JOURNAL OF INTERDISCIPLINARY PERSPECTIVES

ISSN Print: 2984-8288, ISSN Online: 2984-8385
Vol. 2, No. 12, pp. 382-390, December 2024

Enhancing the Numeracy Skills of Grade 8 Students through Quizizz: An Interactive Learning Approach for Improved Mathematical Proficiency

Jan Angelo G. Morata
Department of Education - Louella Gotladera Alcoba National High School, Bulan, Sorsogon, Philippines

Author Email: janangelo.morata@deped.gov.ph

Date received: October 18, 2024
Date revised: November 2, 2024
Date accepted: November 17, 2024

Originality: 95%
Grammarly Score: 99%
Similarity: 5%

Recommended citation:
Morata, J.A. (2024). Enhancing the numeracy skills of grade 8 students through Quizizz: An interactive learning approach for improved mathematical proficiency. *Journal of Interdisciplinary Perspectives*, 2(12), 382-390. https://doi.org/10.69569/jip.2024.0581

Abstract. This study aimed to evaluate the effectiveness of Quizizz as a digital game-based learning tool in enhancing the numeracy skills of Grade 8 students at Louella Gotladera Alcoba National High School. Quasi-experimental research designs were employed, and 30 participants underwent pretest and posttest assessments on basic operations involving integers and real-world integer word problems. In this study, using Quizizz as an interactive tool for numeracy lessons was the intervention. Improvement measures in the students' numeracy skills are done by comparing scores for the pretest and posttest assessments. Paired sample t-tests quantitative analysis showed a significant increase in the mean score: from 19.7 (SD = 5.92) for the pretest to 29.2 (SD = 6.63) for the posttest. The t-value is -18.5 with a p-value of <0.001, which means that improvement is significant, and so it rejects the null hypothesis. These findings suggest that integrating game-based platforms like Quizziz can enhance proficiency in numeracy and positively impact students' engagement. Besides the quantitative data, it was supported by the thematic analysis conducted on structured interviews that provided qualitative data about student experiences using Quizizz. The structured interview shows real-time feedback and other competition-related features, like leaderboards, increase engagement and enjoyment. At the same time, the understanding of numerical concepts develops over time for anxious students who want more explicit feedback. Thus, this result indicates that Quizzes will be helpful in the development of numeracy skills because they will attribute an interactive nature to learning and make it more fun. This study supports the idea that digital game-based learning platforms must be integrated into the mathematical education environment to achieve better results for students' development of numeracy skills.

Keywords: Digital game-based learning; Educational technology; Gamification; Interactive learning; Numeracy skills; Quizizz.

1.0 Introduction

In the current environment, the imperative to enhance the numeracy skills of students perhaps calls for urgency more so than ever. Mathematical competency remains essential in any student's educational journey and for solving everyday problems (Nuraini & Humaidi, 2020). However, traditional mathematics instruction tends to fail to strike learners' minds through conventional teaching methods with the potential to demote motivation, resulting in limited learning. This makes teaching method innovation the best way to make learning interactive and exciting. For students with lower mathematical performance, this requires teaching innovative ways. For

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

instance, online gamified learning platforms like Quizizz are being seen as promising tools to enhance student engagement and improve learning outcomes. However, its potential to improve numeracy skills has not been systematically studied.

There is much positive literature about gamified learning platforms in different subjects, such as Quizizz. Studies conducted by Yong and Rudolph (2022) have shown that Quizizz is a great opportunity for power to attract, motivate, and elevate students to achieve better academic results. Most of these studies have focused only on science and linguistic learning, but research concerning how it may specifically affect mathematical ability has received very little attention. Moreover, although gamified learning has been described to encompass positive motivational elements in several prior studies, there is still a rare study regarding the effectiveness of such applications in strengthening core competencies like numeracy skills. Even though related apps such as Kahoot! and Socrative were also researched for their deployment in educational contexts, the comparison shows that Quizizz offers a much more customized learning experience through instant feedback, a student-paced environment, and continuous game mechanics focusing on continuous practice. This unique advantage calls for further study in its application in mathematics instruction.

For instance, the study of Morata and Caballes (2024) showed how ClassPoint, a digital game-based learning platform, can enhance the numeracy of Grade 7 learners in a public secondary school in Sorsogon. Their study sets aside the possibility that digital game-based learning will offer the students an advantage by pointing out the gap in previous research; it did not even compare ClassPoint with other popular learning gamifications, like Quizizz. This creates a gap in our understanding of how other digital tools uniquely contribute or add value to educational outcomes in analogous contexts. In addition, there are few promising findings made by other disciplines and mathematics education fields regarding a systematic study on how Quizizz may improve students' numeracy skills, which are crucial for academic progression. This study seeks to bridge the gap of existing studies by examining the effectiveness of Quizizz as an interactive strategy to enhance numeracy skills among students.

This study aimed to determine whether Quizizz affected students' mathematical proficiency, particularly improving their numeracy skills. Therefore, it attempts to close this knowledge gap by becoming a potential contribution to the presently increasing scientific literature that encompasses new pedagogical approaches regarding how technology could be used to improve learning results. It is crucial to educators wishing to enhance mathematics instruction and policymakers and educational technologists looking to implement successful digital tools in classroom learning.

2.0 Methodology

2.1 Research Design

This quasi-experimental study probed the effectiveness of Quizizz as a learning platform for enhancing numeracy skills among Grade 8 students. Instead, a quasi-experimental design was employed rather than a true experimental design, primarily due to practical and ethical considerations. In this study, the natural grouping of students occurred by classrooms, and they were not assigned randomly. This ensured that the researchers experimented on how the intervention impacted Quizizz under real conditions without sacrificing the nature of a real classroom while at the same time providing fair equity in the treatment of all the students of this study.

Quasi-experimental designs are very apt in educational research, mainly in a school setting, as they are presented as a more practical way through which education intervention effects may be probed under real conditions. This design ensured that student numeracy could be assessed before and after the intervention - pretest and posttest - capture changes because of Quizizz as an instructional tool. By using Quizizz regularly in a classroom, it was possible to assess in this study whether this gamified platform could enhance the students' abilities in basic integer operations and real-life integer word problems. In essence, the pretest/posttest comparison has lit up this potential of the application and hence supports the intent in educational intervention research, being that of design for better numeracy.

2.2 Research Locale

The research was conducted at Louella Gotladera Alcoba National High School, a public secondary school servicing students from various socio-economic backgrounds. The reason for choosing the school was its commitment to integrating technology in teaching inside their classrooms, and it would accommodate the implementation of online platforms like Quizizz. The study was conducted in one of the classrooms where classes of Grade 8 mathematics were held and has the required technological set-up: internet connectivity and available student-friendly devices that can access Quizizz.

2.3 Research Participants

Louella Gotladera Alcoba National High School comprised the grade 8 respondents in the present study. To draw on convenience sampling, 30 students aged 13 to 15 years were selected because they were enrolled in mathematics classes during the research. This sampling method provided a feasible and accessible group. However, convenience sampling can be susceptible to the same kinds of biases that render generalizations challenging - that is, it is not a random selection of participants. To minimize these, an attempt was made to ensure a range of abilities in the sample by including students who varied in their numeracy proficiency levels. Moreover, the fact that the study focused on pretest and posttest assessment helped isolate the effects of the Quizizz intervention across diverse skill levels within the class. Parental consent was obtained from all participants before the study commenced.

For the qualitative component, a sample of 10 students was contacted to undergo structured interviews. The reduced sample was chosen based on some inclusion criteria to ensure relevance. These include willingness to participate in interviews with a subset of students, ability to express experiences with Quizizz, and good representation across different levels of numeracy proficiency.

Overall inclusion criteria for the study were that students must be enrolled in the target mathematics class, have prior foundational knowledge of integer operations, and have parental consent to participate. Exclusion criteria included students with severe absences during the study because their exposure to the intervention through Quizizz would have been minimal, and also students who did not exhibit consistent participation in classroom activities, as their irregular attendance and participation might affect the consistency of their responses.

Although the sampling approach was convenient, it accommodated a representative range of abilities, and the qualitative subset helped provide depth to the quantitative findings by exploring individual experiences and perceptions of Quizizz.

2.4 Research Instrument

This study's primary instruments were pretest and posttest assessments measuring numeracy skills in integer operations and word problems in real-world integer contexts. Tests were developed based on the foundation of numeracy anchored on operations on integers and word problem scenarios involving integers and were specifically designed to assess the skills of interest to this study. Questions were chosen for content validity through collaboration with mathematics education subject matter experts by reviewing the test items against the curriculum standards of numeracy skills. Pretest and posttest questions underwent a pilot test on another group of Grade 8 students to check clarity, appropriateness, and difficulty level, and minor adjustments were made based on the feedback. This process made it possible to establish content validity and reliability; it was set at a satisfactory score obtained on Cronbach's alpha for internal consistency across test items.

Quizizz is an online intervention space supporting both instructional strategies and performance data. More specific aspects of Quizizz features activate student interest and respond to the learning objectives established for these students. Utilized multiple-choice and short answers to help develop integer operations while building skills in working with word problems. All this allows immediate feedback within each question to be comprehensively understood and to encourage further learning. Leaderboards and point-scoring gamification elements also contribute by motivating and engaging people who wish to make learning fun and competitive and build it so that it can aim toward improving numeracy.

For the qualitative strand, structured interview guides collected in-depth feedback from student experiences using Quizizz, including open-ended questions designed to assess students' understanding of the real-time nature of the feedback, perceptions of the leaderboard, and the extent to which this digital tool has affected their confidence and enjoyment of mathematics. The qualitative instrument, too, was reviewed by subject matter experts to ascertain that it focused on all the relevant issues regarding students' engagement with, understanding of, and perceived effectiveness of the chosen digital learning tool.

This study comprehensively evaluated Quizizz's effectiveness in improving the numeracy skills of Grade 8 students by employing both quantitative and qualitative instruments, combining objective performance data with subjective insights into students' experiences.

2.5 Data Gathering Procedure

Data collection was based on four weeks. The first week of the data collection procedure was a pretest administered to all respondents to establish the numeracy skills that the respondents possessed before the training period. After the pretest, Quizizz as an interactive learning tool was introduced to them and incorporated into their mathematics class. For the next three weeks, the students used Quizizz to take quizzes on integers' basic operations and related word problems. These quizzes paralleled the same activities during classroom lessons to help reinforce what had been taught. A posttest of the same format as the pretest was given at the end of the fourth week to measure possible changes to the students' numeracy skills. The pretest and posttest results were compared to determine whether using Quizizz improves mathematical ability.

For qualitative data collection, structured interviews are conducted during the final week with a sub-sample of 10 students to help capture their experiences and perceptions of using Quizizz as a learning tool. It consisted of the use of interview guides. This ensured that repetition questions were kept to a similar pattern but allowed for flexible questioning related to how participants used the tool, their opinions on live feedback and leaderboards, and how everything affected pleasure and confidence levels in mathematics. The setting for conducting the interviews involved a silent room to elicit comfortable and open participants. After obtaining permission from the participants, the meetings were recorded and further transcribed for analysis. Qualitative data added more depth to the quantitative results, so there was an understanding of how the interactive features of Quizizz influenced student's motivation and learning experiences.

2.6 Ethical Considerations

The overall study was in complete conformity with the highest standards of ethics. Informed consent from the parents or guardians and student assent were sought before collecting data. They were briefed on the study's objectives, how Quizizz would be used to deliver the lesson, and their prerogative to withdraw at any moment without prejudice. Scores and results acquired during the quizzes were given codes to conceal the participants' identities. All other information collected from the study was kept confidential for this study only. The school administration gave approval to conduct this study, which followed all established ethical requirements for conducting educational research.

3.0 Results and Discussion

3.1 Students' Numeracy Skills Before the Use of Quizizz

With n = 30, the mean pretest score is 19.7, with a standard deviation 5.92. From the table included with the possible mean range interpretation, a mean score of 19.7 falls in the range of 16 - 20, "Needs Improvement." Hence, students were largely unfamiliar with numeracy concepts prior to the treatment. More specifically, most students failed to master basic operations involving integers and challenging, real-world word problems. Therefore, they would likely make persistent errors and thus require focused support and remediation to improve their numeracy skills.

Table 1. Descriptive statistics of numeracy skills of students before the use of Quizizz

Type of Test	Mean	Standard Deviation	Interpretation
Pretest	19.7	5.92	Need Improvement

A standard deviation of 5.92 indicates that, given that the scores are relatively moderately spread out around the mean, there is some variability in the level of performance on the pretest by the students. Many likely scored within the "Needs Improvement" range; however, some outliers must be higher, and some are lower than the mean. Generally, the pretest results indicate an area where instructional intervention is urgently needed concerning the topic, students' numeracy proficiency, and hence justify the creation and introduction of the Quizizz platform as a new tool for improvement.

This is typical of most of the problems in foundational mathematics, especially for abstract concepts such as integers, as frequently cited as where most students struggle to master, according to studies (Rosyidah et al., 2021). Theories from the constructivist camp show that foundational knowledge is a bedrock for acquiring more complex skills, so a baseline must be built to measure growth (Piaget, 1976). Practically, this emphasizes the role of interactive methods in aid of fundamental skills and demands intake diagnostics that would make it clear what competencies of the individual students are to be dealt with. Until now, research in numeracy intervention has relied more on initial diagnostics for educational input alignment to guarantee that the range of individual needs is appropriately met (Junpeng et al., 2020).

3.2 Students' Numeracy Skills After the Use of Quizizz

For N = 30, the mean posttest score is Mean = 29.2, and its standard deviation is 6.63. According to the mean range interpretation given, a score of 29.2, of a mean, falls within the given range of 26 - 30 (Satisfactory). In addition, it shows that the average students had offered moderate evidence for the mastery of numeracy skills in the posttest session. They could usually perform integer operations and solve related word problems, although possibly with some difficulty in more complex operations or sometimes in errors that frustrated accuracy.

Table 2. Descriptive statistics of numeracy skills of students after the use of Quizizz

Type of Test	Mean	Standard Deviation	Interpretation
Posttest	29.2	6.63	Satisfactory

With a standard deviation of 6.63, the scores are spread out more than in the pretest case, which meant there was variability in the student's performance following the intervention. Though most of the students performed satisfactory scores, most of them must have been exceptional performers, while others must have continued to struggle with the materials, scores which are a distance from the mean.

This finding aligns with the social constructivist view that collaborative and interactive environments promote higher engagement and better comprehension of mathematical concepts (Vygotsky, 1978). Theoretical frameworks supporting gamification also highlight how features like immediate feedback and competition can increase intrinsic motivation and enhance learning outcomes. This was supported by Margallo et al. (2023), who described how Quizizz helps encourage the participation and engagement of the students in Filipino classroom sets. Students' motivation to participate or learn increased through using the application. The total analysis of this research includes interactive features that include real-time feedback from the system, which integrates gamification and facilitates learner engagement and student success. Further results to sustain these findings came from very recent studies stating that in comparison to a more conventionally taught lesson, "game-based learning platforms offer better retention and understanding in mathematics" (Wang et al., 2022). Simply put, digital game-based learning tools can be employed in mathematics curriculums as they give a better understanding.

3.3 Effectiveness of Quizziz in Enhancing the Numeracy Skills of Students

Table 3. Analysis of the difference between the pretest and posttest scores of students in the numeracy test

Type of test	Mean	Standard Deviation	t-value	p-value	Interpretation	Decision to Null
Pretest	19.7	5.92	-18.5	<.001	Significant	Reject
Posttest	29.2	6.63				

$\alpha = 0.05$ Level of Significance

Table 3 presents the analysis of the differences in the students' numeracy test pretest and posttest scores. It was performed using the t-test for paired samples. The pretest mean score was 19.7, with a standard deviation of 5.92. The posttest scores revealed a better average of 29.2 with a slightly higher standard deviation of 6.63. This large

negative t-value associated with a p-value of much less than 0.001 suggests a statistically significant difference between the pretest and posttest scores.

The fact that statistical significance has been achieved may suggest that the intervention was an effective educational program or tool that significantly improved the numeracy skills of the students. Since the p-value is lower than the margin of error cut-off value of 0.05, the null hypothesis of no difference in the mean between the pretest and posttest is rejected. In this way, it is ensured that the change in performance was not brought about by chance occurrence but ascribed to intervention. The study's findings strongly stimulate educational interventions intended to improve the numeracy skills of the students.

This is further supported by Setiyani et al. (2020), who demonstrated how Quizizz improved the learners' mathematical problem-solving skills with significant leaps in achievement through quizzes. Another study explores the gamification dimension of Quizizz further. It illustrates how such a platform, when applied to mathematical game learning, would positively affect secondary students' mathematical skills (Yanuarto & Hastinasyah, 2023). Furthermore, the study of Capinding (2022) focused on implementing Quizizz as a game-based assessment tool for mathematical education. It concluded that such interactive strategies can promote greater engagement and better outcomes than traditional practice strategies. This is widely underlined by Querido's (2023) quasi-experimental study on the effectiveness of an interactive classroom tool, ClassPoint, somewhat like Quizizz, and how these tools improve mathematical skills significantly.

The mean scores were raised significantly from the pretest to the posttest as evidence of the effectiveness of Quizizz in numeracy skills. The features, such as real-time feedback, gamified quizzes, and leaderboards, provided an environment that enhanced both engagement and skill acquisition. The idea of gamification theories reveals that such features make the learning experience more immersive while providing opportunities for practice in a low-pressure testing context, as revealed by Winanti et al. (2021). These features enhance repeated attempts, which agrees with mastery learning principles as repeated practice improves skills under the gamification theories (Bloom, 1976). These results support game-based learning in instruction design, particularly for such subjects as mathematics, where students often have anxiety toward the subject matter (Ongcoy et al., 2023). Moreover, the research explains that digital tools such as Quizizz allow for converting traditional learning settings into lively spaces so that mathematics is more easily approached and seen as a less fearful subject by students, as backed by the study of Medico et al. (2023) that investigates the impact of digital gamification and traditional based learning on students' mathematics achievement as evidence from the Philippines. Lastly, the findings are supported by Osido (2024), who studied the utilization of Quizizz-assisted instructional materials for Mathematics 8, also employing a quasi-experimental design with pretest and posttest assessments; the study reported significant improvements in student performance, leading to the conclusion that Quizizz is an effective tool for developing improving the performance in Mathematics subject among Filipino students.

3.4 Structured Interview on Students' Experience with Numeracy Enhancement Using Quizizz

Students' experiences with Quizizz were probed through the thematic analysis of structured interviews. In this section, the primary objective of this research study will be to understand how the interactive features of Quizizz can influence learning outcomes, student engagement, and emotional response. To do this, first-person accounts from the students were gathered through gaining their impressions and experiences. The significance of the analysis lies in providing strengths and weaknesses regarding Quizizz while contributing to a general discussion about the pedagogical use of technology in an educational setting to maximize learning productivity and student satisfaction.

The thematic analysis of structured interviews with students about their experiences using Quizizz reveals several significant insights into how digital gamification tools influence learning. Students overwhelmingly recognize Quizizz as an engaging tool that enhances the learning experience. This is evidenced by their descriptions of the platform as "fun" and "competitive," which suggests that Quizizz effectively engages students by incorporating elements of play and competition into educational activities. This engagement appears to translate into an Enhanced Learning Experience, as students report that it is "easier to remember stuff for tests" and enjoy the sensory engagement provided by the platform's graphics and sounds.

Table 4. Thematic analysis of the structured interview on the experiences of students in numeracy enhancement using Quizizz

Student's Response	Codes	Categories	Themes
"Quizizz makes learning fun, and I like the competitive aspect."	Fun, Competitive	Engagement	Enhanced Learning Experience
"I feel anxious when the timer is running during quizzes."	Anxious, Timer	Emotional Response	Impact of Gamification
"The immediate feedback helps me understand my mistakes."	Immediate feedback, Understanding mistakes	Feedback Mechanism	Learning and Correction
"Sometimes I don't get why I got something wrong."	Confusion	Clarity of Feedback	Learning and Correction
"It's easier to remember stuff for the tests after using Quizizz."	Easier to remember, Tests	Memory Improvement	Enhanced Learning Experience
"I prefer using Quizizz over traditional homework."	Preference, Traditional homework	Preference for Learning Tools	Learning Preference
"The graphics and sounds make it more interesting than a regular class."	Graphics, Sounds	Sensory Engagement	Enhanced Learning Experience
"I wish there were more topics covered in Quizizz."	More topics	Content-Range	Scope of Content
"It's fun to see who gets the highest score."	High scores, Fun	Competition	Impact of Gamification
"I learn better when I can play and learn at the same time."	Learn better, Play	Learning Methodology	Learning Preference

Another theme that emerged is the Impact of Gamification. Students felt that the competitive aspects of Quizizz and the real-time feedback motivated them a statement from a student "It is fun to see who gets the highest score." some also experienced anxiety, making a statement, "I feel anxious when the timer is running during quizzes." mainly related to time constraints during quizzes. This dual-edged nature of gamification underscores its significant impact on student behavior and emotional responses, demonstrating both positive and negative effects.

The Learning and Correction theme is a clear indication of how Quizizz can be used for teaching, with the appreciation of the students for "immediate feedback," which enables them to "understand mistakes." with a statement from one of the participants, "The immediate feedback helps me understand my mistakes." However, there is also a need for clarity in some areas since, in this study, some were confused about what went wrong with a student making the statement, "Sometimes I do not get why I got something wrong." and this indicates that there needs to be more about the feedback mechanism within this application. The last theme is Learning Preference, which indicates that interactive and dynamic learning and teaching tools are highly preferred over traditional learning. Students will appreciate learning in a playful context and want more content inside the site. Their statements on this theme are "I learn better when I can play and learn at the same time." and "I prefer using Quizizz over traditional homework.".

Qualitative insights support the quantitative analyses to better inform the impact on student learning due to Quizizz. Indeed, by combining competitive elements, immediate feedback, and an interactive learning environment, both knowledge acquisition and motivational levels improved digital game-based platforms may hold a potential promise for mathematics education, reasserting the conclusion that tools like Quizizz for digital game-based learning can make a significant difference in the way students are engaged and impact their education results. Qualitative data enriched insight into how students perceive such tools and which aspects contribute to their learning experiences, validating the good results in numerical skills and attitudes toward learning for students when using Quizizz. This comprehensive analysis confirms the quantitative analysis's outcomes and gives deep insights into the mechanisms through which gamification can enhance educational practice.

This is anchored by the Self-Determination Theory, which states that intrinsic learning motivation will rise when a feeling of competence, autonomy, and relatedness to the learning activity is present in the student (Deci & Ryan, 2000). The real-time feedback from Quizizz meant that the students could see what they got wrong and correct those mistakes. As such, the learning process was reinforced, and math anxiety was eradicated. Hence, it goes per the latest research findings, confirming that instant feedback in gamified platforms helps students grasp concepts and enact active learning (Yong et al., 2020).

These findings have practical implications for educational practice, including the fact that interactive digital tools may increase engagement and numeracy performance and provide confidence in mathematics that relieves mathematics anxiety. Such a trend towards more student-centered learning, emphasizing technology to make complex, hard-to-reach content more accessible, fits more significant education trends (Cespón & Lage, 2022). This encourages educators in need to integrate devices that include giving immediate feedback through gamified techniques in learning and providing a supportive but engaging setting for learning.

4.0 Conclusion

This study concludes that Quizizz is a digital game-based learning tool that supports the numeracy of Grade 8 students to help them enhance their numeracy skills. Quantitative and qualitative analyses found that the students' mathematical proficiency improved after intervention, as indicated by the statistically significant overall differences. Quantitative data output showed an upward trend, as illustrated by the test scores, which showed significant differences between the pretest and posttest scores. This implies that Quizizz can consolidate mathematical ideas and facilitate the students' effective problem-solving of numerical problems.

Qualitative thematic analysis of students' interviews goes deep into their experiences of Quizizz. Through gamification, students are more engaged and enjoy learning because of this system. Something that included real-time feedback, competitive features, and interactive content made students want to learn even more, retain much in their memory, and understand things better. Additionally, students expressed interest in and preference for this interactive learning tool over others and showed potential for it to supplant or complement traditional means of learning altogether.

However, despite the overwhelmingly positive results, some students were anxious about the quizzes, and content coverage would have been better if there had been more explanation and clear feedback on questions that had been answered wrongly. These areas lend themselves to the further development of Quizizz so that more quality time can be made out of it for education.

To put it in a nutshell, the present study confirms that quizzes can be one of the most versatile tools for learning since they promote numeracy skills while transforming the learning experience into a fun and effective one. It also opens avenues for further study towards identifying strategies that can increase the scope of topics in digital game-based learning to suit different ways of learning and needs. In this view, the current research contributes significantly to the educational technology field by taking their cause into integrating gamified learning platforms into educational environments with a highly interactive and rewarding nature for the learning setting.

Quizizz can be integrated into classrooms by practicing for lessons or testing the students through proper lesson plans designed specifically for classes. Teachers can create or choose quizzes that match curriculum standards, using the platform for concept practice and tracking student progress. Educators can use Quizizz as an ice breaker/warm-up, review, or a formative assessment, customizing game settings so that the competition level will suit the classroom dynamics and feedback will fit what they are trying to accomplish. Teachers can identify and mediate these gaps in learning within instruction so that it can become more emergent, responsive to students, and targeted in nature using the real-time data that Quizizz outputs.

Moreover, to stimulate educational benefits at a bigger scale, policymakers could promote actionable learning tools driven by gamified education, a case being Quizizz. For schools to be able to embrace these tools, policies that promote digital literacy training for educators, funding for digital resources, and best practices around technology adoption would be less complicated to bring in." Gamified learning can enable a transition to student-centered learning environments that are often associated with interactive, collaborative, and student-driven education. Accordingly, policymakers can promote the inclusion of gamified learning in curriculum frameworks, which may lead to more engaged students better prepared for higher-level maths.

5.0 Contributions of Authors

The author has encoded, edited, written, and supervised the study. He also collected, analyzed, and interpreted the data.

6.0 Funding

This study received no specific grant from any funding agency

7.0 Conflict of Interests

There is no conflict or no conflict of interest.

8.0 Acknowledgment

The author would like to thank the students and administrators of Louella Gotlader Alcoba National High School for allowing him to conduct the study, especially the school head of the mentioned school, Ms. Juvy F. Garduque. The authors are extremely grateful to their academic mentors, whose guidance and expertise were invaluable in shaping this research. Of course, they would like to give special thanks to Mr. Kelvin Carl D. Fulay for his support and constructive feedback throughout the development of the study. Appreciation is also extended to the anonymous reviewers whose insightful comments and suggestions helped improve the manuscript.

9.0 References

Bloom, B. S. (1976). Human characteristics and school learning. McGraw-Hill.

Capinding, A. T. (2022). Utilization of 'Quizizz' a game-based assessment: An instructional strategy in secondary education science 10. European Journal of Educational Research, 11(4), 1959-1967. https://doi.org/10.12973/eu-jer.11.4.1959

Cespón, M. T., & Lage, J. M. D. (2022). Gamification, Online Learning and Motivation: A quantitative and Qualitative analysis in Higher education. Contemporary Educational Technology, 14(4), 381. https://doi.org/10.30935/cedtech/12297

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self determination of behavior. Psychological Inquiry, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Junpeng, P., Marwiang, M., Chinjunthuk, S., Suwannatrai, P., Chanayota, K., Pongboriboon, K., Tang, K. N., & Wilson, M. (2020). Validation of a digital tool for diagnosing mathematical proficiency. International Journal of Evaluation and Research in Education, 9(3), 665. https://doi.org/10.11591/ijere.v9i3.20503

Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, Motivation, and Learning: A research and practice model. Simulation & Gaming, 33(4), 441–467. https://doi.org/10.1177/1046878102238607

Margallo, L., Cacharro, C., Bergula, J. D., Villaflor, S. R. A., Agner, M. L., Bughao, C., Calumpag, J., Calvara, C., Jamen, K. K., Loresca, A. V., Maanad, D., Refuerzo, J. M., Ripalda, L. M., & Rabuya, C. A. (2023). Effectiveness of Quizizz on students' learning motivation and engagement in a Filipino class. East Asian Journal of Multidisciplinary Research, 2(9), 3719–3734. https://doi.org/10.55927/eajmr.v2i9.5560

Morata, J.A., & Caballes, D. (2024) The use of digital game-based learning on numeracy of grade 7 students using class point: an input to professional development of teachers. Science International (Lahore), 36(2), 177-188. https://tinyurl.com/yxsfr7ec

Medico, J., Nepangue, D., & Derasin, L.M. (2023) The impact of digital gamification and traditional based learning on students' mathematics achievement: evidence from the Philippines. Journal of Data Acquisition and Processing, 38(4), 2108-2116. https://tinyurl.com/5fnzkpxr

Nuraini, N L S., & Humaidi, H. (2020). Online Assessment Application in Measuring the Numeracy Level of Prospective Elementary School Teachers. 2020 6th International Conference on Education and Technology (ICET).

Ongcoy, P. J. B., Jasmin, D. R. A., Guiamal, I. P., Guinita, S. S., & Iligan, A. M. M. (2023). Experiences and mathematics anxiety of STEM students. Journal of Mathematics and Science Teacher, 3(1), em028. https://doi.org/10.29333/mathsciteacher/12870

Osido, S. E. (2024). Utilization of Quizizz-Assisted Instructional Materials for Mathematics 8. Psychology and Education: A Multidisciplinary Journal, 27(1), 102–111. https://doi.org/10.5281/zenodo.13987775

Piaget, J. (1976). The grasp of consciousness: Action and concept in the young child. Harvard University Press.

Querido, D. V. (2023). Effectiveness of Interactive Classroom Tool: A Quasi-Experiment in Assessing Students' Engagement and Performance in Mathematics 10 using ClassPoint. Applied Quantitative Analysis, 3(1), 79–92. https://doi.org/10.31098/quant.1601

Rosyidah, A. N. K., Maulyda, M. A., Jiwandono, I. S., Oktaviyanti, I., & Gunawan, G. (2021). Misconceptions and errors in integer Operations: A study in Preservice Elementary School Teachers (PGSD). Journal of Physics Conference Series, 1779(1), 012078. https://doi.org/10.1088/1742-6596/1779/1/012078

Setiyani, S., Fitriyani, N., & Sagita, L. (2020). Improving student's mathematical problem solving skills through Quizizz. JRAMathEdu (Journal of Research and Advances in Mathematics Education), 5(3), 276–288. https://doi.org/10.23917/jramathedu.v5i3.10696

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

Wang, L., Chen, B., Hwang, G., Guan, J., & Wang, Y. (2022). Effects of digital game-based STEM education on students' learning achievement: a meta-analysis. International Journal of STEM Education, 9(1). https://doi.org/10.1186/s40594-022-00344-0

Winanti, W., Abbas, B. S., Suparta, W., Heryadi, Y., & Gaol, F. L. (2021). Gamification Framework for programming course in Higher education. Journal of Games Game Art and Gamification, 5(2), 54–57. https://doi.org/10.21512/jggag.v5i2.7479

Yanuarto, W. N., & Hastinasyah, P. D. (2023). Gamification: Quizizz in mathematical game learning for secondary students. Indonesian Journal of Mathematics Education, 5(2), 64. https://doi.org/10.31002/ijome.v5i2.6588

Yong, A., & Rudolph, J. (2022). A review of Quizizz – a gamified student response system. Journal of Applied Learning and Teaching, 5(1), 146–155. https://doi.org/10.37074/jalt.2022.5.1.18

Yong, S., Karjanto, N., Gates, P., Chan, T. A., & Khin, T. (2020). Let us rethink how to teach mathematics using gaming principles. International Journal of Mathematical Education in Science and Technology, 52(8), 1175–1194. https://doi.org/10.1080/0020739x.2020.1744754