consider stakeholder expectations, such as industry demands, teachers' readiness to implement innovative pedagogical approaches, and the importance of data-driven evaluation to monitor learning outcomes.

Active engagement in learning management is achieved through participation in curriculum planning, supervision of teaching practices, facilitation of teacher collaboration, and application of reflective leadership to identify areas for improvement. Effective engagement of entrepreneurs in vocational education can be attained by developing partnerships with business and industrial sectors, incorporating industry-based projects into the curriculum, and aligning instructional activities with practical skills to meet labor market requirements. Collectively, these strategies indicate that comprehensive instructional leadership, encompassing managerial, pedagogical, and collaborative competencies, enables principals to improve learning quality, foster innovation, and strengthen school-industry linkages in vocational education.

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International Journal Article Writing Training For Students Of Universitas Negeri Yogyakarta And Universiti Utara Malaysia

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Abstract. The International Journal Article Writing Training significantly enhanced postgraduate students' competencies in preparing manuscripts for submission to Scopus indexed journals at Universitas Negeri Yogyakarta and Universiti Utara Malaysia. Structured and guided training improved participants' technical writing skills, understanding of journal publication procedures, and academic confidence. Interactive online sessions facilitated research topic development, manuscript drafting, reference management, and application of digital tools for similarity checking and language refinement. Mentored assignments strengthened students' ability to formulate research problems, construct coherent article structures, and align methodologies with stated objectives. Collaborative discussions promoted cross-institutional knowledge exchange and reinforced scholarly communication. Post-training evaluations demonstrated measurable progress in manuscript quality, coherence, and adherence to international journal standards. High attendance and active participation indicated strong engagement and relevance of the training content. The program effectively bridged the gap between academic expectations and practical writing capabilities, fostering sustainable research skills and supporting institutional objectives for research productivity. These outcomes highlight the role of structured capacity-building initiatives in advancing student publication readiness, enhancing academic rigor, and contributing to global research visibility. The training model proves adaptable across institutional contexts and serves as a strategic instrument for strengthening postgraduate research competencies.
Keywords: scientific writing; postgraduate training; international journals; academic competence; Scopus publication.

INTRODUCTION

Higher education institutions hold a strategic position in strengthening national development through the implementation of the Tridharma of Higher Education, particularly research and scientific publication. Academic communities are institutionally responsible for producing and disseminating scholarly work as a manifestation of intellectual contribution and analytical rigor. Scientific journals function as primary instruments for advancing scientific knowledge and extending the societal relevance of research outputs. Journal publication enables research findings to contribute measurably to social welfare and the quality of life. Within this ecosystem, scientific article writing constitutes a central component that sustains research continuity, knowledge validation, and institutional academic performance (Astuti et al., 2023). Scientific articles serve not only as dissemination media for novel findings but also as formal indicators for evaluating academic productivity and institutional research advancement.

The intensification of scientific publication efforts in higher education is directed toward strengthening institutional quality and increasing academic productivity. Publication obligations extend beyond lecturers to include final year students, who are required to publish the results of their final projects in the form of journal articles as a prerequisite for graduation. This requirement is formally regulated through the Circular Letter of the Directorate General of Higher Education No. 152/E/T/2012 dated 27 January 2012 concerning the Publication of Scientific Work. The regulation stipulates that undergraduate graduates must publish articles in scientific journals, master's graduates must publish in national journals with priority given to accredited journals, and doctoral graduates must produce articles accepted for publication in international journals. These policies underscore the strategic role of student publications in strengthening national research capacity.

In the global academic environment characterized by high competitiveness and interconnectivity, the indexation of scientific articles in reputable databases such as Scopus has become a primary indicator for assessing research quality, relevance, and impact. Scopus indexed publications contribute to enhancing both author credibility and institutional reputation. Researchers with Scopus indexed publications are recognized as possessing strong academic competence and scholarly reliability, while their affiliated institutions gain recognition as research intensive environments that support high quality scholarship (Karomah & Rukmana,

2022). Opportunities for students to publish in international journals are increasingly accessible, particularly through structured guidance, research collaboration, and academic mentoring.

Despite these opportunities, substantial challenges continue to hinder student engagement in scientific article writing. Many students perceive journal writing as a demanding task, resulting in limited participation in research activities. Empirical findings by Purwanto et al. (2020) identify several constraints affecting publication in reputable international journals, including limited funding, restricted time availability, difficulties in accessing references, extended publication timelines, insufficient English proficiency, limited competence in manuscript screening software, and restricted access to suitable international journals. Supporting evidence from Prihatin et al. (2021) further indicates that low publication output among students, particularly in international journals, is influenced by inadequate training in scientific article writing.

These conditions provide a strong rationale for implementing structured training programs focused on international journal article writing. In response, the PKM-KI team initiated an International Journal Article Writing Training program for postgraduate students of Universitas Negeri Yogyakarta and Universiti Utara Malaysia. This program is designed to strengthen reference management skills, enhance academic collaboration and clarity of scholarly communication, improve students' capacity to produce articles suitable for international indexed journals, support knowledge development, and elevate academic writing competence and research quality among participating students. Postgraduate students at Universitas Negeri Yogyakarta and Universiti Utara Malaysia continue to encounter substantial constraints in writing and publishing articles in reputable international journals indexed by Scopus. These constraints include limited access to credible and open scholarly references due to paywalled publications, insufficient proficiency in using digital tools for similarity checking, grammatical accuracy, and reference management, and inadequate understanding of writing techniques that comply with Scopus indexed journal standards. These conditions indicate a persistent gap between academic expectations and students' practical competencies in international scholarly publication. Accordingly, the core problem is focused on the need for structured training in writing articles for Scopus indexed international journals for postgraduate students at both institutions.

An intensive and interactive training program is proposed to address these constraints through synchronous online sessions conducted via the Zoom platform. The training materials emphasize scientific writing principles, article structure, and systematic preparation and analysis aligned with Scopus indexed journal requirements. Postgraduate students from Universitas Negeri Yogyakarta and Universiti Utara Malaysia are assigned to identify research topics, develop them into journal article manuscripts, and receive guided assistance throughout the writing process to support submission to Scopus indexed international journals.

RESEARCH METHOD

This program employed a structured training method designed to strengthen students' competencies in writing international journal articles for students of Universitas Negeri Yogyakarta and Universiti Utara Malaysia, with the primary focus placed at the outset on developing technical and procedural skills required for publication in Scopus indexed journals. The training was implemented through three integrated stages, beginning with systematic preparation of instructional materials covering research motivation, strategies for identifying researchable ideas and problems, the scholarly value of scientific writing, and formal regulations governing publication in Scopus indexed international journals. The implementation stage involved fifty postgraduate students, consisting of twenty five participants from Universitas Negeri Yogyakarta and twenty five participants from Universiti Utara Malaysia, and was conducted through synchronous online sessions using Zoom, where the first session addressed technical guidelines for article writing and the second session facilitated structured academic discussion through question and answer activities, followed by guided assignments on problem formulation and manuscript drafting under continuous mentorship. The final stage focused on evaluation through participant presentations of draft articles, formative feedback from resource persons, and systematic identification of writing constraints to inform subsequent academic service activities, while training effectiveness was measured through pre and post activity response questionnaires, attendance rates of at least seventy percent, predominantly positive participant responses, and demonstrable improvement in article writing competence, as indicated by a minimum of seventy percent of participants being able to independently compose journal articles suitable for international submission.

RESULTS AND DISCUSSION

Results

The International Journal Article Writing Training program demonstrated measurable improvements in postgraduate students' competencies in producing manuscripts aligned with international journal standards at

Universitas Negeri Yogyakarta and Universiti Utara Malaysia. The primary outcome indicates that structured, guided training effectively strengthened participants' technical writing skills, procedural understanding of journal publication, and academic confidence in preparing articles for submission to reputable international journals. These improvements were observed consistently across participants from both institutions, reflecting the relevance of the training design to diverse academic contexts. Participants showed clear progress in understanding the standardized structure of international journal articles. At the initial stage, most students demonstrated limited ability to organize manuscripts according to internationally recognized sections, particularly in articulating coherent introductions, formulating explicit research problems, and aligning methods with stated objectives. Following the training sessions, participants were able to construct manuscripts with logically sequenced sections, explicit research aims, and coherent methodological descriptions. This outcome indicates that systematic exposure to article structure and writing conventions contributed to improved textual coherence and academic rigor.

The training also resulted in enhanced competence in formulating research problems and developing publishable research topics. Prior to the program, many participants experienced difficulty narrowing research scopes and translating academic interests into clearly defined research questions. After completing guided assignments and interactive discussions, participants demonstrated improved ability to identify research gaps, justify topic relevance, and frame problems in a manner consistent with international journal expectations. This improvement reflects the effectiveness of guided mentorship in bridging conceptual understanding and practical writing execution. Another significant result concerns the development of technical skills related to academic writing tools. Participants exhibited increased proficiency in using digital applications for reference management, similarity checking, and language refinement. Initially, limited familiarity with these tools constrained students' ability to meet formal publication requirements. After targeted instruction and hands on practice, participants were able to apply reference management software accurately, reduce similarity levels through appropriate paraphrasing, and improve grammatical precision. This outcome indicates that integrating digital literacy components into writing training supports compliance with international publication standards.

The collaborative learning environment established through synchronous online sessions contributed positively to participant engagement and learning outcomes. Interactive question and answer sessions enabled students to clarify conceptual difficulties and receive immediate feedback on writing challenges. Peer discussions further facilitated knowledge exchange across institutional and disciplinary backgrounds. This interaction fostered an academic atmosphere that encouraged critical reflection and mutual support, which strengthened participants' motivation to complete manuscript drafts. Evaluation data derived from pre and post activity questionnaires reveal a positive shift in participants' perceptions of international journal writing. Prior to the training, many students expressed low confidence and perceived journal publication as an inaccessible academic task. After the program, participants reported increased self efficacy, clearer understanding of publication procedures, and stronger motivation to pursue international publication. This perceptual change is a critical outcome, as academic confidence is closely linked to sustained engagement in research and writing activities.

Attendance and participation rates further support the effectiveness of the training implementation. More than the minimum attendance threshold was achieved, indicating strong participant commitment throughout the program. Active participation during discussions and assignment completion suggests that the training content was perceived as relevant and directly applicable to students' academic needs. This sustained engagement reflects the alignment between training objectives and participants' expectations regarding international publication requirements. The final evaluation stage revealed tangible improvements in manuscript quality. A substantial proportion of participants were able to independently produce draft articles that met basic criteria for international journal submission, including clarity of argumentation, coherence of structure, and adherence to formal writing conventions. While further revision and editorial refinement remain necessary, the ability to generate complete drafts represents a meaningful advancement from initial writing competencies. This result demonstrates that structured training can reduce the gap between academic expectations and students' practical writing capabilities. Differences in initial skill levels between participants from the two institutions did not result in significant disparities in final outcomes. Both groups exhibited comparable improvements in writing competence and procedural understanding. This finding indicates that the training model is adaptable and effective across institutional contexts, provided that participants receive consistent guidance and opportunities for practice.

Overall, the results confirm that the International Journal Article Writing Training program achieved its primary objectives of strengthening postgraduate students' competencies in academic writing and international publication preparation. The combination of structured instruction, interactive discussion, guided assignments, and formative feedback contributed to measurable improvements in writing quality, technical skills, and academic confidence. These outcomes underscore the value of sustained academic service programs in supporting student research productivity and enhancing institutional academic performance within an international publication framework.

Discussion

The implementation of the International Journal Article Writing Training demonstrates a strategic intervention to address the documented gap between postgraduate students' academic obligations and their practical competencies in international scholarly publication. Positioned within the Tridharma of Higher Education, the program aligns institutional responsibilities for research dissemination with student capacity development, reinforcing the role of scientific articles as indicators of academic productivity and institutional performance (Astuti et al., 2023). The training responds directly to regulatory demands that require student publication as a graduation prerequisite, as mandated by the Directorate General of Higher Education, while simultaneously strengthening the international visibility of Universitas Negeri Yogyakarta and Universiti Utara Malaysia.

The program outcomes indicate that structured and guided training contributes to mitigating persistent challenges that hinder student publication performance. Prior studies identify limited English proficiency, inadequate familiarity with manuscript screening tools, restricted access to references, and insufficient understanding of international journal standards as primary constraints in achieving publication in reputable journals (Purwanto et al., 2020; Prihatin et al., 2021). Through systematic preparation and interactive implementation, the training addressed these barriers by emphasizing article structure, reference management, and compliance with Scopus indexed journal requirements. This approach is consistent with the conception of scientific writing as a disciplined activity governed by objectivity, logic, empiricism, and systematic presentation, as articulated by Prayitno (2001) and Sutarno (2008).

The integration of synchronous online sessions facilitated cross institutional academic interaction between students of Universitas Negeri Yogyakarta and Universiti Utara Malaysia, creating a collaborative learning environment that supports scholarly communication and peer engagement. Such interaction enhances students' awareness of international publication norms and reinforces academic confidence in producing manuscripts suitable for global dissemination. The mentoring process, which combined technical instruction with iterative feedback, reflects the function of scientific journals as validation mechanisms for knowledge production and quality assurance within the academic community (Astuti et al., 2023).

The emphasis on Scopus indexed journals within the training framework is particularly relevant given their role as benchmarks of research quality and impact. Scopus functions as a comprehensive indexing system that provides reliable metadata and citation information across disciplines, contributing to institutional reputation and author credibility (Rahyudi et al., 2019; Aribowo, 2019). Students' exposure to journal quartile classifications, as defined through the Scimago Journal Ranking, enhanced their understanding of publication stratification and realistic target setting for manuscript submission (Arisanty, 2023). This knowledge supports informed decision making in journal selection and reduces the risk of misaligned submissions.

Evaluation findings indicate that the majority of participants demonstrated measurable improvement in drafting articles that meet international standards, as reflected in post training assessments and manuscript presentations. This outcome supports the argument that targeted training can function as an effective academic service model to elevate student research output, particularly when aligned with institutional policies and global publication metrics. Furthermore, the focus on open access strategies and navigation of Scopus resources addressed accessibility constraints that often limit student engagement with high quality references.

Overall, the training program substantiates the importance of structured academic capacity building in fostering sustainable research cultures among postgraduate students. By aligning pedagogical strategies with regulatory frameworks and international indexing standards, the program contributes to strengthening student publication readiness and advancing the research profiles of both participating institutions (Karomah & Rukmana, 2022).

CONCLUSION

The International Journal Article Writing Training demonstrates that deliberate and structured capacity-building initiatives can significantly enhance postgraduate students' ability to engage in scholarly publication. Integrating practical skill development, collaborative learning, and iterative feedback fosters both technical proficiency and academic confidence. The program highlights the value of aligning instructional design with institutional objectives and global publication standards to produce tangible research outputs. By cultivating a disciplined approach to manuscript preparation, students acquire competencies that extend beyond immediate training outcomes, promoting long-term research engagement. Such initiatives also support the development of an academic culture that prioritizes rigor, peer collaboration, and international scholarly communication. Consequently, structured training emerges as a strategic instrument for elevating research quality and sustaining institutional academic growth.

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Leadership Arts Training For Vocational High School Principals In Indonesia And India

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Abstract. This program responds to the need to strengthen the leadership competence of Vocational High School principals in Indonesia and India, whose strategic roles shape school policy and support learning environments aligned with industrial development. Principal leadership is critical to improving vocational education quality across managerial and pedagogical dimensions and to reinforcing collaboration with the business and industrial sectors (DUDI). Ongoing challenges in conceptual understanding and contextual application of leadership within vocational schools require a structured training program that integrates theoretical insight with practical leadership skills. The program aims to equip principals with applicable leadership strategies to enhance school management, empower teachers, and support effective and innovative learning practices. It emphasizes data based policy making, strengthened communication and decision making capacity, and expanded cooperation networks with industry and business to promote professional and adaptive school management aligned with global labor market demands. Targeted outputs include publication of program outcomes as scientific articles in a community service journal such as the Abdimas Journal and presentation at international education conferences. Dissemination of results is intended to share best practices and provide references for educational institutions seeking effective leadership strategies, while contributing to improved principal competence and graduate readiness for a dynamic labor environment.

Keywords: Principal Leadership, Vocational High School, Leadership Training, School Management, Learning Innovation, Industry Collaboration

INTRODUCTION

Vocational education plays a strategic role in preparing a ready to use workforce, yet vocational schools in Indonesia and India face persistent leadership challenges. School principals are required to demonstrate strong leadership competencies to manage institutions effectively, align curricula with industry needs, and establish sustainable partnerships with business and industry sectors. Transformative leadership has been identified as a critical approach for enhancing organizational effectiveness through motivation, inspiration, and individual development. Northouse (2021) emphasizes that principals with transformative leadership capabilities are more likely to foster innovation and create learning environments that are adaptive to change. Empirical evidence further indicates that strong leadership in vocational education directly contributes to improved graduate work readiness (Leithwood et al., 2020).

Principals participating in this program from Indonesia and India commonly encounter structural and professional constraints in managing vocational schools. Limited access to systematic leadership training has resulted in insufficient competence in change management and innovation (Avolio & Yammarino, 2019), weak collaboration with industry that leads to a mismatch between graduate competencies and labor market demands (Jackson, 2010), and inadequate skills in effective communication and negotiation with stakeholders (Fullan, 2020). These conditions hinder the development of an organizational culture that supports collaboration among educators, students, and industry partners, thereby reducing schools' capacity to respond to rapid industrial development (Robinson et al., 2008). This program is designed to strengthen effective and innovative leadership capacities among vocational school principals while supporting the Merdeka Belajar Kampus Merdeka policy and the achievement of Main Performance Indicators. Evidence from comparable leadership training initiatives in Finland demonstrates that effective leadership in vocational education can increase graduate readiness for employment by up to 30 percent compared to schools that do not apply transformative leadership principles (Sahlberg, 2021).

The program addresses two primary problem areas. First, principal leadership competence remains limited due to insufficient training in transformative leadership and weak capacity in managing human and

financial resources. Second, relationships with industry and the community are underdeveloped, reflected in difficulties in building business networks and minimal collaboration in industry based curriculum development. In alignment with national higher education policy, this service program contributes to several university Key Performance Indicators. It supports IKU 2 by involving students as training facilitators to gain experiential learning outside campus settings. It advances IKU 5 through the application of lecturers' expertise to improve principal leadership with potential international relevance. It also reinforces IKU 7 by promoting collaborative and participatory learning with industry in the development of leadership curricula for school principals.

The service focus of this program centers on enhancing leadership quality in vocational education through strengthening principals' management and strategic leadership capacity, reinforcing synergy between education and industry via improved communication and collaboration, and empowering principals as agents of change in advancing vocational education quality.

RESEARCH METHOD

The leadership training program for vocational secondary school principals in Indonesia and India is organized through a systematic, needs based framework aimed at enhancing leadership competencies and strengthening collaboration with industry and the community. The program begins with a needs analysis conducted through surveys and interviews to identify contextual leadership challenges, followed by training activities that include transformative leadership workshops, case based learning, role play in decision making, and simulations of communication with industry partners. Program implementation is reinforced through intensive mentoring over a three month period and an evaluation of its impact on principals' performance using surveys and interviews involving principals and educators. Sustainability is ensured through the establishment of a principals' leadership forum and the monitoring and development of advanced programs, while partner participation is realized through active principal engagement in training activities and collaboration with industry in internships and mentoring initiatives.

RESULTS AND DISCUSSION

The implementation of the Community Service Program through Leadership Art Training for Vocational High School Principals in Indonesia and India produced substantial outcomes in enhancing individual leadership competencies, strengthening institutional collaboration, and improving school governance. The training was conducted in a multinational context, utilizing cross-cultural implementation, hybrid delivery, structured modules, pre-post competency assessments, reflective narration, and mentoring. Transformational leadership competence showed marked improvement. Pretest and post-test results indicated that 85% of participants exhibited significant gains, particularly in the ability to formulate school vision and policies grounded in contextual problems, persuasive and collaborative communication, initiation of short-term, medium-term, and long-term change programs with measurable impact, and enhanced data-driven decision-making literacy. These findings suggest that experiential- reflective training surpasses conventional conceptual approaches in effectiveness.

Leadership identity was strengthened through the art-based leadership approach. Participants developed a Narrative Leadership Art Portfolio visualizing their values, philosophy, character, intrinsic motivation, and leadership direction. This reflective artifact enhanced self-awareness, value orientation, and leadership self-efficacy, addressing the internalization of meaning-making leadership typically overlooked in conventional models. The program established the Indonesia-India Vocational Leadership Collaborative Forum, which initiated sustainability activities such as monthly thematic discussions among principals, joint research on comparative vocational leadership, and formulation of recommendations to reinforce industry-oriented vocational policy.

Industry networks and external partnerships expanded, resulting in five collaborative models supporting industry- based curriculum, teacher internships, and competency mapping of school production units. School management governance improved during the three-month mentoring period. Participants implemented priority-based budgeting, optimized school management risk mapping, and applied simple digital tools for program monitoring and evaluation.

The program demonstrated that integrating art into leadership training fosters not only conceptual understanding but also meaningful transformation in personal leadership identity. The Art-Based Leadership approach effectively shifts leadership paradigms from bureaucratic-administrative toward humanistic, creative, and innovation-oriented models. Key outcomes of art-based learning include strengthened imaginative literacy and empathic intelligence, reinforced self-awareness as change leaders, and heightened ownership of school policies. Cross-country implementation in Indonesia and India highlighted universal vocational leadership

challenges, particularly the lag in vocational school innovation relative to industry development. The international collaboration model provides evidence that cross-cultural leadership capacity building enhances the relevance, applicability, and impact of community service programs and contributes to University Performance Indicators (IKU).

These results position Leadership Art Training as a replicable intervention model suitable for developing countries with strong vocational education cultures, integrating academic, artistic, psychological, policy, industrial, and reflective dimensions. It is feasible to develop this training as a sustainable program, a national-level capacity-building strategy, and an international policy reference for humanized leadership in vocational education.

CONCLUSION

The Community Service Program in the form of Leadership Art Training for Vocational High School Principals in Indonesia and India enhanced leadership capacity, international academic collaboration, and school governance practices. The integration of art-based reflective methodology effectively transformed leadership learning from conceptual understanding to deeper personal meaning construction, self-awareness, and action-oriented transformation. The program yielded three primary contributions. First, it strengthened leadership competencies, evidenced by substantial improvement in transformational leadership indicators, including data-driven decision making, persuasive and empathetic communication, strategic change initiation, and vision-policy alignment formulation. Second, it facilitated leadership identity construction through art.

The development of the Narrative Leadership Art Portfolio functioned as a reflective instrument reinforcing intrinsic motivation, value orientation, personal authenticity, and leadership self-efficacy, achieving meaning-making dimensions rarely addressed in conventional leadership programs. Third, it fostered institutional and industrial networking. The Indonesia-India vocational leadership forum enabled joint research initiatives, comparative leadership knowledge production, and industry-aligned policy enhancement, while additional industry partnerships established sustainable pathways for curriculum alignment and competency standardization. The program demonstrates that art-based leadership training represents a scalable model for vocational leadership development, particularly for developing nations with robust vocational education systems and urgent industry-school integration needs. It constitutes a replicable intervention that strengthens university IKU outcomes, global engagement, and research-based community development impact..

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Improving Personal And Social Skill Of Students Of State University Of Yogyakarta And Punjabi University Patiala India Through Socialization And Education

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Abstract. This community service activity focuses on enhancing the personal and social skills of history study program students at UNY Indonesia and PUP India. The program targets 25 UNY students and 15 PUP India students selected based on their willingness and potential to develop these competencies. The training aims to strengthen students' motivation, practical abilities, and understanding of personal and social skills as essential components of life skills. It also encourages students to actively expand their knowledge and apply these skills in academic and personal contexts. The training is conducted over two days, totaling a minimum of sixteen hours, using lecture, discussion, question-and-answer sessions, and simulation methods. Sessions are delivered online to ensure health safety during the Covid-19 pandemic. Activity evaluation is implemented both during and after the training, assessing the achievement of training objectives and the effectiveness of the methods employed. Questionnaires are used to measure outcomes and participant satisfaction. Success is determined through two evaluation stages: continuous assessment during the training process and post-training evaluation. These evaluations provide insights into improvements in students' personal and social skills, the effectiveness of the training methods, and the extent to which participants can apply the acquired competencies. The program ultimately seeks to foster students' ability to integrate personal and social skills into their broader life skills development.

Keywords: training; personal skills; social skills; students.

INTRODUCTION

At this time we have entered the 21st century which is marked by rapid changes in various aspects of life. This means that human life in the 21st century has undergone fundamental changes from the previous century. This 21st century indicates that we are entering the era of globalization, where in that era we are required to be able to compete globally and have high resilience with the increasingly massive currents of globalization that are spreading throughout the world. It can be said that the 21st century is a century that requires quality in all human efforts to develop themselves in the 21st century.

The 21st century has many differences from previous centuries in many ways, including in the field of work, social life and self-actualization. The changes that exist need to be anticipated by mastering the Life Skills of the 21st century. 21st-century life skills include creativity and innovation; critical thinking, problem solving, decision making, learning how to learn, metacognition, communication, collaboration, information literacy, information and communication technology literacy, local and global citizenship, life and career skills, personal and social responsibility (Partnership for 21st Century skills, 2002).

That personal skills are skills needed so that students can exist and be able to take positive opportunities in life conditions that change very rapidly. Personal skills include critical and creative thinking skills, decision-making skills, problem-solving skills, self-confidence, and work ethic (Widoyoko, 2009: 213). Meanwhile, social skills include communication skills with empathy, an understanding attitude and the art of two-way communication, it needs to be emphasized because what is meant by communicating is not just conveying a message but the content and delivery of the message is accompanied by a good impression that will foster a harmonious relationship (Anwar, 2004: 30). So that we can know that personal and social skills are one of the many life skills of the 21st century that can support students in an increasingly complex global life.

The 2019 NACE Job Outlook survey data that was successfully collected from company leadership survey participants from 1 August 2018 to 8 October 2018 found a total of 172 surveys were returned with a response

rate of 18.5 percent (National Association of Colleges and Employers, 2019: 3) which results are that the most valued attributes, namely communication skills and problem-solving abilities (See Table 1). In 2019 it was a little different where in the previous two years 2017-2018 problem solving skills and the ability to work in a team were the most desirable attributes. Where the largest percentage of employers will look for these two attributes on a college alumni resume or curicculum vitae. Following after communication skills and problem-solving skills, namely strong teamwork, initiative and analysis skills are also highly valued attributes that employers want to see.

The results of research conducted by (Wijaya, 2016) explain that the order of competence in the 21st century according to the business world / industrial world is: (1) communication and collaboration of 3.75; (2) critical thinking and solving problems 3.77; and (3) creative and innovation 3.64. This is also supported by the results of research (Redhana, 2019) which explains that 21st century skills are important skills that everyone must master in facing life in the 21st century. Many organizations have defined 21st century skills. However, all of these definitions contain the same principles. 21st century skills consist of at least critical thinking and problem solving, creativity and innovation, collaboration, and communication skills. Students must master these skills in order to face the challenges of the 21st century.

TABLE 1. *Key Attributes / Softskills for Graduates Companies Look for according to NACE in 2019*

Atribute	% of Respondents
Communication skills (written)	82.0%
Problem-solving skills	80.9%
Ability to work in a team	78.7%
Intitative	74.2%
Analytical/quantitative skills	71.9%
Strong work ethic	70.8%
Communication skills (verbal)	67.4%
Leadership	67.4%
Detail-oriented	59.6%
Technical skills	59.6%
Flexibility/adaptability	58.4%
Computer skills	59.6%
Interpersonal skills (relates-well to others)	52.8%
Organizational ability	43.2%
Strategic planning skills	38.2%
Tactfulness	25.8%
Creativity	23.6%
Friendly/outgoing personality	22.5%
Entrepreneurial skills/risk-taker	16.9%
Fluency in a foreign language	11.2%

The results of research conducted by (Aman, 2014) on the development of a character education model as an effort to improve personal and social skills for vocational students in the Special Region of Yogyakarta, in the implementation of a preliminary trial on a limited trial of 25 vocational students can reveal the required data by good. The character education model is effective in improving the personal and social skills of vocational students. The results of the pre-test and post-test in the results of his research showed that there was an increase in personal and social skills after the character education model training for vocational students was carried out. The pretest results show that the average classification is quite good on personal skills with a mean of 3.28. Meanwhile, the post-test results showed an increase to a good classification with a mean of 3.48. Not different from social skills, after training there was an increase in results, namely from a mean of 3, 34 to 4.04 with a good enough classification to be good..

Training for community service activities This international collaboration will be carried out for early semester students at Yogyakarta State University and Punjabi University Patiala India which will be carried out online through the zoom meeting application. This activity is motivated by the fact that we are currently entering the 21st century which is marked by rapid changes in various aspects of life. With the various skills demands that students at both UNY Indonesia and Punjabi University Patiala India in order to welcome the 21st century, it has many differences from previous centuries which need to be anticipated by mastering 21st century life skills so that they can generate skills according to the demands of the century 21st for students at UNY Indonesia and Punjabi University Patiala India. This activity is expected to: (1) motivate (build willingness) to increase understanding of personal skills and social skills, (2) understanding of personal skills and social skills of students of UNY Indonesia and PUP India, (3) improve personal skills and social skills of students of UNY

Indonesia and PUP India. The target of this activity is students of the first semester at UNY Indonesia and PUP India who have the willingness and ability to be trained in personal and social skills, and will be selected as a sample of 25 UNY students and 15 PUP students.

RESEARCH METHOD

This community service initiative aims to enhance the personal understanding, social skills, and technical abilities of students at UNY Indonesia and PUP India. An operational problem-solving framework is implemented through a structured work plan. The program engages 25 students from each institution and delivers two days of training totaling at least 16 meeting hours. Training materials focus on motivating students, improving personal and social skills, and developing technical and interpersonal competencies. The program targets students from UNY Indonesia and PUP India who demonstrate willingness and aptitude for personal and social skills development. Participant selection considers strategic field conditions and the potential to enhance personal and social competencies. The program encourages continuous skill development to support essential life skills. This initiative involves collaboration between the Institute for Research and Community Service (LPPM) at Yogyakarta State University, UNY lecturers, and students from both institutions. LPPM provides professional human resources, training facilities, and online platforms such as Zoom. Students contribute strong motivation and engagement. The collaboration fosters knowledge dissemination on life skills, offering strategic synergy between higher education institutions and participants (Bond et al., 2020; Holmes et al., 2019). Training employs lectures, discussions, question-and-answer sessions, and simulations to enhance understanding and practical application of personal and social skills. Participants undergo preparatory, implementation, and practice stages, including direct engagement and peer enrichment. Evaluation occurs during and after training using questionnaires, observations, and performance indicators. Success is measured by participant comprehension, practical application, and willingness to disseminate skills. The program is scheduled over six months to ensure adequate training and skill integration.

RESULTS AND DISCUSSION

Research on Personal and Social Skills for students at Yogyakarta State University and Punjabi University Patiala India will be held on 6-7 July 2025. Personal and Social Skill training held on 6-7 July 2025is the realization of community service programs in an international cooperation scheme. . This activity was attended by 40 participants consisting of 25 participants from UNY and 15 participants from PUP. The training participants are students who are taken at random. The training that was held was a training that involved all participants, so that they did not experience difficulties in participating in the training even though it was online. This was deliberately done, considering the limited time for the implementation of the international cooperation service activities.

Personal and Social Skills training is held from 08.00 to 12.00 online involving a team of devotees and collaborators. Partner lecturers from PUP India also attended and participated in the implementation of the training. Participants participated in the training with enthusiasm and enthusiasm. The training consists of a series of events that include personal and social skill improvement through character education. The material is presented in a simple and clear manner, so that it can be understood by all participants. The training activities took place in a relaxed manner, but still endeavored to the maximum for the development of character education models.

Submission of material is done through power points and various lectures. Participants enthusiastically listened to the directions and took notes if they were important and useful. Personal and social skill materials are given separately to participants, either through lectures, discussions, or case examples. The training activity begins and ends with a pretest and posttest which aims to measure how far the results obtained after the training are carried out. The results of the pretest and posttest are generally shown to be combined between UNY and PUP students. The details of the results of the pretest and posttest are as follows.

TABLE 2. Details of Student Personal Skill Pre-test and Post-test

No	Statement	In general	
		Pre-test	Post-test
1.	Thinking about the causes of the problems encountered	3,52	3,76
2.	In solving problems I involve other people	2,88	3,64
3.	Estimating the goals of each problem-solving method	3,08	3,56
4.	Every time I make a decision, I get support from other people	3,04	4,08
5.	Giving the opportunity to others to carry out the decisions that have been taken	3,36	3,72
6.	Looking for various ways to solve the right problem	3,56	3,92
7.	Calculate the advantages and disadvantages of various problem solving methods that have been made	3,44	3,84
8.	Give others the opportunity to criticize and give advice on the decisions taken	3,68	4,12
9.	Estimating the possible consequences of a problem if it is not followed up immediately	3,60	3,84
10.	Provide opportunities for others to be involved in determining how to solve problems	3,60	3,72
	Mean	**3,37**	**3,82**
	Clasification	**Pretty Good**	**Good**

As for the social skills which are also carried out at the same time, the scores are as follows.

TABLE 3. *Details of Student Social Skill Pre-test and Post-test*

No	Statement	In general	
		Pre-test	Post-test
1.	Every time there is a group activity, I am happy to be the leader	3,54	4,00
2.	Every time there is a group activity, I divide the tasks fairly	3,34	3,92
3.	The group members respect me quite a bit	3,66	4,00
4.	I can work easily with other people	3,26	4,20
5.	I want to listen to other people's suggestions	3,66	3,96
6.	I want to accept other people's input	3,30	3,76
7.	Every time there is group work I maintain group cohesiveness	3,18	3,96
8.	I respect other people's opinion	3,46	3,92
9.	I enjoy helping others	3,46	4,00
10.	I can build group spirit	3,38	4,12
	Mean	**3,42**	**3,98**
	Clasification	**Pretty Good**	**Good**

Based on the details of the table above, it can be seen that there was an increase in personal and social skills after the character education model training for UNY and PUP students was carried out. The results of the pretest showed that the average classification was quite good on personal skills with an average of 3.37. While the results of the posttest showed an increase to a good classification with an average of 3.82. Not different from social skills, after the training there was an increase in results, namely from an average of 3.42 to 3.98 with a fairly good classification to good. Based on these data, it shows that all aspects that are assessed both regarding personal and social skills show a fairly good and good classification.

CONCLUSION

Based on the previous explanation, it was known that there was an increase in personal and social skills after training on character education models for UNY and PUP students. The results of the pretest showed that the average classification was quite good on personal skills with an average of 3.37. While the results of the posttest showed an increase to a good classification with an average of 3.82. Not different from social skills, after the training there was an increase in results, namely from an average of 3.42 to 3.98 with a fairly good classification to good. Based on these data, it shows that all aspects that are assessed both regarding personal and social skills show a fairly good and good classification. Meanwhile, to improve social skills, the application of the Problem Solving Exercise method is carried out through the following steps: forming groups of 4-5 people to discuss problems around them, identify problems and choose 1 problem that they think is the most risky. in their environment through group discussions, write down what causes the problem

to arise through group discussions, identify what efforts should be made to solve the problem, determine what efforts are most suitable to solve the problem, determine how to apply the problem-solving effort and assessing the success of problem solving carried out in this research activity. Operational character education activities for UNY and PUP India students to improve personal and social skills are carried out on Wednesday-Thursday. Educational activities were carried out at 8 am starting with filling out a non-test questionnaire related to the assessment of personal skills and social skills. Next, a lecture is given regarding general material about character. After a break, then proceed with personal material and social skills. After they finished giving the material, they filled out a non-test questionnaire to assess the students' personal and social skills.

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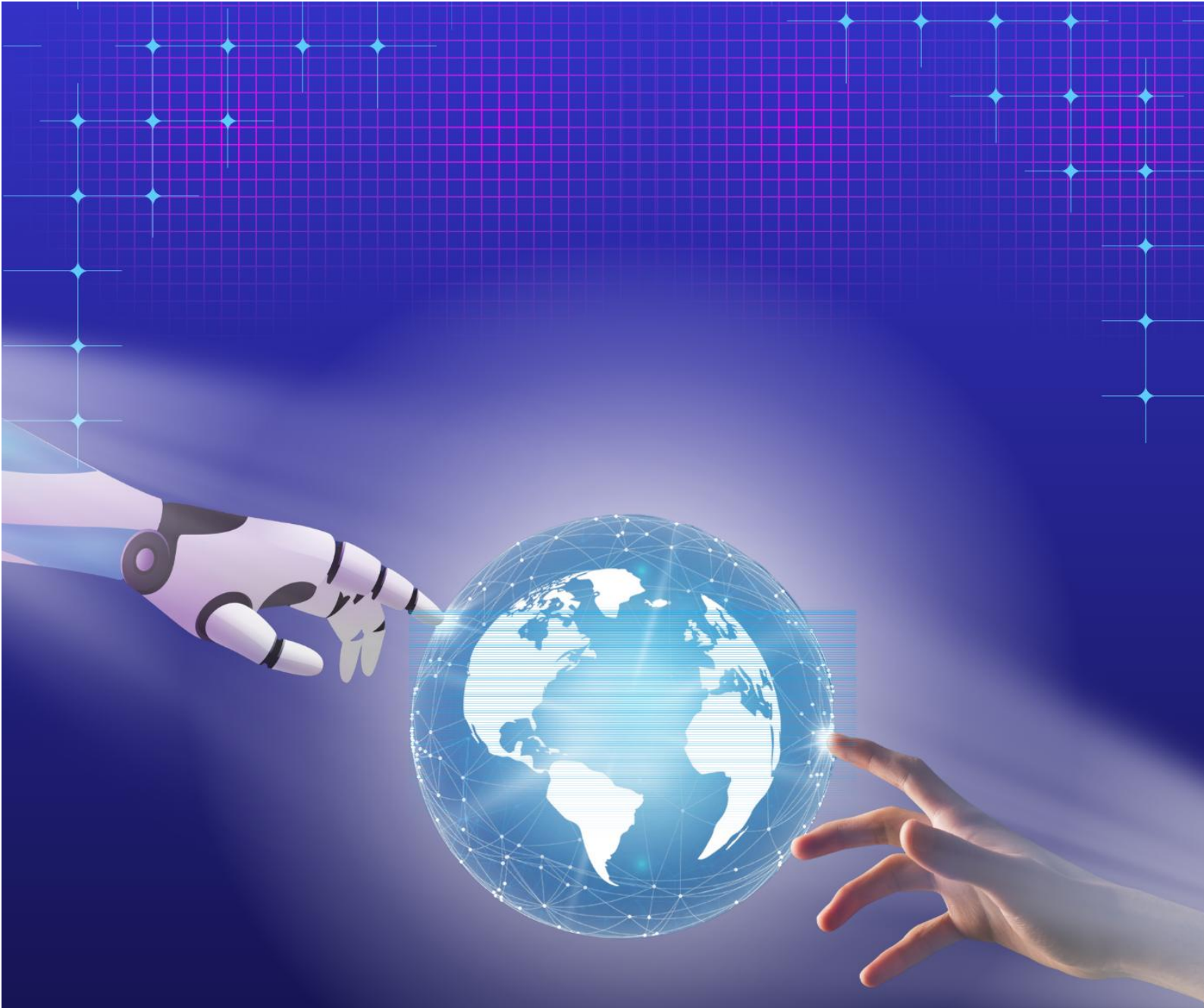

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