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The Use of Quizizz Based Gamification to Enhance Student Satisfaction in Learning

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Abstract: The rapid advancement of digital technology has transformed educational practices, particularly through the integration of gamified learning platforms such as Quizizz. This study aimed to explore students satisfaction with the use of Quizizz in Geography learning and to identify which aspects most influence their learning experience. Employing a descriptive quantitative design, data were collected from 35 tenth grade students through a Likert-scale questionnaire measuring four key indicators: interactivity, ease of use, learning motivation, and material comprehension. Data were analyzed using mean scores and frequency distribution to determine overall satisfaction levels. The results revealed that students satisfaction with Quizizz based gamification was categorized as neutral (mean=3.01). Among the four aspects, material comprehension obtained the highest score (mean=3.13), suggesting that real-time feedback effectively supported students conceptual understanding. In contrast, learning motivation recorded the lowest score (mean=2.90), indicating possible fatigue from repetitive quiz formats and competitive features. Technical barriers, such as unstable internet connections, also affected students engagement and comfort. These findings suggest that while Quizizz provides valuable interactive learning experiences, its effectiveness depends on pedagogical variation and contextual adaptation. Teachers are encouraged to integrate gamified tools strategically to sustain motivation and enhance overall student satisfaction in Geography education.

Keywords: Digital pedagogy; Gamified learning; Geography education; Student satisfaction; Quizizz

Introduction

The integration of digital technology in education has reshaped the way teachers design and deliver instruction, fostering interactive and studentcentered learning environments (Padli et al., 2024; Prasetyo et al., 2024; Selviani et al., 2024). The shift toward digitalization in schools encourages educators to adopt technology-based media that enhance engagement, diversify learning experiences, and support rapid formative assessment (Jasmanedi et al., 2025; Nyoman et al., 2024; Rinaldi et al., 2025). In Geography education, challenges such as student boredom, lack of focus, and limited conceptual understanding often arise when conventional lecture-based methods dominate classroom practice (Aritonang & Irvan, 2025; Hidayat et al., 2025; Marín et al., 2022). Consequently, the use of gamified learning platforms has emerged as an innovative approach to promote active participation and improve learning outcomes.

Among the various digital tools available, Quizizz has gained widespread attention as an assessment platform that integrates gamification elements such as competition, timers, leaderboards, and real-time feedback (Hidayati et al., 2025; Sholihah et al.,, 2025; Sitompul, Sayekti, & Saragih, 2023). These features have been shown to foster engagement and allow learners to immediately identify and correct misconceptions (Sorohiti et al., 2024; Tabbu et al., 2024). The pedagogical potential of gamification lies in its ability to increase student motivation and enjoyment, aligning with Xu et al., (2024) *ARCS model* of motivational design attention, relevance, confidence, and satisfaction. Nevertheless,

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research also highlights potential drawbacks, including *wear-out effects*, where prolonged exposure to competitive stimuli diminishes motivation and engagement over time (Fatimah, 2025; Ilham et al., 2024; Indika et al., 2023; Sari et al., 2024). Moreover, unstable internet connections and unequal access to devices continue to challenge the effectiveness of gamified applications in real classroom contexts (Asri et al., 2025; Nyoman et al., 2024; Prasetyo et al., 2025).

Recent studies have demonstrated the positive influence of Quizizz on student motivation and achievement across various subjects (Hidayati et al., 2025; Marín-Vinuesa et al., 2022). However, most research has focused primarily on learning outcomes or the efficiency of formative assessment rather than on the broader dimension of student satisfaction a crucial indicator of how learners perceive, experience, and value digital instruction (Sholihah et al., 2025). While satisfaction is closely related to motivation and engagement, it also encompasses usability, interactivity, and perceived comprehension. Despite its relevance, few studies have simultaneously examined these aspects in the context of Geography learning, leaving a research gap regarding the comprehensive evaluation of students satisfaction with gamified learning platforms (Sitompul et al., 2023; Tabbu et al., 2024).

Furthermore, prior studies often treat gamification as a uniform construct, overlooking how each of its elements competition, feedback, interactivity, and ease of use differently influence students affective and cognitive responses (Sitompul et al., 2023; Sorohiti et al., 2024). Addressing this limitation requires an analysis that disaggregates these components to provide a more nuanced understanding of students learning experiences.

Therefore, the present study aims to describe the level of student satisfaction with the use of Quizizz in Geography learning by examining four core indicators: interactivity, ease of use, learning motivation, and material comprehension. The novelty of this research lies in its simultaneous assessment of these dimensions within a single framework, offering an integrative perspective on how gamified learning shapes students satisfaction. The study also contributes to pedagogical practice by identifying contextual factors such as technical constraints and repetitive usage patterns that may affect the sustainability of digital engagement. The scope of the study is limited to secondary-level Geography education, focusing on the perceptions of students who have consistently used Quizizz as part of classroom instruction.

Method

Research Design

This study employed a descriptive quantitative design, which is commonly used to examine trends, perceptions, and experiences in educational contexts (de Pedro et al., 2025). The purpose of this approach was to describe students satisfaction toward the use of Quizizz as a gamified learning tool in Geography education. The design enabled the researchers to measure student perceptions across multiple dimensions without manipulating variables, thereby ensuring an objective representation of the learning experience (Fraenkel & Wallen, 2019).

Participants and Sampling Procedure

The research was conducted at SMA Negeri 1 Kampar, involving 35 students from Grade X.F, Phase E2, who had consistent exposure to Quizizz-based learning activities. The sample size was determined based on the total number of students enrolled in the class, which met the minimum requirement for descriptive quantitative analysis (Anwar et al., 2024). Participants were selected using purposive sampling, as they represented a homogeneous group with similar experiences using the Quizizz platform. This sampling technique allows researchers to focus on participants who can provide relevant insights into the research phenomenon (Muhammad Anwar & Sabrina, 2020).

Ethical considerations were strictly observed. Permission was obtained from the school administration, and participation was voluntary with informed consent from all students. Data confidentiality and anonymity were maintained throughout the research process, aligning with ethical standards in educational research.

Instrument Development and Validation

Data were collected using a Likert-scale questionnaire ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument was designed to assess four major indicators of student satisfaction identified in prior studies: interactivity, ease of use, learning motivation, and material comprehension (Alsolami, 2025). Each indicator comprised several statements that captured students perceptions of the learning experience.

To ensure content validity, the questionnaire underwent expert judgment by two senior lecturers in Geography Education. They reviewed the clarity, relevance, and representativeness of each item in relation to the constructs measured. Based on their recommendations, minor revisions were made to improve wording and coherence. This process aligns with the validity assurance procedures outlined by (Mendoza et al., 2025), ensuring that the instrument accurately reflected the research objectives.

Data Collection Procedures

Data collection was carried out in September 2025 during regular Geography classes. Students completed

the questionnaire after participating in several Quizizz-based learning sessions. The researchers supervised the process to ensure understanding of the instructions and to prevent response bias. The use of in-class administration minimized the risk of missing data and allowed clarification of any ambiguous items.

Data Analysis

The collected data were analyzed using descriptive statistics, including mean scores and frequency distribution, to determine the overall level of student satisfaction and to identify variations across the four indicators. Descriptive analysis is appropriate for summarizing trends in perception data and highlighting dominant response patterns (Tan, 2025).

Interpretation of mean scores followed a five-point scale adapted from (Namaziandost & Çelik, 2025), which categorized satisfaction levels as follows:
1.00–1.80 = Strongly Disagree
1.81–2.60 = Disagree
2.61–3.40 = Neutral
3.41–4.20 = Agree
4.21–5.00 = Strongly Agree

This framework enabled systematic interpretation of students responses and comparison across dimensions. The analytical results were further contextualized with relevant literature to discuss patterns, potential causes, and implications for digital learning practices in Geography education. Figure 1 will explain in detail the research implementation process.

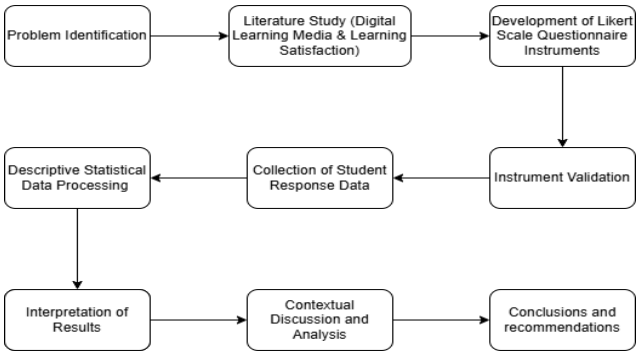

Figure 1. Research flow

Result and Discussion

Overview of Student Satisfaction

Descriptive analysis was conducted to determine students satisfaction with the use of Quizizz in Geography learning. The overall mean score was 3.01, indicating a neutral level of satisfaction as shown in Table 1. This suggests that while Quizizz provided some engaging and supportive features, its influence on students overall learning experience remained moderate.

Table 1. Overall Student Satisfaction Level

Category	Mean	Interpretation
Overall Satisfaction	3.01	Neutral

The neutrality of responses reflects that students appreciated the interactive and feedback-oriented nature of Quizizz, yet the motivational aspects were not strongly perceived. This finding aligns with (Fatimah, 2025; Rulismi, Sahil, & Dali, 2024), who emphasize that the success of digital gamification depends not only on technology itself but also on pedagogical implementation and classroom context.

Detailed Descriptive Results

This section presents a detailed descriptive analysis of students' satisfaction with the learning process implemented in this study. The analysis focuses on key dimensions that reflect students' perceptions of the instructional design, technological usability, and learning experience. Descriptive statistics were employed to summarize the mean scores of each satisfaction dimension, providing an overview of students' responses and identifying areas of relative strength and limitation. The results are presented in Table 2.

Table 2. Mean Scores of Each Satisfaction Dimension

Dimension	Mean	Category	Interpretation
Interactivity	2.98	Neutral	Limited engagement due to technical barriers
Ease of Use	3.03	Neutral	Generally user-friendly, but network-dependent
Learning Motivation	2.90	Neutral (Lowest)	Decreased motivation due to repetition
Material Comprehension	3.13	Neutral (Highest)	Improved conceptual understanding

Based on Table 2 above, the interactivity dimension achieved a mean of 2.98, classified as neutral. While Quizizz offers real-time feedback and competitive features, several students reported that unstable internet connectivity reduced seamless interaction during quizzes. As Thuan, (2025) notes, technological barriers often diminish the perceived quality of digital learning experiences. Similarly, Tabbu et al., (2024) highlights that digital interactivity must be pedagogically structured to promote deeper engagement rather than surface level participation.

Ease of Use with a mean score of 3.03, the ease of use aspect indicates that students found Quizizz intuitive and straightforward. The application's design simplifies navigation and delivers real-time results,

supporting autonomous learning. These findings corroborate (Cosh et al., 2023), who assert that usability strongly influences students satisfaction in digital learning environments.

The learning motivation dimension recorded the lowest mean score of 2.90. This suggests that although students initially perceived gamified learning as enjoyable, the repetitive use of competitive quiz formats diminished their long-term enthusiasm. This phenomenon, known as the wear out effect (Prasetyo et al., 2025; Zhang et al., 2024), has been identified as a natural decline in motivational response when identical stimuli are presented repeatedly.

Among the four indicators, material comprehension achieved the highest mean score of 3.13. Students reported that the instant feedback mechanism of Quizizz helped them identify misconceptions and improve understanding of key concepts. This finding supports (Asri et al., 2025), who demonstrated that immediate feedback accelerates cognitive consolidation and fosters self-correction.

Summary of Dimension Rankings

To further clarify the relative contribution of each satisfaction dimension, a ranking analysis was conducted based on the mean scores obtained. This analysis enables a clearer comparison of students' perceived satisfaction across dimensions and highlights priority areas for instructional improvement. By ranking the dimensions, the results provide a more interpretable overview of strengths and weaknesses within the implemented learning model. The ranking outcomes are summarized in Table 3.

Table 3. Ranking of Satisfaction Dimensions

Rank	Dimension	Mean	Interpretation
1	Material Comprehension	3.13	Highest satisfaction
2	Ease of Use	3.03	Positive usability
3	Interactivity	2.98	Moderate engagement
4	Learning Motivation	2.90	Lowest satisfaction

The overall neutral satisfaction level indicates that Quizizz-based gamification provides a moderately effective learning experience. The tool supports conceptual comprehension and ease of interaction, but its influence on motivation and emotional engagement remains limited. Similar to (Anshima et al., 2025), this study confirms that while gamification can enhance engagement, its success largely depends on how teachers design learning tasks and manage competition dynamics.

The findings reinforce the argument that digital gamification acts as a pedagogical enhancer rather than a standalone solution. For sustainable learning motivation, teachers must integrate gamified platforms with reflective activities, narrative based assessments, and social learning components. Moreover, infrastructure quality especially stable internet connectivity remains a determinant factor for the successful implementation of digital tools in secondary education (Thuan, 2025).

The present study sought to determine the extent to which the use of Quizizz-based gamification enhances students satisfaction in Geography learning. The findings reveal that the overall satisfaction level was neutral, with the highest score in material comprehension and the lowest in learning motivation. These results suggest that while Quizizz successfully supports students cognitive understanding through instant feedback, its motivational effect may diminish over time. This study therefore provides new insight into how the pedagogical use of gamified platforms rather than the technology alone determines the quality of students learning experiences.

Compared to previous research that primarily focused on the impact of Quizizz on academic achievement or formative assessment efficiency (B. Zhang & Jiang, 2024), this study offers a broader and more integrative analysis by simultaneously examining four key dimensions: interactivity, ease of use, learning motivation, and material comprehension. This multidimensional approach advances the existing literature by highlighting how each aspect contributes differently to overall satisfaction. Moreover, unlike earlier works that treated gamification as a single construct, this research disaggregates its components to show their distinct pedagogical implications. Such differentiation enables a more nuanced understanding of why gamified learning environments produce varied affective and cognitive responses among students.

Another strength of the present study lies in its contextual focus on Geography education, a discipline often perceived as abstract and content-heavy. The application of Quizizz within this subject demonstrates that digital gamification can make conceptual material more accessible, confirming the platform's potential beyond language or science domains where it has been predominantly studied (Rulismi et al., 2024). This expands the applicability of gamified learning to subjects that require spatial reasoning and conceptual interpretation.

The findings confirm that real-time feedback plays a critical role in facilitating self-regulated learning and concept mastery. The higher mean score in material comprehension supports cognitive theories emphasizing retrieval practice and instant correction as mechanisms that strengthen memory consolidation (Permana et al., 2023). Thus, Quizizz functions not merely as a testing tool but as a metacognitive aid that

helps learners identify and address conceptual gaps independently.

In contrast, the decline in motivation supports (Sitompul et al., 2023) wear out effect theory, suggesting that repetitive exposure to competitive formats reduces engagement over time. This underscores the need for pedagogical adaptation: gamification should evolve through varied challenges, cooperative gameplay, and narrative elements to sustain interest. Furthermore, consistent with Roman et al, (2025) the study found that leaderboard based competition may trigger anxiety among low performing students, implying that motivation in gamified learning is not universal but context dependent.

The interactivity and ease of use dimensions, both scoring within the neutral range, highlight a crucial interplay between technological accessibility and pedagogical design. Although students appreciated the user friendly interface of Quizizz, the lack of deep social interaction and limited infrastructure (Sitompul et al., 2023) constrained its full potential. These findings reinforce the view that technology alone cannot guarantee engagement meaningful learning emerges from the synergy between digital tools, instructional design, and the learning environment.

The results have significant implications for both educational practice and digital pedagogy design. For teachers, the study emphasizes the importance of using Quizizz strategically as part of blended learning strategies that combine competition with reflection, collaboration, and contextual application. Teachers should also manage the frequency and format of gamified activities to avoid cognitive fatigue and sustain motivation.

From an institutional perspective, schools and policymakers should prioritize improving digital infrastructure and teacher digital literacy, as technical disruptions and uneven connectivity directly affect the perceived quality of digital learning (Wen et al., 2024). The study also informs educational software developers about the necessity of designing adaptive gamified systems that can personalize challenges, adjust difficulty levels, and provide balanced feedback mechanisms to prevent the wear-out effect.

The research objectives were successfully achieved, as the study effectively described the levels of student satisfaction and identified the relative contributions of each indicator. However, the findings also revealed limitations that warrant further exploration. The neutral motivation levels and inconsistent interactivity scores suggest the presence of contextual variables such as classroom culture, students prior experiences, and network stability that were not fully controlled in this study. Future research may adopt mixed-methods or experimental designs to examine causal relationships and capture the qualitative nuances behind students perceptions.

In summary, this study contributes new knowledge by demonstrating that the pedagogical orchestration of gamified learning is more influential than its technical novelty. Quizizz enhances conceptual understanding through immediate feedback, but its motivational impact depends on diversity, moderation, and context. The integration of gamification into Geography learning thus holds promise for creating more dynamic and reflective classrooms provided it is supported by pedagogical creativity, infrastructural readiness, and learner centered design.

Conclusion

This study concludes that the use of Quizizz-based gamification in Geography learning resulted in a neutral level of student satisfaction, with material comprehension emerging as the highest-rated dimension due to the effectiveness of instant feedback in helping students identify and correct mistakes, while learning motivation showed the lowest score, indicating decreased enthusiasm caused by repetitive quiz formats; although students perceived the platform as easy to use and interactive, technical constraints such as unstable internet connectivity limited the overall learning experience, highlighting the need for varied instructional strategies, integration of collaborative and reflective learning approaches, and improved technological support, as well as the potential for future research to develop more adaptive gamification models to enhance student motivation and satisfaction.

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Author Contributions
Conceptualization, methodology, funding acquisition, formal analysis, investigation, resources, data curation, and writing original draft preparation, A.S. and P.I.; writing review and editing, supervision, project administration, and validation, A.S. and D.H. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest
The authors declare no conflict of interest.

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