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Social Studies Learning Innovation Using Deep Learning and Gamification ZEP Quiz

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ABSTRACT

Background: The digital era demands adaptive and innovative social studies education to move beyond conventional teacher-centered approaches that rely on memorization
Objectives: This activity aims to strengthen the capacity of social studies teachers in developing learning evaluation models based on deep learning and gamification using the ZEP Quiz platform.
Method: The activity utilized a hands-on, participatory workshop method combined with a reflective mentoring approach, involving 134 social studies teachers from the MGMP IPS Bandung City. The procedure followed four systematic stages: preparation, implementation, evaluation, and follow-up.
Result: Statistical analysis using the Wilcoxon Signed Rank Test showed a significant increase in teachers' understanding of deep learning concepts and digital pedagogical skills ($p < 0.05$). Teacher confidence in utilizing digital media rose significantly from 38% to 87% post-training. Furthermore, the workshop successfully produced 80 interactive quiz products ready for classroom implementation.
Conclusion: This activity successfully achieved its targets by improving teacher professionalism, fostering a collaborative digital culture through the MGMP network, and encouraging sustainable innovation in technology-based social studies learning. Despite minor technical and time constraints, the program proves effective as a model for teacher professional development in the 21st century.

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INTRODUCTION

Knowledge Social Studies (IPS) is one of the key lessons that plays a strategic role in Indonesian education because it integrates various disciplines of knowledge, such as geography, history, economics, and sociology. Social studies plays an important role in fostering social awareness, responsibility, and citizenship, as well as the ability to think critically and reflectively, and to participate in the social environment. However, in practice, social studies learning in schools faces, in the medium term, a number of fundamental constraints. The approach is still conventional teacher-centred, where learning activities are often oriented towards memorisation rather than the exploration of meaning and application in real life. As a result, students experience difficulty linking material to the current context of social media, so learning and its relevance to life participants are lost.

Challenge the more complex in the era of digital disruption, which demands education that is adaptive, innovative, and skills-based in the 21st century. Teachers are required not only to transfer knowledge but also to foster higher-order thinking skills, collaboration, creativity, and digital literacy in students. One of them is the approach considered capable of answering. This is a deep learning approach that focuses on understanding emotionally meaningful, reflective, and engaged participants in the learning process. Deep learning emphasises three main aspects: joyful learning (learning that is fun), meaningful learning (learning that is meaningful and contextual), and mindful learning (learning that is reflective and invites students to be aware of the values and learning processes). With this, the approach expected can produce students who not only know but also understand and are capable of internalising social values in their lives.

However, conditions in the field show that many social studies educators still face challenges in apply draft learning deep in a way that maximises. This is triggered by limitations in competence in digital-based pedagogy, a lack of training in real, practical settings, and a lack of support infrastructure for learning that utilises technology. Although technology education has significant potential to enrich experiential learning, especially through gamification (Nurmawati & Harahap, 2025). Gamification involving the use of elements from games, such as challenges, points, badges, leaderboards, rankings, and prizes in the context of education to strengthen motivation as well as the involvement of students. Various studies show that gamification can change students' views of learning, making it more positive, improving participation, and improving results (Study in a way real; Febriansyah et al., 2024).

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One breakthrough in technology education, based on effective gamification for social studies teachers, is the ZEP Quiz platform. This tool combines element games, artificial intelligence, and interaction in manufacturing question evaluation learning. ZEP Quiz provides teachers with the ability to create various types of evaluations, such as quizzes, case studies, and reflective questions, which students can access directly through digital tools. The presence of this platform in Indonesia in 2025 will be a catalyst for the education sector to adopt technology, interactive support, participation, and motivation for learning (Scitech & Digital News, 2025). By utilising deep learning and gamification through ZEP Quiz, teachers can design an evaluation process that not only assesses learning outcomes but also encourages critical thinking, reflection, social awareness, and value awareness among students.

Various academic supports are important in approaching this. Mystakidis et al. (2021) systematically confirm that using digital platforms for deep, meaningful learning has the potential to improve memory recall and form meaningful personal connections in students' selves. Research by Chen & Singh (2023) also found that successful learning is influenced by the integration of individual, social, and environmental supportive learning reflections, as well as the exploration of new ideas. On the other hand, Febriansah et al. (2024) emphasised that implementing gamification in education can increase enthusiasm for studying and increase interaction between educators and participants in a digital context. In addition, research by Nurmawati et al. (2025) shows that using a gamification-based application, such as Bamboozle, can increase summative evaluation scores for junior high school students by up to 25% while fostering interest in learning through healthy competition. Facts show that integration between learning, immersion, and gamification is not only relevant in theory but also proven effective in practice to improve learning quality.

With the background behind said, the activities Devotion Community Service (intervention) organised by the Social Sciences Education Study Program, Faculty of Social Sciences Education Knowledge Social Sciences (FPIPS) of the Indonesian University of Education, aim to strengthen the capacity of social studies teachers in developing evaluation learning based on deep learning and gamification through the ZEP Quiz platform. This intervention session was followed by 134 social studies teachers who joined in the MGMP IPS Bandung City. Through this, participants Not only get an understanding of deep learning, but also practical skills in designing creative, contextual, and interactive digital assessments. It is hoped that this activity will become a concrete step in create a community of creative teachers

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who are capable of answering the challenge of transformational education in the digital era, while at the same time strengthening a meaningful, reflective, and sustainable ecosystem for social studies learning.

METHODS

This educational intervention utilises a hands-on, participatory session method, combined with a reflective mentoring approach, to improve social studies teachers' competency in understanding deep learning concepts and in implementing gamification through the ZEP Quiz platform. The research procedure is divided into four systematic stages: preparation, implementation, evaluation of results, and follow-up of field implementation. During the preparation stage, the team conducted a needs assessment of social studies teachers in Bandung City under the Bandung City MGMP, which revealed a lack of familiarity with digital media for learning evaluation. Consequently, a practice-based training design focusing on conceptual understanding and technical skills was developed. The instruments used in this study include pretest and posttest sheets, observation sheets for participant activity, and reflective questionnaires to measure changes in teacher perceptions and motivations, all of which were tested for validity and reliability through limited trials.

The implementation phase took place on September 10, 2025, at the Faculty of Psychology and Social Sciences (FPIPS) Auditorium at UPI, involving 134 social studies teachers as the primary subjects. This stage consisted of a conceptual session on the deep learning curriculum emphasizing joyful, meaningful, and mindful dimensions and a practical session where participants engaged in technical training using ZEP Learning. Data collection techniques involved objective testing, direct observation of collaboration and technology adaptability, and the analysis of the 80 interactive quiz products created by the participants. To analyze the data, quantitative analysis was conducted using Shapiro-Wilk and Wilcoxon Signed Rank Tests via statistical software, while qualitative analysis employed a descriptive-reflective approach to evaluate participant narratives and discussions.

The level of success is measured through three main dimensions: changes in professional attitudes, collaborative social and cultural changes within the MGMP digital community, and changes in academic competence. Quantitative results indicated a significant increase in understanding, with a p-value < 0.05, and teacher confidence in using digital media rose from 38% to 87%. Finally, the follow-up stage ensures sustainability through online mentoring and monitoring every two weeks for two months within the MGMP IPS forum. The team also

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collects testimonials and classroom documentation as evidence of the program's long-term impact on the teachers' work culture and pedagogical implementation.

RESULTS AND DISCUSSION

Activity Devotion to the Community (PkM) entitled "Innovation Workshop Social Studies Learning Using Deep learning and Gamification ZEP Quiz for Creative Teachers" has successfully reached a large part of the target set. The workshop was attended by 134 social studies teachers who joined the MGMP IPS Bandung City and was held on September 10, 2025, at the FPIPS Auditorium, Indonesian Education University.

In a general way, activities produce four main, namely :

1) Improvement in the Competence of Social Studies Teachers in understanding deep learning and gamification, proven with statistical test results showing a significant difference between the mark pretest and posttest.
2) Product Digital Evaluation in the form of 80 interactive activities based on ZEP Learning, which is designed directly by participants during the intervention session.
3) Change Teacher Attitudes and Motivation, where the majority participant show improvement, trust in self, and enthusiasm for learning based on technology.
4) Strengthening the Network Collaborative between academics from FPIPS UPI, Bandung City Education Office, and MGMP IPS as a professional community.

To measure the effectiveness of activities, testing statistics are used to pretest and posttest results. Based on the normality test using Shapiro-Wilk, the pretest data has significance $0.286 \geq 0.05$ (normally distributed), while the posttest has significance $0.001 \leq 0.05$ (not normal). Because there is non- normal data, the analysis will be continued using the nonparametric Mann-Whitney test and the Wilcoxon Signed Rank Test.

Table 1. Test Normality

Tests of Normality						
	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Pretest	.130	37	.115	.965	37	.286
Posttest	.165	37	.012	.876	37	.001

a. Lilliefors Significance Correction

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The results of the Mann-Whitney test show marked Asymp. Sig (2-tailed) = 0.000 ≤ 0.05, which means there is a significant difference between pretest and posttest scores. This is strengthened by the Paired Samples Test, which produces t-value = -5.555 and sig. (2- tailed) = 0.000 < 0.05, so hypothesis H_0 rejected and H_1 accepted, signifies existence improvement significant after training.

Table 1. Test Normality

Pairec Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std.	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest Zep Quiz - Posttest Zep Quiz	-7.24324	7.93167	1.3039	-9.8877	-4.59869	-5.555	36	.000

The results of the Wilcoxon Signed Rank Test showed that 29 respondents (78%) experienced an improvement in value, 5 respondents experienced a decline, and 3 respondents remained. Asymp value. Sig (2-tailed) = 0.000 ≤ 0.05, so we concluded that training-based gamification using ZEP Quiz effectively increases social studies teachers' understanding of draft deep learning and its applications in digital evaluation.

Table 3. Wilcoxon Signed Rank

Ranks				
		N	Mean Rank	Sum of Ranks
Posttest – Pretest	Negative Ranks	5 [a]	10.70	53.50
	Positive Ranks	29 [b]	18.67	541.50
	Ties	3 [c]		
	Total	37		

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With thus, it can concluded that method applied training own impact real in a way statistics to improvement teacher competency. On average, the increased score participants reached 7.24 points after attending the intervention session, signifying a significant change in aspects of understanding and digital pedagogical skills.

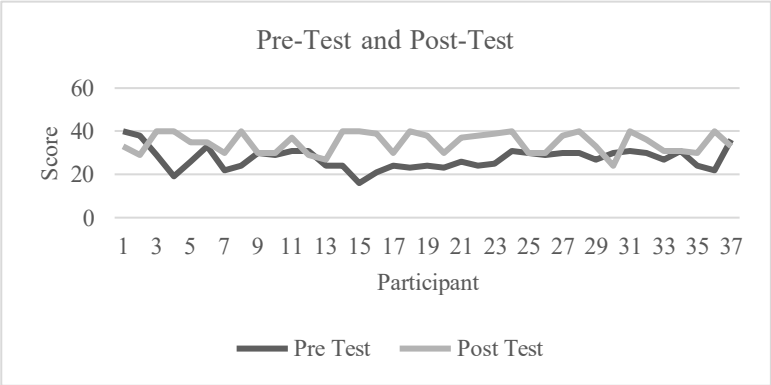

Figure. 1 Pre-Test and Post-Test

In addition to the increase in quantitative results, qualitative results show a positive change in the attitude of professional, social, and cultural collaborative teachers. Based on results reflection and interview short:

1) As many as 87% of participants report learning to use technology after attending the intervention session.
2) As many as 92% of participants feel that the deep learning model helps them understand the importance of meaningful, reflective learning.
3) The previous teacher is now active and shares practice on the online MGMP forum, forming a digital learning community for continued collaboration.

Figure 2. Documentation

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In terms of social culture, activities strengthen the ethos of collaboration among social studies teachers. During the implementation, participants help each other understand ZEP Learning features and work in small groups to compile question-based studies on IPS cases, such as urbanisation in Bandung, international trade, and climate change. Phenomenon: This shows growth in a culture of mutual cooperation in learning-based technology. The impact of cultural others is a shift in the paradigm of evaluation and learning. Before activities, teachers tend to consider evaluation as stage-end learning. After activities, the teacher views evaluation as a fun, reflective, and interactive learning process in accordance with the principles of joyful and mindful learning.

Activity results demonstrate that implementing deep learning and gamification through the ZEP Quiz platform significantly increases social studies teachers' ability to design creative and meaningful learning. This matter aligns with the findings of Chen and Singh's (2023) research, which confirms that deep learning requires integrating reflection, applying knowledge, and participants' emotional involvement to foster a deep understanding of a concept. This approach allows teachers to see evaluation not just as a tool to measure, but as a means of reflective study. Deep learning integration in the context of social studies education represents a shift in paradigm from teacher-centred learning towards learning that focuses on meaningful understanding. According to Biggs and Tang (2022), deep learning occurs when participants are educated to connect ideas, apply concepts, and reflect to experience learning. In training this, the teacher not only understands the theory but also applies it in design assessments that encourage students to link social studies material with real-life social problems.

The implementation of gamification has become an important strategy in increasing teacher motivation and participation during training. Caponetto, Earp, and Ott (2014) explain that elements such as points, badges, and leaderboards contribute significantly to improving motivation and intrinsic participant education. In the context of social studies teacher training, mechanisms that are also effective for creating an atmosphere of study, collaborative, fun, and competitive in a healthy way. Results from research conducted by Dichev and Dicheva (2017) show that gamifying kasi not only increases motivation to learn but also changes participants' perceptions of the learning process. That alone becomes more active and participatory. This aligns with results-based training that demonstrates improvement in teacher enthusiasm and involvement during practice, creating an interactive quiz. The teacher becomes more confident in using digital technology for assessment and learning.

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According to Zainuddin, Chu, Shujahat, and Perera (2020), the successful integration of gamification in learning is largely determined by a design that prioritizes social interaction and feedback. In the activity, the ZEP Quiz feature allows teachers to work in pairs to design evaluation-based cases, which has been proven to strengthen collaboration and critical thinking skills. This shows that gamification can serve as an instrument for constructive learning, values of mutual cooperation, and social development. In addition to the social aspects, motivational, deep learning, and gamification also contribute to the formation of a professional culture among social studies teachers. In line with research by Stoll, Bolam, McMahon, Wallace, and Thomas (2020), a community study professional (professional learning community) is becoming increasingly important in developing teacher competence through collaboration and reflection. Formation MGMP IPS online group post-training shows the existence of a transformation in social going to the ecosystem, with mutual digital learning support.

Strengthening teachers' digital culture also supports the achievement profile of Pancasila students, as outlined by the Ministry of Education, Culture, Research, and Technology (2022). Values independent, creative, reasoning critical, and grow together through experience-designed learning with principles of joyful, meaningful, and mindful learning. Through gamification, social studies teachers learn to utilise technology not only as a tool to help, but as a means to instil values and social and national education in participants.

From the side, pedagogy, application learning by doing in training, is also proven effective. Widodo (2023) emphasised that training-based practice can directly develop competence and reflectiveness, and enhance teachers' ability to innovate. In training, the teacher practices direct manufacturing digital assessment and conducting trials among fellow participants, so that the learning process is participatory and contextual. A meta-analysis study by Hamari, Koivisto, and Sarsa (2014) strengthens this result, showing that well-designed gamification aligned with pedagogical principles has an impact on engagement and learning. Integration between deep learning and gamification creates an experience of learning that is not only pleasant but also reflective and development-oriented.

Thus, the activities of the Community Service Program not only succeed increase teacher competence in designing evaluation-based technology, but also contribute to strengthening cultural professionalism and transformational learning in the digital era. In line with Rahman, Santosa, and Wibowo's (2023) view, mastery of technology by teachers must be accompanied by awareness of pedagogy so that the innovations carried out are still meaningful and sustainable. Therefore, the

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The training model can be made into references for the development of professional social studies teachers nationally.

CONCLUSION

The educational intervention with the theme "Social Studies Learning Innovation Workshop Using Deep Learning and Gamification ZEP Quiz for Creative Teachers" successfully improved the competency of social studies teachers in Bandung City in understanding the concept of deep learning and implementing gamification through the ZEP Learning platform. The results of statistical analysis showed a significant increase between pretest and posttest scores, indicating the effectiveness of the training in improving teachers' digital pedagogical knowledge and skills. In addition, this activity also had a positive impact on changing professional attitudes, strengthening a collaborative culture, and fostering a productive learning community network within the MGMP IPS environment. The main advantage of this activity lies in its participatory and hands- on practice-based training approach (learning by doing), which allows participants to produce tangible products in the form of interactive quizzes based on social cases. However, this activity still faces limitations in terms of the short training duration and technical constraints in some schools related to digital facilities. In the future, this program has the potential to be developed into a sustainable mentoring program based on a digital teacher community, with a focus on the development of an interactive question bank and the integration of learning analytics to strengthen the technology-based evaluation system. Thus, this activity not only contributes to improving the professionalism of social studies teachers but also supports the transformation of learning towards a more meaningful, reflective, and adaptive model to the challenges of 21st-century education.

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