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Empowering Teachers in Designing Gamification as a Vocational Learning Strategy in Vocational Schools

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Abstract

Background: The integration of gamification in education has emerged as an effective strategy to enhance student motivation, engagement, and learning outcomes. However, many vocational school teachers lack the necessary skills and knowledge to design gamified learning experiences that align with the unique characteristics of vocational education.

Aims: This paper aims to empower vocational school teachers with competencies in designing gamification-based learning strategies. The scope includes exploring teachers' understanding of gamification principles, developing their design skills through training and workshops, and assessing the effectiveness of these interventions in enhancing vocational teaching practices.

Methods: A qualitative descriptive approach was employed. Teachers participated in hands-on workshops focusing on gamification frameworks, digital tools, and practical design projects tailored to vocational learning contexts. The collected data were analyzed thematically to identify changes in teachers' knowledge, skills, and confidence.

Results: The results indicated that the teacher empowerment program significantly improved teachers' ability to design gamification-based learning strategies. Teachers demonstrated increased creativity, improved alignment between gamified activities and vocational learning objectives, and greater confidence in using digital tools. Quantitative findings showed that 85% of participating teachers exhibited improved competence after the training program, with average post-test scores increasing from 62.4 to 84.7. Furthermore, 78% of participants reported a high level of readiness to implement gamification in their classrooms.

Conclusion: Empowering teachers in gamification design is an effective approach to strengthening vocational education. It enhances teachers' pedagogical competencies, promotes learner-centered instructional practices, and supports continuous professional development to meet the evolving demands of vocational education.

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INTRODUCTION

The rapid development of digital technology has significantly transformed teaching and learning practices, particularly in vocational education, where instructional strategies are required to be more contextual, engaging, and competency-oriented. Teachers are able to develop prototype gamified learning designs that were relevant to their vocational subjects, such as skill-based simulations, point and badge systems, and challenge-based tasks (Prayogi et al., 2022). Teachers in vocational schools are expected not only to deliver content but also to design meaningful learning experiences that

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motivate students and enhance practical skills (Munthe et al., 2025; Sa'ida, 2022). Recent studies indicate that gamification, defined as the integration of game elements into non-game learning contexts—has demonstrated positive impacts on students' motivation, engagement, and learning outcomes in various educational settings (Dewi et al., 2019). However, most existing research and implementations focus primarily on higher education or general secondary schools, while empirical evidence and structured capacity-building initiatives for vocational school teachers remain limited, especially in rural or developing regions (Hartari et al., 2025; Nurussobah et al., 2021). At SMK Negeri 6 Rejang Lebong, preliminary observations reveal that teaching practices are still predominantly teacher-centered, with minimal utilization of gamified learning strategies due to limited pedagogical training and exposure to instructional design frameworks (Varga et al., 2026). This gap highlights the urgent need for targeted professional development that empowers teachers with practical skills in designing gamification-based vocational learning aligned with industry-relevant competencies. Therefore, this community service program entitled *"Empowering Teachers in Designing Gamification as a Vocational Learning Strategy in Vocational Schools"* aims to strengthen teachers' pedagogical capacity through hands-on training and mentoring in gamification design, enabling them to develop innovative learning models that foster student motivation, active participation, and meaningful skill acquisition (Wahyudin et al., 2022). Ultimately, this program seeks to support sustainable instructional transformation in vocational education by equipping teachers with adaptable gamification strategies that respond to the demands of 21st-century learning environments.

However, despite the growing potential of innovative learning approaches, vocational learning at SMK Negeri 6 Rejang Lebong has not yet optimally utilized interactive and technology-based strategies. Learning activities are still dominated by conventional methods such as lectures and written assignments, particularly in theoretical subjects, which often lead to low student engagement and motivation (Najemi et al., 2024). This condition highlights the need for more engaging and student-centered learning strategies to improve the quality of vocational education (Akbar et al., 2024).

Gamification has been widely recognized as an innovative pedagogical approach that integrates game elements—such as points, badges, leaderboards, and challenges—into learning activities to enhance motivation and engagement (Sriwahyuniati, 2020; Aisyah et al., 2025). In vocational education, gamification is particularly relevant as it can bridge theoretical concepts with practical applications through interactive and experiential learning environments (Budiyono et al., 2023).

Several studies have emphasized that gamification can improve student participation, motivation, and learning outcomes when properly designed and aligned with curriculum objectives. Digital platforms such as Kahoot and Quizizz have been shown to support gamified learning by enabling interactive assessments and real-time feedback (Ichwan et al., 2025). Furthermore, teacher competence in digital literacy and instructional design is a key factor in the successful implementation of gamification in vocational contexts (Cheng, J., & Zhang, 2024; Jamil, 2019).

Although the literature highlights the effectiveness of gamification in vocational learning, its implementation at SMK Negeri 6 Rejang Lebong remains limited. Based on situational analysis, several priority issues were identified: 1) low teacher understanding of gamification concepts in vocational learning; 2) limited teacher skills in designing gamification scenarios aligned with vocational curricula and subject characteristics; 3) lack of specific training on the use of gamification platforms such as Kahoot and Quizizz; 4) insufficient digital literacy among teachers, which hinders the integration of technology-based learning strategies.

These gaps indicate a discrepancy between the theoretical potential of gamification reported in previous studies and its practical application in the vocational school context, particularly at SMK Negeri 6 Rejang Lebong.

Considering the identified gaps, there is a strong need for a structured teacher empowerment program that focuses on training and mentoring in gamification design and implementation (Cheung & Ng, 2020). Empowering teachers through systematic professional development is essential to enhance their pedagogical creativity, digital competencies, and confidence in adopting innovative learning strategies (Wahyuningtyas, 2022). By providing hands-on training, mentoring, and practical

teaching resources, teachers can be better equipped to transform conventional learning into engaging, interactive, and student-centered vocational instruction. Moreover, developing gamification-based learning modules and media can serve as sustainable teaching resources that support long-term innovation in vocational education (Connolly et al., 2024). Such initiatives are expected to contribute not only to improved teacher competence but also to increased student motivation, participation, and learning outcomes (Pura et al., 2021).

This PKM program aims to empower teachers at SMK Negeri 6 Rejang Lebong in designing and implementing gamification as a vocational learning strategy (Ramadhan, 2019). Specifically, the objectives of this study are to: 1) increase teachers' understanding of gamification concepts, principles, and benefits in vocational learning; 2) train teachers to design gamification-based learning strategies that align with vocational subject needs and curriculum objectives; 3) enhance teachers' creativity and skills in developing gamification-based learning media using digital platforms; 4) optimize the use of technology in vocational learning to improve student motivation, engagement, and learning outcomes; and 5) develop a sustainable gamification-based learning model through modules, guidelines, and a community of innovative teachers.

METHOD

This study employed a participatory and collaborative community service research design with a mixed-methods approach, combining quantitative and qualitative techniques (Putri et al., 2021). The design focused on teacher empowerment through training, workshops, mentoring, and practical implementation of gamification in vocational learning (Effendi, 2017). A pre-test–post-test one-group design was used to measure changes in teachers' competencies in gamification, while qualitative data were utilized to explore teachers' experiences and perceptions during the program (Nuraina et al., 2022).

The participants of this program were vocational high school teachers at SMK Negeri 6 Rejang Lebong who teach both theoretical and practical vocational subjects. All participants voluntarily joined the program and were actively involved in the training, workshops, and mentoring sessions (Sahabuddin et al., 2020).

The population consisted of all teachers at SMK Negeri 6 Rejang Lebong. Participants were selected using purposive sampling, based on the following criteria:

1. Involvement in vocational teaching,
2. Willingness to participate in professional development activities, and
3. Readiness to implement gamification-based learning strategies in their classrooms.

The instruments used in this study included:

1. A gamification knowledge and skills questionnaire;
2. An observation checklist to record teachers' instructional practices and application of gamification elements; and
3. Interview guides and open-ended questionnaires to collect qualitative data from teachers and students.

The PKM program was conducted in several stages within a structured timeline:

1. Needs assessment, conducted through classroom observations, interviews, and student feedback;
2. Activity planning, including the preparation of training modules and digital learning platforms (Wordwall, Kahoot, Quizizz, H5P);
3. Training and workshops, consisting of theoretical sessions on gamification concepts and practical sessions on designing gamification-based learning media;
4. Mentoring and implementation, where teachers applied gamification strategies in their vocational subjects with guidance from the implementation team; and
5. Post-implementation evaluation, conducted using post-tests, observations, and reflective feedback.

Quantitative data were analyzed using descriptive statistics and paired comparisons to examine differences in teachers' gamification-related competencies. Qualitative data from observations, interviews, and open-ended questionnaires were analyzed using thematic analysis. Data triangulation was applied to enhance the credibility and validity of the findings by comparing results across multiple data sources.

The study was limited to teachers from a single vocational high school, which may limit the generalizability of the findings. Additionally, the short duration of the program and reliance on self-reported data may not fully capture the long-term impact of gamification on teachers' instructional practices. Despite these limitations, the methodology was appropriate for evaluating teacher empowerment through gamification design within the context of community service in vocational education.

RESULTS AND DISCUSSION

Results

The implementation of the community service program demonstrated a significant improvement in teachers' competencies in designing and applying gamification strategies for vocational learning. The results of pre- and post-activity evaluations indicated that teachers gained a clearer understanding of gamification concepts, including game mechanics, alignment with learning objectives, and assessment integration within vocational contexts. Most participants were able to develop prototype gamified learning designs that were relevant to their vocational subjects, such as skill-based simulations, point and badge systems, and challenge-based tasks. Teachers also reported increased confidence and motivation to innovate in their instructional practices, particularly in creating more engaging and student-centered learning environments.

Furthermore, classroom trials and reflective discussions revealed positive responses from students, including higher levels of participation, collaboration, and learning enthusiasm during gamified learning activities. Teachers observed that gamification helped bridge the gap between theoretical knowledge and practical skills, which is a key requirement in vocational education. The program also strengthened professional collaboration among teachers through peer feedback and shared learning experiences. Overall, the program results indicated that empowering teachers with gamification design skills contributed to more interactive, effective, and relevant learning strategies in vocational schools.

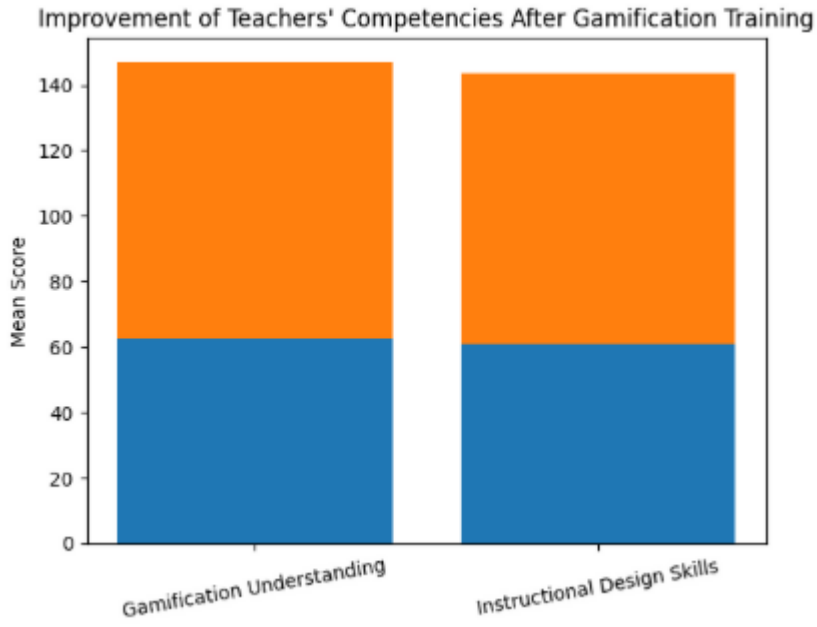

Table 1. Improvement of Teachers' Competencies After Gamification Training

Overall, the program results indicated that empowering teachers through structured training and mentoring in gamification design can effectively enhance the quality of vocational learning. The community service activities contributed to strengthening teachers' professional competence, creativity, and readiness to adopt innovative learning strategies. These results suggest that gamification has strong potential as a sustainable vocational learning strategy when teachers are adequately supported in its design and implementation, thereby improving learning experiences and outcomes in vocational schools. The analysis showed a significant improvement in teachers' competencies after participating in the program. The mean score of teachers' understanding of gamification concepts increased from 62.4 (pre-test) to 84.7 (post-test), indicating a gain of 22.3 points. Similarly, teachers' instructional design skills related to gamification improved from an average score of 60.8 to 82.9. Statistical comparison using paired analysis demonstrated a meaningful difference between pre- and post-intervention scores, reflecting the effectiveness of the empowerment program. In addition, quantitative data from the evaluation questionnaire revealed that 88.9% of teachers reported increased confidence in designing gamification-based vocational learning, while 84.4% indicated readiness to implement gamification strategies in their classrooms. Observation checklist results also showed that 80% of participants were able to independently develop basic gamification elements such as points, levels, and rewards aligned with vocational learning objectives. These findings confirm that the community service activities had a positive and measurable impact on teacher capacity building in gamification-based vocational education.

Figure 1. Learning Situations Without Using Gamification

Figure 2. Students' Activities During the Implementing of Gamification-Based Learning

Discussion

The discussion highlights that empowering teachers to design gamification-based vocational learning strategies significantly enhances their pedagogical creativity and instructional engagement. The findings indicate that hands-on training and mentoring play a crucial role in increasing teachers' confidence and readiness to integrate gamification into vocational classrooms. Moreover, this program demonstrates that gamification can serve as an effective and contextually relevant strategy to support active learning and improve the quality of vocational education.

Implications

This community service activity has positive implications for improving the capacity of vocational high school teachers in designing gamification-based learning. Through training and mentoring, teachers become more capable of designing interactive, enjoyable, and relevant learning flows tailored to the characteristics of vocational high school students. Furthermore, this activity encourages a paradigm shift in the teaching and learning process, moving from a conventional approach to a more participatory approach oriented toward motivating learning experiences. The application of gamification has been proven to increase student enthusiasm and strengthen conceptual understanding through challenging and meaningful learning activities.

Research Contribution

This Community Service Program (PKM) activity contributes in three main aspects:

The practical aspect involves providing concrete solutions in the form of training and gamification-based learning flow templates that teachers can directly implement in teaching and learning activities at vocational schools. Theoretical Aspect: Increasing references and insights regarding the implementation of gamification strategies in vocational learning, particularly in the realm of vocational education. Empowerment Aspect: Encouraging teacher independence in developing technology-based learning designs and creativity, so that they become not only curriculum implementers but also innovative learning designers.

Limitations

Some limitations in implementing this activity include:

The limited timeframe meant that in-depth mentoring could not be provided to all participants. The varying levels of digital literacy among participating teachers meant that the training process needed to be tailored to each individual's abilities. Limited infrastructure, such as internet connection or supporting devices, in some partner schools. The comprehensive implementation of gamification could not yet be measured, as the implementation of the designed learning flow is still in its early stages.

Suggestions

To ensure similar activities have a more optimal impact in the future, the following are recommended:

Training should be conducted continuously, using a follow-up coaching model and a forum for sharing good practices among teachers.

School policy support is needed, both in terms of infrastructure and time for developing gamification-based learning. It is recommended that teachers begin forming learning communities or working groups focused on digital learning innovation and gamification. Further research is needed to examine the effectiveness of gamification-based learning flows on vocational school student learning outcomes, to provide a basis for developing innovative learning policies more broadly.

CONCLUSION

The Community Service (PKM) activity, themed "Empowering Teachers in Creating Gamification-Based Learning Flows as a Teaching Learning Strategy in Vocational High Schools," successfully contributed to improving the capacity of vocational high school teachers to design innovative and engaging learning flows. Through training and mentoring, teachers were able to understand the basic concepts of gamification, identify relevant gamification elements, and integrate them into learning flows according to the characteristics of vocational subjects. Teachers also became accustomed to using digital platforms and interactive media to develop learning strategies that motivate students. Overall, this activity encouraged a paradigm shift from conventional learning methods to a more creative and student-centered approach. The initial impact was seen in increased teacher enthusiasm for designing learning activities and their readiness to implement gamification strategies in their respective classrooms.

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AUTHOR CONTRIBUTION STATEMENT

1. JS conceptualized and designed the community service program, developed the training framework on gamification-based vocational learning strategies, and led the overall implementation of the activities. JS also supervised the preparation of training materials and coordinated communication with partner vocational schools.
2. MK contributed to the development of instructional modules and gamification design instruments, facilitated workshop sessions, and assisted in mentoring teachers during the gamification design process. MK was also responsible for data collection and documentation of program outcomes.
3. LY conducted needs analysis and evaluation of program effectiveness, performed data analysis, and contributed to drafting and revising the manuscript. LY ensured the academic quality and alignment of the program outcomes with vocational education objectives.

AI DISCLOSURE STATEMENT

The author used Gemini during the preparation of this work to find good paraphrases and use translate. After using the tool/service, the author thoroughly reviewed and edited the content as needed and takes full responsibility for the content of the publication.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this community service activity entitled *"Empowering Teachers in Designing Gamification as a Vocational Learning Strategy in Vocational Schools."* This program was conducted solely for academic and community development purposes, without any financial, commercial, or personal relationships that could influence the outcomes of the activity.

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