

Gamified Formative Assessment with Quizizz to Enhance Learning Outcomes at Madrasa

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Abstract: *This study investigates the effectiveness of gamified formative assessment using Quizizz to improve learning outcomes at a madrasah. Formative evaluation is essential to support learning engagement and achievement. This qualitative research employed a case study approach involving Grade 7 students and subject teachers. Data were collected through semi-structured interviews and classroom observations, then analyzed using the Miles and Huberman interactive model. The findings indicate that Quizizz enhances student motivation and engagement, with 85% of learners reporting increased enthusiasm in classroom activities. Moreover, the average test scores improved from 70 to 82 following its implementation. While Quizizz provides advantages such as real-time feedback and interactive features, challenges such as limited internet access and inadequate devices remain. The study recommends integrating gamified tools like Quizizz into the curriculum and providing teacher training to optimize digital-based learning.*

Abstrak: Penelitian ini mengkaji efektivitas asesmen formatif berbasis gamifikasi menggunakan Quizizz dalam meningkatkan hasil belajar di sebuah madrasah. Evaluasi formatif penting untuk mendukung keterlibatan dan pencapaian belajar siswa. Penelitian ini menggunakan pendekatan kualitatif dengan metode studi kasus yang melibatkan siswa kelas VII dan guru mata pelajaran. Data dikumpulkan melalui wawancara semi-terstruktur dan observasi kelas, kemudian dianalisis dengan model interaktif Miles dan Huberman. Hasil penelitian menunjukkan bahwa penggunaan Quizizz meningkatkan motivasi dan keterlibatan siswa, dengan 85% siswa melaporkan antusiasme belajar yang meningkat. Selain itu, nilai rata-rata tes meningkat dari 70 menjadi 82 setelah implementasi aplikasi ini. Meskipun menawarkan keunggulan seperti umpan balik instan dan fitur interaktif, tantangan seperti keterbatasan akses internet dan perangkat masih ditemukan. Studi ini merekomendasikan integrasi alat gamifikasi seperti Quizizz dalam kurikulum serta pelatihan guru untuk mengoptimalkan pembelajaran berbasis digital.

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INTRODUCTION

In the current era of digital transformation, the integration of educational technology in learning evaluation is no longer an option, but a necessity. Traditional assessment methods are increasingly seen as insufficient in promoting active learning and continuous feedback. Educators and policymakers are now turning to formative assessments that emphasize student engagement, timely feedback, and real-time tracking of learning progress. According to Morris, et al 2021; Hooda, et al 2022), evaluation in education is not merely about grading, but also about enhancing the overall quality of the learning process. With the rise of digital education tools, such as gamified platforms, there is a growing shift from summative to formative and interactive assessment models. However, despite their potential, many schools, especially in developing regions, still rely heavily on outdated testing methods that lack adaptability and learner-centered design (Kerkhoff, et al 2025; Ho & Dimmock, 2023).

The emergence of gamified learning tools reflects a broader pedagogical shift towards student-centered learning. Digital applications like Quizizz are increasingly used not only to make learning more engaging but also to provide immediate feedback, which is vital for knowledge retention and motivation (Zhang & Crawford, 2024; Anak Yunus & Hua, 2021). Empirical data show that such platforms can increase student participation by up to 80% (Chen, et al 2022; Abdelrady & Akram, 2022). Nevertheless, the implementation of these tools remains uneven due to technological constraints, teacher readiness, and curriculum rigidity. In the context of madrasas, which often straddle traditional and modern educational systems, the use of digital assessment platforms like Quizizz represents both a challenge and an opportunity (Fatmawati, 2020; O'Connor, et al 2023).

Several previous studies have examined the use of Quizizz in language learning contexts. For instance, research by Pham (2023) found that Quizizz improved learning outcomes in English language classes through its interactive features and instant feedback. Similarly, Ati, et al (2025) showed that gamified learning tools positively affect student motivation in Islamic education subjects. However, most of these studies focused on general classroom contexts, without specifically analyzing how digital formative assessment tools operate within the unique cultural, religious, and pedagogical settings of madrasas.

Other studies have explored the benefits of gamification in learning, such as increased motivation, better cognitive engagement, and improved retention of material (Al-Khresheh, 2025; Smirani & Yamani, 2024). However, few have investigated how gamified formative assessment is implemented in madrasah-based education, particularly in Indonesia. This represents a gap in the literature, as the contextual adaptation of such tools may vary significantly based on institutional values, student characteristics, and infrastructure conditions.

Moreover, while some researchers have evaluated the impact of Quizizz on cognitive learning outcomes (Zainudin & Zulkiply, 2023), there is still limited research focusing on its role in shaping students' affective and behavioral engagement, especially in faith-based schools. This indicates a need for more

comprehensive studies that go beyond academic performance metrics to include learner perception, motivation, and classroom participation.

This study aims to fill that gap by providing a contextualized analysis of how gamified formative assessment through Quizizz enhances student learning outcomes in madrasas. Unlike general studies, this research focuses on the sociocultural learning environment of MTs Attaqwa Putri, a typical example of a religious-based school in Indonesia that is navigating the integration of digital tools within its curriculum. It provides not only empirical findings but also insights into the challenges and possibilities of digital transformation in traditional learning institutions.

The novelty of this study lies in its focus on madrasah-based implementation of gamified formative assessment. It explores how Quizizz, a widely available gamification tool, can support formative evaluation practices that align with the pedagogical goals of Islamic educational institutions. This is particularly relevant in the post-pandemic education landscape, where digital resilience and pedagogical innovation are crucial (Sato, et al., 2023; Ossiannilsson, 2022).

Therefore, this research seeks to answer the following: How effective is the use of Quizizz as a gamified formative assessment tool in improving student learning outcomes at madrasas? It also investigates student perceptions, teacher responses, and the institutional conditions that support or hinder technology integration in assessment practices.

This inquiry is grounded on the theoretical assumption that meaningful evaluation is not limited to summative scoring but includes continuous feedback, learner autonomy, and engagement (Black & Wiliam, 2009). By embedding assessment within an interactive, gamified environment, Quizizz is presumed to fulfill these formative functions more effectively than traditional assessment modes.

The significance of this study lies in its potential to guide educational policymakers, curriculum developers, and madrasah educators in designing more engaging and effective assessment strategies. As digital learning becomes more prevalent, this research provides a timely contribution to the growing body of knowledge on gamified assessment in faith-based and culturally specific educational contexts.

METHOD

This study employed a qualitative approach with a case study design to explore the implementation of Quizizz as a gamified formative assessment tool within a madrasa learning environment. The approach was chosen because it allows for an in-depth understanding of the experiences, perceptions, and behavioral responses of both students and teachers in their natural educational context, aligning with the interpretivist paradigm in educational research (Yin, 2018).

The research was conducted at MTs Attaqwa Putri, a religious-based junior high school (madrasah tsanawiyah) in Indonesia, during the second semester of the 2022/2023 academic year. This site was purposively selected due to its active use of Quizizz as part of the classroom assessment process. The research participants

consisted of 28 seventh-grade students who regularly used Quizizz during classroom activities and two subject teachers who were directly involved in integrating the application into teaching and assessment practices. A purposive sampling technique was used based on participants' involvement in Quizizz implementation, availability, and willingness to take part in the study.

Data collection employed two primary techniques: semi-structured interviews and non-participant classroom observation. Individual interviews were conducted with students and teachers to gather insights into their experiences, perspectives, and views on the effectiveness of Quizizz. The interview protocols were developed based on themes identified in previous research, including learning motivation, feedback, user interaction, and technological challenges. Observations were conducted directly in the classroom setting, focusing on student engagement, classroom dynamics, time management, and interactions involving teachers, students, and the digital media.

The data collected were analyzed using the interactive model of Miles and Huberman (Miles, Huberman, & Saldaña, 2014), which consists of three core steps: data reduction, data display, and conclusion drawing. Data reduction was conducted through coding and categorizing interview transcripts and observation notes to identify emerging themes. These were then displayed in thematic matrices to facilitate interpretation and comparison across data sources. Conclusions were drawn inductively by verifying consistency and convergence of findings. To ensure transparency and traceability in the analysis process, NVivo 12 software was used to assist in the organization and management of qualitative data.

To ensure the credibility and trustworthiness of the findings, the study followed the four criteria proposed by Lincoln and Guba (1985): credibility, transferability, dependability, and confirmability. Techniques such as data triangulation, member checking, thick description, and maintaining an audit trail were applied. Triangulation was achieved by comparing data from different participants and sources, while member checking was used to validate the accuracy of transcripts and interpretations. Thick descriptions were provided to support contextual understanding, and all analytic decisions were documented systematically.

Ethical considerations were carefully addressed in this study. Formal permission was obtained from the school principal, and verbal informed consent was secured from all participants, including parental approval for minors. Participant confidentiality was ensured through the use of pseudonyms, and all participants were given the right to withdraw from the study at any stage without consequence. Through this approach, the study aims to offer a comprehensive understanding of how Quizizz supports formative assessment and improves student learning outcomes in a madrasa setting.

RESULT AND DISCUSSION

RESULT

Implementation of Quizizz in Classroom Settings

Quizizz has been implemented at MTs Attaqwa Putri since the 2022/2023 academic year as part of the school's effort to improve formative assessment practices. Teachers utilize the application to deliver quizzes after each learning session, covering various question types, multiple choice, short-answer, and image-based questions. These quizzes are closely tied to recently taught content and are administered immediately to reinforce understanding. The process allows students to apply their knowledge directly and receive immediate feedback.

During classroom observation, it was evident that students responded actively and enthusiastically when Quizizz was used. They were focused, attentive, and competitive. The teacher began the session by launching a quiz after a short review. Students quickly grabbed their devices, eagerly awaited the game pin, and responded enthusiastically. The atmosphere was more vibrant compared to traditional assessments.

As one student shared: *"Using Quizizz feels like playing a game, but I'm actually learning because I can see my mistakes right away"* (Student 3).

The teacher also commented: *"I can sense more excitement in the class when we use Quizizz. Students are more engaged and less anxious about being tested"* (Teacher 1).

The integration of Quizizz altered the classroom dynamic from a traditionally teacher-centered assessment model to a more participative and student-centered environment. The instant feedback mechanism allowed learners to reflect on their mistakes in real time, while the game-like design created a safe space for formative testing. This setting nurtured a more responsive learning climate, where feedback became a natural part of the learning cycle, not a punitive tool.

Students' Responses toward the Use of Quizizz

Students expressed strong enthusiasm for Quizizz. Based on interviews with 15 students, the majority found it fun, interactive, and effective in helping them understand the material. Many commented that they felt less pressure when doing quizzes through Quizizz, as the format resembled a game rather than a formal exam.

One student noted: *"I usually get nervous during tests, but with Quizizz I feel relaxed and even excited to participate"* (Student 7).

Another added: *"Seeing my name on the leaderboard motivates me to improve my score and learn more"* (Student 2).

The competitive nature of the application, along with its real-time feedback and colorful interface, stimulated intrinsic motivation. Observations supported this, as students who were typically passive during standard evaluations appeared more engaged and willing to answer even difficult questions.

These student responses highlight how gamified assessments can reduce performance anxiety while increasing intrinsic and extrinsic motivation. The playful

design elements lower psychological barriers to testing, especially for students who often struggle in traditional assessment formats. Quizizz transforms assessment into a learning opportunity, rather than a measurement of failure, thus promoting a growth mindset among learners.

Effectiveness of Quizizz as an Evaluation Tool

To measure Quizizz's impact, students' scores before and after its implementation were compared. Before using Quizizz, the average test score was 70. After three months of regular use, the average rose to 82. A deeper analysis of Class VII-A data revealed that students who consistently used Quizizz scored an average of 44.29, while those who did not averaged 39.65.

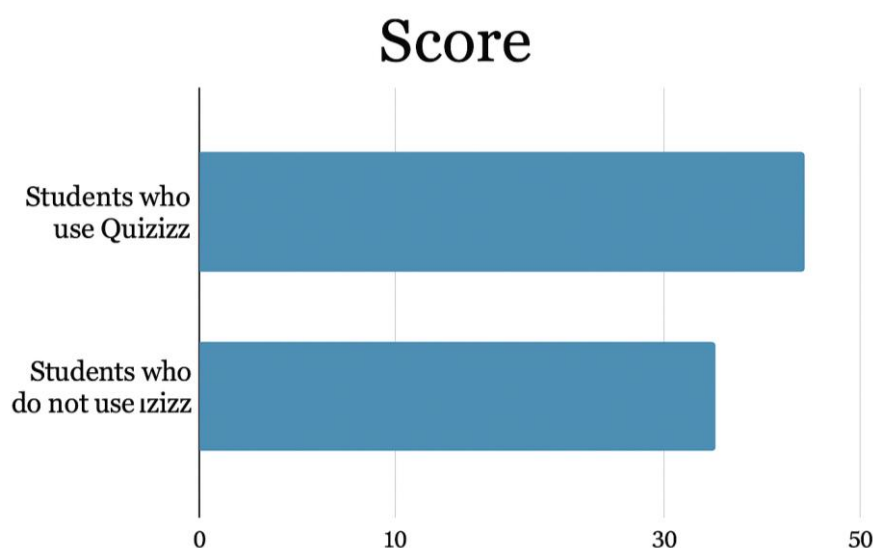


Figure 1. Comparison of Average Scores of Grade 7 Students at MTs Attaqwa Putri in Learning With and Without Quizizz

A teacher reflected: *"With Quizizz, I can clearly identify which students are struggling and which concepts need to be reviewed. It helps me adjust the next lesson accordingly"* (Teacher 2).

One student shared: *"Before Quizizz, I didn't know where I went wrong. Now I can immediately see and fix my mistakes"* (Student 5).

The improvement in scores and learner awareness demonstrates that Quizizz supports both formative and diagnostic assessment functions. The system's ability to track individual progress enables more targeted and adaptive teaching, enhancing personalization in the learning process. The use of data from Quizizz allows teachers to identify learning gaps and respond in real time, an essential characteristic of high-impact formative assessment.

Strengths of Using Quizizz

Quizizz offers multiple advantages. First, the real-time feedback system allows students to reflect and correct errors on the spot. Second, the flexible accessibility enables learners to join quizzes from anywhere with internet access, allowing continuity even during absences.

One student commented: *"When I'm absent, I can still join the quiz from home. It helps me catch up with the class"* (Student 10).

Teachers also found the platform helpful in monitoring progress. The data reports provided after each quiz helped them assess which questions were most challenging and which students needed further support.

"Quizizz gives me detailed results. I use them to plan follow-up exercises and improve weak areas" (Teacher 1).

The pedagogical value of Quizizz lies not only in its engaging format but also in its capacity to support differentiated learning and formative data analysis. It empowers teachers to personalize instruction and empowers students to take control of their own progress. The gamification layer adds enjoyment, but the core functionality enables real pedagogical decisions and self-regulated learning.

Challenges and Limitations

Despite its benefits, Quizizz use at MTs Attaqwa Putri faced several challenges. One of the main issues was unreliable internet access. Some students struggled to complete quizzes due to poor connectivity or technical delays.

"Sometimes the internet is too slow, and I get left behind in the quiz" (Student 12).

Another challenge was the lack of access to personal devices. Not all students owned smartphones or laptops, and some had to borrow devices from friends or family.

"I had to wait my turn to borrow a phone. It made me late to join the quiz" (Student 6).

Teachers also noted that students with low digital literacy needed more support to navigate the application.

These limitations point to the persistent digital divide that undermines equitable access to technology-enhanced learning. While Quizizz offers rich pedagogical features, its effectiveness is constrained by infrastructural limitations. To fully realize the benefits of gamified assessment, schools must address technological readiness, including connectivity, device access, and digital literacy, ensuring that innovation does not widen existing gaps.

DISCUSSION

Quizizz as a Tool for Immediate Formative Feedback

The study revealed that Quizizz facilitates immediate corrective feedback, enabling students to address misconceptions in real-time. This finding aligns with the fundamental principle of formative assessment, which highlights that timely

feedback significantly improves learning outcomes (Black & Wiliam, 2009). Yusof, et al., (2024) argued that even brief, focused feedback delivered promptly supports metacognitive processes, explaining the meaningful score improvement in our study, from an average of 70 to 82. Therefore, Quizizz functions as a powerful instructional tool, seamlessly integrating learning and assessment.

Gamification Enhancing Student Motivation and Engagement

The noticeable increase in student motivation and engagement corresponds with Self-Determination Theory, which posits that attaining feelings of competence, autonomy, and relatedness enhances intrinsic motivation (Ryan & Deci, 2017). The gamified elements within Quizizz, such as leaderboards, timers, and instant scoring, supported these psychological needs by offering a challenge, instant competence feedback, and peer-based comparison. Comparable studies in gamified EFL settings reported boosted engagement, though cognitive depth sometimes lagged (Hoang, 2024). Our study demonstrates strong affective and behavioral engagement; however, to maximize academic gains, follow-up reflections or in-depth tasks are recommended.

Diagnostic Usefulness and Personalized Learning

Data analytics produced by Quizizz enabled teachers to spot learning gaps quickly. This aligns with competency-based education models where ongoing assessment guides individualized instruction. Sagarika, et al., (2021); Kaspi & Venkatraman (2023) meta-analysis further indicates that formative assessment linked to data-driven teaching yields significant academic improvements. In our context, such diagnostic insight empowered teachers to plan targeted interventions, reinforcing the principle that formative tools are not solely evaluative but also instructional.

Reducing Test Anxiety through Gamification

The shift from formal testing to a game-like format lowered student anxiety, supporting Domínguez et al.'s (2013) assertion that gamification encourages risk-taking and fosters a less punitive learning environment. However, Domínguez et al. emphasized that gamified systems risk superficial engagement if not coupled with reflective practices. Thus, while Quizizz creates a psychologically safe learning context, guiding students to analyze mistakes post-quiz is essential to deepen cognitive outcomes.

Structural Barriers: Digital Access and Equity

Although Quizizz offers pedagogical advantages, its effectiveness depended on reliable internet and device access, paralleling global concerns about the digital divide (Van Dijk, 2020). Students with poor connectivity or inadequate devices experienced diminished benefits. This finding underscores the need for infrastructural investment, such as campus Wi-Fi and device provision, to ensure equitable access and prevent digital transformation from exacerbating educational inequality.

The findings of this study underscore the importance of reimagining classroom assessment strategies by integrating gamified digital tools such as Quizizz into regular teaching practice. For educators, the primary implication is the

necessity to move beyond conventional testing models and embrace formative, low-stakes, feedback-rich assessments that motivate students intrinsically. Quizizz, when embedded into lesson plans as a formative activity rather than merely a review exercise, allows students to engage actively with content while fostering autonomy and self-monitoring. However, to maximize its impact, teachers should design complementary instructional activities, such as reflective discussions, group debriefs, and error analysis sessions, to promote metacognitive thinking and prevent shallow engagement. Furthermore, professional development programs should include training on how to use analytics generated by such platforms to inform teaching interventions and support differentiated instruction.

From a policy perspective, the success of Quizizz hinges on equitable digital access across educational institutions. School administrators and education policymakers must prioritize investment in technological infrastructure, particularly in underserved and rural areas where digital inequality is most evident. Provision of reliable internet, school-supported devices, and technical support must be institutionalized if gamified learning is to be implemented sustainably and equitably. Policies should also ensure that digital integration does not widen existing gaps in access to quality education. Instead, it should serve as a means to close learning disparities by equipping all learners, regardless of their background, with equal opportunities to benefit from digital formative assessments. This includes developing clear standards and guidelines for responsible and pedagogically sound technology use in the classroom.

Lastly, educational ministries and curriculum developers should integrate gamified assessment tools into national learning frameworks as part of broader digital learning initiatives. Rather than treating platforms like Quizizz as supplementary or extracurricular, they should be formally recognized as legitimate pedagogical instruments. This would not only validate their use in the eyes of teachers and school leaders but also encourage systematic monitoring, support, and innovation. Future large-scale educational programs could also include partnerships with edtech providers to localize content, align assessments with national competencies, and collect longitudinal data for policy evaluation. In this way, gamified formative assessment can evolve from classroom innovation into a systemic tool for transforming student learning experiences at scale.

CONCLUSION

This study concludes that the integration of gamified formative assessment through Quizizz significantly enhances students' learning experiences in madrasah settings. The platform fosters increased student motivation, active engagement, and improved academic performance by providing real-time feedback and interactive content. Its gamified features, such as leaderboards and instant scoring, contribute to a more dynamic and psychologically safe learning environment, reducing test anxiety and promoting positive attitudes toward assessment.

In addition to its motivational impact, Quizizz also offers pedagogical value through its diagnostic capabilities. Teachers are empowered to monitor student progress, identify learning gaps, and deliver targeted instructional interventions.

These findings validate Quizizz as not only an assessment tool but also a formative instrument that supports personalized and data-informed learning. However, the platform's effectiveness is contingent on adequate digital infrastructure, including stable internet access and student device availability.

The study recommends the institutional adoption of gamified digital assessments like Quizizz as part of regular classroom practice. To maximize learning outcomes, such tools should be complemented with reflective and metacognitive activities. Furthermore, equitable access to technology must be addressed through policy and infrastructure development to ensure all students can benefit from innovative learning technologies. With thoughtful implementation, Quizizz and similar platforms can become powerful agents of pedagogical transformation in 21st-century Islamic education.

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