CENDEKIA
Jurnal Kependidikan dan Kemasyarakatan
P ISSN : 1693 1505
E ISSN : 2477 796X

Cendekia: Jurnal Kependidikan dan Kemasyarakatan
Vol. 23 No. 2 (2025) : 303-323
Available online at https://jurnal.iainponorogo.ac.id/index.php/cendekia

Enhancing Student Participation through Gamification-Based Digital Learning Media: A Study of Structural Gamification

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ARTICLE INFO

Article History:
Received: July 17, 2025
Revised: November 9, 2025
Accepted: December 3, 2025

Keywords:
gamification; student participation; digital learning

ABSTRACT

This study investigates the implementation of digital gamification at MTs Nurul Jadid as a strategy to enhance student participation in learning. With the increasing integration of digital technology in education, gamification offers a promising approach to boost student motivation and engagement. Using a qualitative case study design, this study examines key gamification elements, including point systems, levels, and leaderboards, within teaching and learning activities. The findings reveal that gamification positively influences students' intrinsic motivation, leading to increased participation in discussions, questions, and interactions with teachers. This approach fosters a more interactive and enjoyable classroom environment, promoting intensive collaboration and social interaction among students, while improving teacher-student relationships. Consequently, learning extends beyond knowledge transfer to active peer collaboration and mutual support. The study contributes valuable insights toward developing gamification-based learning models suitable for Islamic boarding schools and other educational institutions, aiming to improve learning effectiveness in line with contemporary educational trends.

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How to Cite:
Aisyah, Nur, Ratna Rufaida, Fathor Rozi, and Alma Vorfi Lama. "Enhancing Student Participation through Gamification-Based Digital Learning Media: A Study of Structural Gamification." *Cendekia: Jurnal Kependidikan dan Kemasyarakatan* 23, No. 2 (2025): 303-323.
https://doi.org/10.21154/cendekia.v23i2.11640

INTRODUCTION

Advances in digital technology have changed the paradigm of education, demanding more responsive, interactive, and collaborative learning models.[1] Generation Z, who grew up in the digital era and are very familiar with technology, requires an educational approach that integrates academic demands with digital habits.[2] However, the reality in Islamic boarding school-based educational institutions reveals that student involvement remains relatively low. This is due to the dominance of conventional approaches that have not utilized technology's full potential, resulting in their inability to stimulate student motivation and active participation in learning. Students tend to be passive and less deeply involved in the learning process. Whereas Jawad Abbas,[3] Argues that active participation is one of the important indicators in determining the effectiveness of the educational process. Therefore, innovative and contextual pedagogical strategies are needed to create an engaging, relevant, and in-line learning experience with the development of today's digital ecosystem.

Digital-based structural gamification offers a pedagogical solution to enhance student engagement in Islamic boarding schools. Unlike conventional games, this approach embeds game mechanics-such as points, levels, missions, badges, and leaderboards- in a planned into planned learning activities, thereby triggering intrinsic motivation, healthy competition, and a goal-oriented mindset.[4] Research on it is crucial because it plays a dual role: (1) updating teaching methodologies that are in line with the digital era, and (2) expanding the theoretical basis of modern learning that is relevant for Generation Z.[5] By using gamification, educators can transform the classroom into a fun and participatory space, fostering independent, discovery-based learning. The research results are expected to provide operational guidelines for the development of adaptive and sustainable learning media, thereby optimizing student

[1] Patricia Ananga, "Pedagogical Considerations of E-Learning in Education for Development in the Face of COVID-19.," *International Journal of Technology in Education and Science* 4, no. 4 (2020): 310–21; Gerhard Fischer, Johan Lundin, and J Ola Lindberg, "Rethinking and Reinventing Learning, Education and Collaboration in the Digital Age—from Creating Technologies to Transforming Cultures," *The International Journal of Information and Learning Technology* 37, no. 5 (2020): 241–52; Abid Haleem et al., "Understanding the Role of Digital Technologies in Education: A Review," *Sustainable Operations and Computers* 3 (2022): 275–85.

[2] Mamdouh Alenezi, Saja Wardat, and Mohammed Akour, "The Need of Integrating Digital Education in Higher Education: Challenges and Opportunities," *Sustainability* 15, no. 6 (2023): 4782; Roger McHaney, *The New Digital Shoreline: How Web 2.0 and Millennials Are Revolutionizing Higher Education* (Taylor & Francis, 2023); Majid Wajdi et al., "Profile of Generation Z Characteristics: Implications for Contemporary Educational Approaches," *Kajian Pendidikan, Seni, Budaya, Sosial Dan Lingkungan* 1, no. 1 (2024): 33–44.

[3] Jawad Abbas, "HEISQUAL: A Modern Approach to Measure Service Quality in Higher Education Institutions," *Studies in Educational Evaluation* 67 (2020): 100933; Nada J Alsaleh, "Teaching Critical Thinking Skills: Literature Review.," *Turkish Online Journal of Educational Technology-TOJET* 19, no. 1 (2020): 21–39; Asep Kusmawan et al., "The Relationship between Teacher Involvement in Curriculum Development and Student Learning Outcomes," *International Journal of Educatio Elementaria and Psychologia* 2, no. 1 (2025): 1–12, https://doi.org/https://doi.org/10.70177/ijeep.v1i4.1086.

[4] A Christopoulos and S Mystakidis, "Gamification in Education. Encyclopedia 2023, 3, 1223–1243," 2023; Athanasios Christopoulos and Stylianos Mystakidis, "Gamification in Education," *Encyclopedia* 3, no. 4 (2023): 1223–43; Fan Zhao, "Gamification Design," in *User Experience Methods and Tools in Human-Computer Interaction* (CRC Press, 2024), 373–441.

[5] Diana-Margarita Córdova-Esparza et al., "Active Learning Strategies in Computer Science Education: A Systematic Review," *Multimodal Technologies and Interaction* 8, no. 6 (2024): 50; Hui Li and Muzhi Zhang, "Museum Game-Based Learning: Innovative Approaches from a Constructivist Perspective," in *Frontiers in Education*, vol. 10 (Frontiers Media SA, 2025), 1576207; Kimberly Rudd Parks, "A Phenomenological Study of Teachers' Experiences with Educational Gamification and Its Impact on Student Engagement in the Middle School Math and Science Classroom," 2023.

participation and achievement in the ever-growing education ecosystem. The implication is that Islamic boarding schools can maintain the relevance of the curriculum while fostering 21st-century competencies, including critical thinking, collaboration, and digital literacy.

At MTs Nurul Jadid, Probolinggo, East Java, despite previously facing challenges in implementing technology in education, the school has successfully demonstrated significant progress through the implementation of game-based learning (gamification). While initially teaching methods tended to be conventional with limited use of technology, MTs Nurul Jadid successfully transformed its approach by using digital platforms such as Kahoot! to increase student interactivity and engagement. The implementation of a points system, levels, and learning challenges has proven to have a measurable positive impact, increasing student motivation and developing their cognitive and affective abilities. The effect of this success is immediately evident in students who are now more active in class discussions and more confident in expressing their opinions. This success is also reflected in improved academic achievement, with student test scores rising significantly and more students able to solve problems previously considered difficult. Teachers who initially had a limited understanding of technology are now more skilled in utilizing educational technology after participating in the provided training. With this achievement, MTs Nurul Jadid has not only succeeded in improving the quality of education and student participation but also demonstrated its commitment to supporting the achievement of 21st-century competencies, while maintaining religious values as the basis of education in Islamic boarding schools, and proving that technological innovation can go hand in hand with the principles of character-based education and spirituality.

Recent research consistently shows that gamification is an effective pedagogical strategy in improving the quality of learning, especially in terms of intrinsic motivation, emotional engagement, and learning outcomes. A meta-analysis conducted by Cigdem et al., [6], found that the use of gamification elements such as points, badges, and leaderboards significantly increased student attendance and participation in online learning. Similar findings were also put forward by Doyle,[7] who showed that this strategy can strengthen the memory of the material and encourage active student involvement. This confirms that gamification not only presents entertainment aspects but also forms productive learning behavior. In addition, studies by Hilman,[8] dan Rafsanjani et al.,[9] highlight the potential of gamification in Islamic religious learning.

However, there are some negative impacts associated with the use of gamification. First, relying too much on gamification elements can cause students to focus more on rewards rather than on the actual learning, which might decrease their motivation to learn

[6] Harun Cigdem et al., "Unlocking Student Engagement and Achievement: The Impact of Leaderboard Gamification in Online Formative Assessment for Engineering Education," *Education and Information Technologies*, 2024, 1–26.

[7] Terry Doyle, *Helping Students Learn in a Learner-Centered Environment: A Guide to Facilitating Learning in Higher Education* (Taylor & Francis, 2023).

[8] Cecep Hilman, "Digital-Based Islamic Religious Education: A New Orientation in Enhancing Student Engagement and Spiritual Understanding," *The Journal of Academic Science* 2, no. 1 (2025): 53–65.

[9] Toni Ardi Rafsanjani, M Abdurrozaq, and Fauziah Inayati, "Islamic Religious Learning in the Digital Age: An Interactive Method for Generation Z," *Solo International Collaboration and Publication of Social Sciences and Humanities* 2, no. 03 (2024): 304–15.

without rewards. Second, the competitive aspects of gamification can make some students feel frustrated or discouraged when they are always behind, lowering their confidence and creating a less supportive learning environment. Lastly, implementing gamification requires extra time and resources to develop and manage, which might not be feasible for all teachers or schools, especially those with limited resources.[10]

In addition, a recent study by Sampurna & Jannah emphasized that the implementation of gamification in Islamic-based education, such as Islamic boarding schools, must pay attention to the integration of local religious and cultural values in order to be effective.[11] Their research on madrasas shows that gamification elements developed with a sharia approach, such as a reward system that encourages good morals, a leaderboard based on contributions in religious activities, and a game narrative that contains spiritual values, have been proven to be able to increase learning motivation without shifting the main goals of Islamic education. This finding reinforces the urgency of designing gamification that is not only visually appealing and interactive but also in line with the ethos of knowledge and spirituality typical of Islamic boarding schools. However, most research remains focused on general formal education and has not targeted the unique context of Islamic boarding schools, which have their distinct learning dynamics.

Although numerous studies have highlighted the role of Islamic boarding schools (*pesantren*) as institutions that integrate religious, disciplinary, and Indonesian cultural dimensions, most previous research has been limited to the institutional aspects and moral character of students. The study of classroom learning dynamics, particularly as it relates to the learning styles of the digital generation, has yet to receive adequate attention. Therefore, this study does not merely attempt to fill a gap in the literature but also engages in critical dialogue with previous research. This study seeks to critique the limitations of conventional approaches to Islamic boarding school learning and offers improvements by examining students' learning motivation through the perspective of Self-Determination Theory. This theory emphasizes that intrinsic motivation develops optimally when the basic needs for autonomy, competence, and social connectedness are met, dimensions often overlooked in traditional Islamic boarding school learning practices. Tsai et al. said that digital gamification can facilitate all three through task selection, a point-level feedback system, and a collaborative leaderboard.[12] Thus, gamification becomes a relevant strategy to increase students' motivation and participation. This study aims to empirically test the effectiveness of structural gamification at Nurul Jadid Islamic Boarding School, thereby filling a literature gap and offering a contextual, participatory, and digital-era Islamic education model. The findings are expected to contribute to the development of technology-based learning media, enrich learning theories in Islamic boarding school environments, and provide practical

[10] A Christopoulos and S Mystakidis, "Gamification in Education. Encyclopedia 2023, 3, 1223–1243," 2023; Athanasios Christopoulos and Stylianos Mystakidis, "Gamification in Education," *Encyclopedia* 3, no. 4 (2023): 1223–43; Fan Zhao, "Gamification Design," in *User Experience Methods and Tools in Human-Computer Interaction* (CRC Press, 2024), 373–441.

[11] Sampurna, Putranta Cahaya, and Putri Nur Jannah, "Reconstructing Islamic Pedagogy: A Critical Analysis of Traditional and Modern Teaching Approaches," *Journal of Islamic Studies and Educational Innovation* 1, no. 1 (2025): 42–68.

[12] Tsai-Hsuan Tsai et al., "Running on a Social Exercise Platform: Applying Self-Determination Theory to Increase Motivation to Participate in a Sporting Event," *Computers in Human Behavior* 114 (2021): 106523.

guidance for teachers in designing innovative gamification-based learning activities.

This research has significant urgency in facing the challenges of digital learning transformation in Islamic boarding schools, which are educational institutions that integrate religious values, discipline, and culture. The low level of active participation of students is expressed in various studies.[13] It not only has an impact on the decline in learning outcomes but also hinders the achievement of holistic educational goals. In this context, digital-based structural gamification can be an innovative solution that combines elements of competition, interactivity, and entertainment, without disregarding the Islamic values that form the basis of education in Islamic boarding schools. However, empirical research that systematically examines the application of gamification in Islamic boarding schools is still very limited. Therefore, this research is important in designing an adaptive learning model that is not only driven by technological developments, but also contextual to the needs and dynamics of Islamic boarding school education. It is hoped that the findings of this study will serve as a practical guide for educators in implementing effective digital strategies, while also providing theoretical contributions to the development of more participatory and relevant Islamic education in the digital era.

This study evaluates the effectiveness of digital-based structural gamification in increasing student participation at the Nurul Jadid Islamic Boarding School. The main objectives are: (1) to assess the extent to which the planned gamification design on digital media encourages the active involvement of students in formal learning; (2) to identify the most influential game elements—points, levels, challenges, leaderboards, badges—in the context of the Islamic boarding school; and (3) to examine their impact on learning motivation and classroom interaction. Through a mixed approach, this study not only maps the roots of low participation but also offers measurable and contextual technological solutions. The results are expected to serve as a basis for the development of innovative learning media that align with the character of the digital generation, while enriching the Islamic education model to be more adaptive, participatory, and meaningful, without compromising the Islamic values that are the core of the curriculum.

This study begins with the premise that digital-based structural gamification has the potential to increase student participation in formal learning within Islamic boarding schools. Preliminary studies indicate that the integration of points, levels, challenges, and rewards, which are systematically designed, stimulates intrinsic motivation while creating a more interactive and enjoyable learning environment.[14] In institutions characterized by high routine and discipline, this strategy is seen as a bridge between classical teaching traditions

[13] Olateju Temitope Akintayo et al., "Evaluating the Impact of Educational Technology on Learning Outcomes in the Higher Education Sector: A Systematic Review," *International Journal of Management & Entrepreneurship Research* 6, no. 5 (2024): 1395–1422; Fischer, Lundin, and Lindberg, "Rethinking and Reinventing Learning, Education and Collaboration in the Digital Age—from Creating Technologies to Transforming Cultures"; Riza Rahmawati, Rosita Rosita, and Masduki Asbari, "The Role and Challenges of Islamic Religious Education in the Age of Globalization," *Journal of Information Systems and Management (JISMA)* 1, no. 1 (2022): 6–11.

[14] Elaine Clanton Harpine, "Creating an Intrinsically Motivating Learning Environment: Promoting Student Engagement and Intrinsic Motivation," in *Service Learning in Higher Education: From Pedagogy to Practice* (Springer, 2024), 59–76; Judith L Meece, "The Role of Motivation in Self-Regulated Learning," in *Self-Regulation of Learning and Performance* (Routledge, 2023), 25–44.

and the preferences of a technology-savvy digital generation. In addition, the integration of game mechanics enables educators to monitor learning progress through analytical data, allowing for more precise and personalized pedagogical interventions.[15] The research is expected not only to address the problem of low student involvement but also to formulate an adaptive and sustainable learning model. The final findings are expected to serve as the basis for innovation in Islamic boarding school curricula, strengthen the relevance of Islamic education in the digital era, and enhance the competitiveness of graduates in the modern job market, which demands technological literacy and online collaboration.

RESEARCH METHOD

This study employed a qualitative research approach with a case study design. It aims to explore in depth the optimization of gamified learning media use to increase student participation at MTs Nurul Jadid. This approach was chosen because it allowed researchers to analyze the phenomenon in detail in a specific context, namely the application of digital-based gamification in the learning process. Furthermore, a case study offers a deeper understanding of the experiences and results achieved by students and teachers when using gamification as a learning method. The study took place at MTs Nurul Jadid, a madrasah that has implemented technology in learning and seeks to optimize the use of digital media to increase student participation. This study focuses on 8th-grade students as the material objects to be studied.

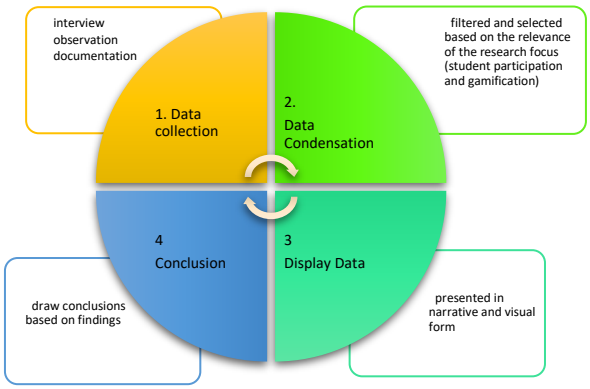

Figure 1. The Data Collection Stages

The sources of information in this study consisted of three main informants, namely the principal, two religious teachers, and 29 eighth-grade students. The eighth-grade students were the main subjects who provided information about their perceptions of the use of

[15] Javier Fernandez-Rio and Damian Iglesias, "What Do We Know about Pedagogical Models in Physical Education so Far? An Umbrella Review," *Physical Education and Sport Pedagogy* 29, no. 2 (2024): 190–205; Alexandra Martín-Rodríguez and Rubén Madrigal-Cerezo, "Technology-Enhanced Pedagogy in Physical Education: Bridging Engagement, Learning, and Lifelong Activity," *Education Sciences* 15, no. 4 (2025): 409; Valentine Joseph Owan et al., "Exploring the Potential of Artificial Intelligence Tools in Educational Measurement and Assessment," *Eurasia Journal of Mathematics, Science and Technology Education* 19, no. 8 (2023): 2307.

gamification in learning and its impact on their participation. The data collection process was conducted through direct observation in class, semi-structured interviews with key informants, and documentation related to the implementation of gamification, including teaching materials and screenshots of the applications used. The data collected will be analyzed through four stages, starting with data collection to obtain complete information, followed by data condensation to filter and select relevant information. The data is then presented in the form of a data display to facilitate understanding. Finally, the results are drawn by analyzing and integrating the findings to draw comprehensive conclusions.

RESULT AND DISCUSSION

To support readers' understanding of the patterns that emerged in the field, the study presents its findings through visual illustrations. These graphics do not serve as statistical measurements but as interpretive tools that help clarify the qualitative insights gained from observations, interviews, and field notes. The visualizations depict how students' behaviors, interactions, and learning engagements shifted after the introduction of gamification. Each graph is accompanied by a descriptive explanation that interprets these changes based on the lived experiences of the students and teachers, reinforcing the themes identified during the analysis.

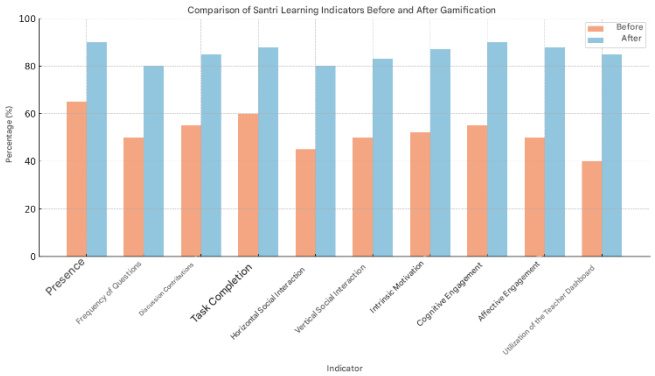

Figure 2. Comparison Graph of Student Learning Indicators Before and After Using Gamification

According to Figure 2, the results of this study indicate that the systematic application of digital gamification schemes has successfully increased student engagement in three primary domains. In the behavioral engagement domain, students showed significant changes in attendance and participation. Teachers noted that students arrived in class earlier, asked questions more often, and completed assignments on time because they were motivated by the point and level system. In the cognitive domain, students demonstrated more independent and persistent thinking patterns. From in-depth interviews, they stated that the challenges and missions in gamification made them want to continue to deepen their understanding of the material and not give up easily. Meanwhile, in the affective domain, researchers observed an increase in interest and enthusiasm for learning. Students showed expressions of joy when they received badges or rewards, and they expressed that learning felt more enjoyable than with the previous method.

Thus, the comparative graph shown is not the result of formal numerical calculations, but a visual representation of thematic findings that show a pattern of increased student engagement before and after gamification. The graph helps clarify the qualitative narrative that gamification not only changes learning behavior but also affects motivation, social interaction, and sense of belonging in the learning community.

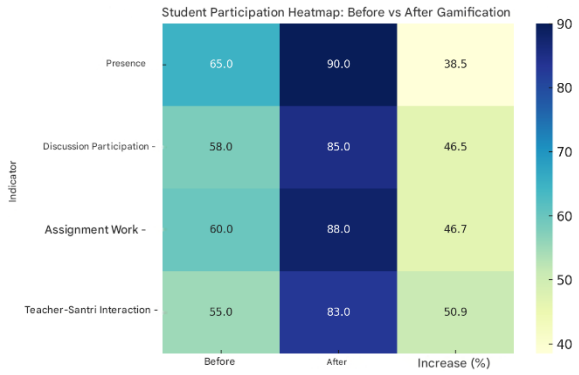

Figure 3. Student Participation Heatmap: Before and After Using Gamification

Figure 3 illustrates changes in student participation obtained through observation and interviews in this qualitative study. The heat map provides a visual illustration that confirms the field findings that gamification encourages increased attendance, participation in discussions, task completion, and teacher-student interaction. The results of the observation show that students arrive earlier and are better prepared for lessons after the points and levels system is implemented. Teachers noted spontaneous responses, courage to ask questions, and more active discussions. In learning tasks, students were more diligent in completing missions and collaborated more often to understand the material. Tasks were understood as interesting challenges, not just obligations. Teacher-student interactions also developed into more open dialogues. Students felt comfortable asking for explanations, while teachers could adjust the material based on the needs observed during the gamification process. Overall, these qualitative findings show that gamification creates a more lively and collaborative learning atmosphere without eliminating the values of Islamic boarding schools. In fact, cooperation, manners, and a spirit of togetherness are strengthened, making gamification relevant for learning in the digital age.

Increasing student participation

Increasing student motivation and engagement in learning involves creating an environment that encourages students to actively participate, demonstrate enthusiasm for the material, and increase their efforts in the learning process. In the field, this can be measured through student attendance rates, involvement in class discussions, interactions with classmates and teachers, and their responses to the learning methods applied. Digital-based gamification, which incorporates game elements such as points, levels, and challenges, aims to stimulate students' intrinsic motivation, to increase their participation in the learning process, and enhance their emotional engagement with the material being taught.

The first informant, a teacher at Nurul Jadid Islamic Boarding School, provided insight into the positive impact of gamification in increasing student motivation and engagement. The teacher stated, "Students become more motivated when they are challenged and rewarded. Previously, they tended to be less active, but now, with the point system and leaderboard, they compete to get more points and occupy the top position." This indicates that the competitive element in learning motivates students to achieve more, resulting in increased participation and engagement in class.

The second informant, a grade VIII student, expressed the positive experience they felt after gamification in learning. Initially, I was not too interested in the lesson, but after a point system and challenges were introduced, I became more enthusiastic about participating in class. I felt appreciated when I completed the challenge and got points," said the student. This indicates that students experience a significant change in their motivation to learn following the implementation of gamification. The researcher interpreted that the use of gamification is effective in stimulating students' intrinsic motivation by providing challenges that align with their abilities and offering rewards for the efforts made.

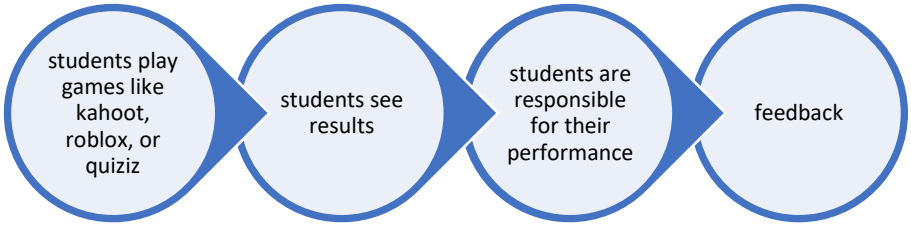

Figure 4. Gamification Learning Stages

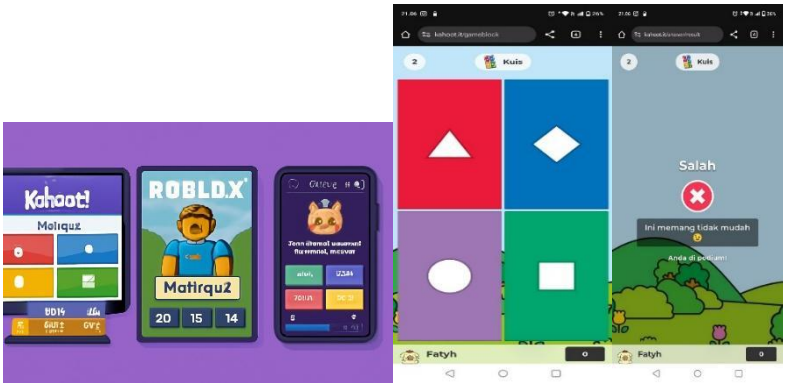

Figure 5. Kahoot Platform

Figures 4 and 5 show that this increase in student motivation and engagement began with the implementation of gamification, which integrates game elements into learning. Gamification motivates students by providing challenges that are appropriate to their ability level, which then encourages them to try harder to complete the task. The points and rewards system implemented increases the sense of competition between students, which in turn increases their engagement in learning. This is seen in the change in student attitudes from

previously passive to more active participants in class. Elements such as levels and challenges make students feel more emotionally involved in learning because they can see the progress they have made and feel appreciated.

Observation results showed that students asked more questions, engaged in discussions, and demonstrated greater interest in the subject matter after the implementation of gamification. They were more active in discussion groups and appeared more enthusiastic in completing the tasks given. The leaderboard system, which motivated students to compete with their friends, also increased their motivation to focus more on learning. In addition, students showed a more positive attitude towards the lesson because they felt appreciated for their efforts, which in turn increased their emotional involvement in the learning process. The researchers interpreted that gamification succeeded in creating a fun and challenging learning environment, making students feel more enthusiastic about getting involved.

The implementation of gamification has successfully increased students' motivation and engagement in the learning process. Students who previously tended to be passive and less motivated now feel more challenged and enthusiastic in following the lessons. This is reflected in their increased activity in class discussions and more positive responses to the material presented. With the point and reward system, students feel appreciated for their efforts, which encourages them to strive for even greater achievements. Overall, the implementation of gamification has a significant positive impact on students' intrinsic motivation and emotional engagement in learning.

Gamification effectively increases students' motivation and engagement in learning. Students who engage in a challenge-based game system are more likely to participate actively in discussions and complete assignments. They feel more emotionally involved, as gamification rewards their efforts. This pattern demonstrates that gamification effectively creates a more dynamic and interactive learning environment, where students feel valued and motivated to improve their performance. This increase in motivation, driven by competitive elements and rewards, also strengthens their engagement in every aspect of learning.

Increased social interaction

Increasing social interaction in the context of gamification-based learning involves enhancing the quality of communication and collaboration among students, both among themselves and with their teachers. Social interaction is measured by the frequency with which students participate in group discussions, share ideas, collaborate on assignments, and engage in active communication with classmates and teachers. In gamification-based learning, social interaction can occur through features such as group challenges, leaderboards, and collaboration in achieving common learning goals. This increase in social interaction is expected to create a more dynamic learning environment, where students not only focus on individual tasks but also help and support one another in the learning process.

Table 1. Interviews on the Use of Gamification Learning

Interview Excerpts	Indicator	Informant
"I find it easier to communicate with friends when playing games in groups. We give each other ideas to complete the task."	Collaboration in groups	Class VIII Students (Inayah)
"With the leaderboard, we interact with each other more often, either to ask questions or discuss the material."	Social interaction between students	Class VIII Students (Az Zahra)
"I can observe that students are more active in class discussions after using this gamification application."	Improved class discussions	Learning Teacher (Ms. Fina)
"Gamification makes me talk and collaborate with my friends more often, not only in class but also outside of class."	Collaboration and communication	Class VIII Students (Ruaifah)

From Table 1, it can be seen that the use of digital-based gamification has succeeded in increasing social interaction in the classroom. The first excerpt indicates that students find it easier to communicate with their friends when working in groups, as they share ideas more frequently to complete tasks. This demonstrates that gamification has successfully created a more collaborative environment, where students not only focus on individual tasks but also work together in groups to achieve common goals. The second excerpt also confirms that the leaderboard system encourages students to interact more frequently with one another, both to discuss the material and to ask questions. This indicates that the competitive element in gamification not only increases motivation but also strengthens social relationships between students.

Furthermore, interviews with teachers revealed a significant increase in class discussions following the implementation of gamification. Teachers observed that students were more actively participating in discussions, a phenomenon that was previously rare. This suggests that gamification not only impacts students in a group context but also motivates them to be more engaged in class discussions overall. The last excerpt from students indicated that gamification expanded their social interactions, not only limited to in-class activities, but also continued outside the classroom. Students felt they were talking and working together with their friends more often in completing the tasks given, which further strengthened their social collaboration. This leads to the understanding that gamification plays a crucial role in creating an environment that supports social interactions more broadly, not only in the classroom but also in daily learning activities.

The implementation of gamification in the classroom demonstrates that students are not only more engaged in interacting with their peers but also with their teachers. Students are often seen discussing in groups, sharing ideas, and collaborating to complete the challenges given. Researchers observed an increase in communication between students, which had previously been limited to minimal conversation, becoming more dynamic and open. Teachers are also more actively involved in facilitating class discussions, providing

faster and clearer feedback, and creating space for students to express their opinions. Researchers believe that gamification fosters a more collaborative learning environment, where social interaction becomes an integral part of the learning process.

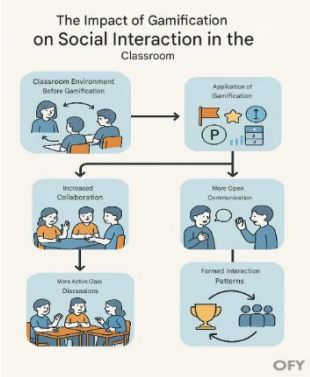

Figure 6. The Impact of Gamification

Overall, the data indicate that gamification effectively enhances social interaction in the classroom. Increased collaboration in groups, communication between students, and more active class discussions are evidence that the elements in gamification not only increase student motivation but also strengthen their social relationships. Students become more open in sharing ideas and working together, both in and out of class. This demonstrates that gamification not only facilitates individual learning but also enhances social interaction among students and between students and teachers. Thus, gamification can be considered an effective strategy for creating a more interactive and collaborative learning environment.

The patterns emerging from these data suggest that gamification increases social interaction by creating a competitive and collaborative atmosphere in the classroom. Students who engage in group challenges and compete on leaderboards interact more frequently with each other to discuss and complete assignments. Additionally, gamification encourages students to communicate more openly with their teachers and peers. These patterns demonstrate that gamification not only influences individual motivation but also fosters social relationships among students, which is crucial for creating a productive and collaborative learning environment.

Positive response from teachers and students

Positive responses from teachers and students in gamification-based learning refer to attitudes and reactions that indicate acceptance and satisfaction with the learning methods employed. In this context, positive responses are measured through feelings of satisfaction, increased motivation, and appreciation of gamification elements such as challenges, point systems, and leaderboards. Teachers and students who exhibit positive responses tend to feel more motivated and enthusiastic about following and teaching lessons, and appreciate the interactions created through games. Therefore, these positive responses reflect the effectiveness of gamification in creating a fun and engaging learning atmosphere for all parties involved.

The first informant, a teacher at Nurul Jadid Islamic Boarding School, gave a positive response regarding the implementation of gamification in learning. "I saw a big change in students after gamification was implemented. They were more active and enthusiastic in following the lessons, especially because of the points and rewards system. I feel that this method is very effective in increasing their attention to the material being taught," said the teacher. The researcher interpreted that teachers felt that gamification not only increased student engagement but also created a more enjoyable learning atmosphere. The points and rewards given to students created a sense of appreciation, which in turn increased their motivation to participate more actively in class.

The second informant, a grade VIII student, expressed their positive response to the use of gamification in learning. "I feel more challenged and more enthusiastic about learning after using the gamification application. I can see my progress through the points I get, and that makes me more motivated to keep trying," said the student. The researcher interpreted that this student's response demonstrated how gamification successfully increased their intrinsic motivation. With measurable rewards and achievements through points and challenges, students feel more appreciated and encouraged to strive for improvement in their learning. This reflects a positive response to the method applied, where students feel more involved and motivated.

The flow associated with this positive response began with the implementation of gamification, which integrated game elements into the learning process. Teachers and students then experienced significant changes in their attitudes towards the lesson. Students who were previously less active became more motivated because they felt valued with the points and rewards system. Teachers also observed a notable increase in student engagement, resulting in a positive response to the gamification method. With the challenges and competitions created through the leaderboard, students felt more motivated to excel, which ultimately strengthened the relationship between teachers and students. Gamification made a positive contribution to creating a more interactive and enjoyable learning atmosphere.

Observations made by researchers revealed a significant increase in positive responses from students and teachers following the implementation of gamification. Students appeared to be more engaged in the learning process, asking questions and responding to the material being taught. They also appeared more enthusiastic in following each challenge given. Teachers also felt the positive impact of this method because students were more focused and interested in the lesson. Researchers interpreted that gamification succeeded in creating a more dynamic and enjoyable classroom atmosphere, which made students feel more appreciated and motivated to contribute to the learning process.

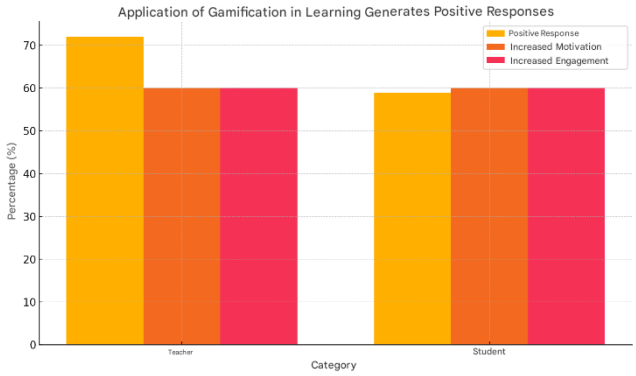

Figure 7. Positive Impact of Gamification

Overall, Figure 7 indicates that the implementation of gamification in learning yielded significant positive responses from both teachers and students. Teachers felt that students were more active and enthusiastic in following the lessons, while students reported increased motivation due to the point and reward system. With gamification, students felt more appreciated for their efforts, leading to increased engagement in learning. The implementation of this method created a more enjoyable and engaging learning atmosphere, which in turn strengthened the positive relationship between teachers and students.

The patterns emerging from these data suggest that gamification effectively elicited positive responses from both students and teachers. Students who engaged in the challenge-based and reward-based game system were more active participants in class, showed greater interest in the material being taught, and felt appreciated for their efforts. Teachers also felt that gamification made learning more interesting and enjoyable, which in turn increased student engagement. These patterns suggest that gamification successfully created a positive learning environment and increased student motivation and engagement.

DISCUSSION

This study revealed that the implementation of digital-based gamification at MTs Nurul Jadid can significantly increase student participation, social interaction, and positive responses from teachers and students. This finding aligns with previous studies, which have shown that gamification can enhance student engagement in learning. For example, a study conducted by Mahmud et al.,[16] Ramdlani et al.,[17] and Rosidah et al.[18] confirms that gamification elements such as points, levels, and leaderboards can increase students' attendance and active participation in learning activities. Research by Dakir et al.[19] has also

[16] Eka Mahmud et al., "The Effect of Using Edmodo Application on Students' Mastery Skill of Technology," *Journal of Physics: Conference Series* 1899, no. 1 (2021), https://doi.org/10.1088/1742-6596/1899/1/012157.

[17] Maghfur Ramdlani et al., "Distance Learning and Independent Learning of Students in Higher Education," *Journal of Physics: Conference Series* 1899, no. 1 (2021), https://doi.org/10.1088/1742-6596/1899/1/012177.

[18] Rosidah Rosidah et al., "Blended Learning Approach in Arabic Learning," *Journal of Physics: Conference Series* 1779, no. 1 (2021), https://doi.org/10.1088/1742-6596/1779/1/012065.

[19] Dakir, Muhammad Wisolus Sholihin, and Moh. Faisol, "Learning Effectiveness Improvement Through Mobile Learning," *Turkish Online Journal of Qualitative Inquiry* 12, no. 4 (2021): 1661–65; Abd Hamid Wahid et al., "Information Technology in the Development of Language Aspects of Early Childhood,"

shown that gamification enhances students' memory and emotional engagement with the material being studied. However, this study found that the success of gamification implementation is highly dependent on teachers' readiness to use technology and their ability to effectively integrate game elements with relevant subject matter. This differs from studies that emphasize technical aspects without considering the readiness of teaching resources, which is a crucial factor in the context of Islamic boarding schools.

In terms of increasing social interaction, this study showed results that were in line with social learning theory, from Sara De Felice et al. They assert that social interaction plays a crucial role in the learning process.[20] Gamification, with its competition and collaboration mechanisms, strengthens relationships between students and between students and teachers. Previous research by José-María Campillo-Ferrer also revealed that gamification can encourage positive interactions among students.[21] However, this study added that the use of leaderboards and group-based challenges in gamification not only increases motivation but also expands the space for communication and collaboration in learning. The results of this study suggest that gamification can foster a more dynamic classroom atmosphere, where students share knowledge and strategies, both within and outside the classroom.

The positive responses given by teachers and students are also important findings in this study. As stated by Liu[22] and Nguyen-Viet[23], gamification in learning can increase student and teacher satisfaction. This finding is in line with research by Nashmi et al. This study shows that gamification can strengthen students' commitment and interest in the material being studied.[24] However, this study also found that positive responses occurred not only because of the competitive elements but also due to the fast and precise feedback system,

Proceedings of the International Conference on Industrial Engineering and Operations Management, 2021, 6994–7000, https://doi.org/10.46254/an11.20211211; B. R. Rosyadi et al., "Self-Regulation Using Moodle Virtual Learning Environment (VLE) in Solar System Practice," *Journal of Physics: Conference Series* 1779, no. 1 (2021), https://doi.org/10.1088/1742-6596/1779/1/012072.

[20] Sara De Felice et al., "Learning from Others Is Good, with Others Is Better: The Role of Social Interaction in Human Acquisition of New Knowledge," *Philosophical Transactions of the Royal Society B* 378, no. 1870 (2023): 20210357; Thorsten Hennig-Thurau et al., "Social Interactions in the Metaverse: Framework, Initial Evidence, and Research Roadmap," *Journal of the Academy of Marketing Science* 51, no. 4 (2023): 889–913; Thomas K F Chiu, Tzung-Jin Lin, and Kirsti Lonka, "Motivating Online Learning: The Challenges of COVID-19 and Beyond," *The Asia-Pacific Education Researcher* 30, no. 3 (2021): 187–90.

[21] José-María Campillo-Ferrer, Pedro Miralles-Martínez, and Raquel Sánchez-Ibáñez, "Gamification in Higher Education: Impact on Student Motivation and the Acquisition of Social and Civic Key Competencies," *Sustainability* 12, no. 12 (2020): 4822; Yung-Ming Cheng, "How Gamification and Social Interaction Stimulate MOOCs Continuance Intention via Cognitive Presence, Teaching Presence and Social Presence?," *Library Hi Tech* 41, no. 6 (2023): 1781–1801; Chih-Hung Chung and Hui-Ling Wendy Pan, "Assessing the Effects of Flow, Social Interaction, and Engagement on Students' Gamified Learning: A Mediation Analysis," *Sustainability* 15, no. 2 (2023): 983.

[22] Tiezhu Liu et al., "Research on Online Teachers' Training Based on the Gamification Design: A Survey Analysis of Primary and Secondary School Teachers," *Heliyon* 9, no. 4 (2023).

[23] Bang Nguyen-Viet, Cuong Nguyen-Duy, and Bac Nguyen-Viet, "How Does Gamification Affect Learning Effectiveness? The Mediating Roles of Engagement, Satisfaction, and Intrinsic Motivation," *Interactive Learning Environments* 33, no. 3 (2025): 2635–53.

[24] Nashmi Turaikhim Alrashedi et al., "The Effects of Gamified Platforms on Enhancing Learners' Ambition," *Journal of Ecohumanism* 3, no. 8 (2024): 3393–3403; Celia Redondo-Rodríguez et al., "Influence of Gamification and Cooperative Work in Peer, Mixed and Interdisciplinary Teams on Emotional Intelligence, Learning Strategies and Life Goals That Motivate University Students to Study," *International Journal of Environmental Research and Public Health* 20, no. 1 (2022): 547; Ni Putu Wulantari et al., "The Role Of Gamification In English Language Teaching: A Literature," *Journal on Education* 6, no. 01 (2023): 2847–56.

which enables teachers to provide more accurate and personalized assessments. This suggests that gamification can increase teacher satisfaction by providing a more effective tool for managing classes and monitoring student progress.

The findings in this study can be further explained by using the Self-Determination theory developed by Chiu et al.,[25] Kotera et al.,[26] Meece, [27]. They state that students' intrinsic motivation increases when they have control over the activities they do. In this case, gamification elements that give students choices in choosing tasks and provide rewards based on their achievements encourage higher engagement. This is reflected in the increase in student participation, which is evident through their high attendance and the rise in the number of questions and discussions that occur in class. By incorporating competitive and collaborative elements into gamification, students feel more engaged and have a clear purpose in each learning activity.

The increase in social interaction in this study was identified through qualitative analysis of the dynamics of student behavior during the learning process. Assessment was not carried out by counting numbers, but through systematic observation of the intensity of communication, patterns of cooperation, and quality of participation that emerged after gamification was implemented. Gamification, which emphasizes collaboration in group challenges and interaction through leaderboards, encourages students to share knowledge and engage in more discussions with their peers. This fosters a more inclusive learning environment, where students feel motivated to collaborate and support one another in achieving common goals. This study adds to the empirical evidence that gamification not only increases individual motivation but also strengthens social relationships in the classroom.

The positive responses from teachers and students in this study can also be attributed to the use of gamification elements, which provide students with immediate feedback and rewards for their efforts. When students receive points or badges, they feel appreciated for their efforts, which in turn increases their motivation to participate more actively in the learning process. This reinforces the view that gamification can create a more positive and interactive learning environment, where students feel more valued and motivated to strive for excellence. This study also demonstrates that gamification can foster a more positive relationship between students and teachers, facilitating more open communication and enhancing the overall quality of learning.

The primary contribution of this study is to offer new insights into the application of gamification in the context of Islamic boarding schools. This area has not been extensively explored in the educational literature. This study enriches learning theories by providing new perspectives on how gamification can be effectively adapted in religious education environments, particularly in Islamic boarding schools. In addition, this study offers practical guidelines for teachers and educators in Islamic boarding schools to effectively implement gamification, thereby increasing student motivation, enhancing social interaction, and

[25] Chiu, Lin, and Lonka, "Motivating Online Learning: The Challenges of COVID-19 and Beyond."

[26] Yasuhiro Kotera et al., "Motivation of UK Graduate Students in Education: Self-Compassion Moderates Pathway from Extrinsic Motivation to Intrinsic Motivation," *Current Psychology* 42, no. 12 (2023): 10163–76.

[27] Meece, "The Role of Motivation in Self-Regulated Learning."

improving student engagement in learning. These findings have the potential to serve as a reference for the development of digital-based learning models that are more inclusive and relevant to the demands of 21st-century education.

CONCLUSION

This study found that the implementation of digital-based gamification at MTs Nurul Jadid had a positive impact on increasing student participation, fostering social interaction, and eliciting better responses from both students and teachers. Gamification elements, such as point systems, levels, and challenges, proved effective in intrinsically motivating students and creating a more dynamic learning environment. Competitive mechanisms and awards for achievement also played a role in increasing student engagement in the learning process. These findings underscore the importance of updating teaching methodologies to align with technological developments, particularly in meeting the needs of the digital generation, while not neglecting the fundamental values of religious education. The primary contribution of this study is the advancement of knowledge in the field of education, particularly in the implementation of gamification in Islamic boarding schools. Although it provides significant insights, this study is limited to a sample involving only one Islamic boarding school. Further research is recommended to expand the scope of samples in various Islamic boarding schools and conduct long-term research to analyze the effectiveness of gamification in teaching in more depth. Thank you to the Mts Nurul Jadid school and Nurul Jadid Paiton University, Probolinggo, for providing the opportunity and support for this research, as well as to colleagues from Nigeria who have been willing to offer constructive input and meaningful support throughout this research.

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