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Enhancing grade two students' mathematics achievement through the use of Nearpod as a gamification tool

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Abstract

A mixed-methods research design was employed, integrating quantitative and qualitative approaches. The participants comprised eleven grade two students (six boys and five girls). Quantitative data were collected using a one-group pretest–posttest achievement test, while qualitative data were gathered through semi-structured interviews and a perception survey focusing on three themes: fun and enjoyment, learning and understanding, and user-friendly. The intervention was implemented over four weeks using Nearpod as a gamification tool. Data were analyzed using descriptive statistics, a paired-sample t-test, and thematic analysis. The quantitative findings revealed a statistically significant improvement in students' mathematics achievement following the intervention. The posttest mean score was significantly higher than the pretest mean score, with a statistically significant difference and a very large effect size, indicating the strong effectiveness of Nearpod as a gamification tool. Survey results showed high to highest levels of positive perception across all dimensions, demonstrating that students found Nearpod enjoyable, effective for learning, and easy to use. Qualitative findings further supported these results, highlighting three major themes: increased interest and enjoyment, enhanced learning satisfaction, and improved self-confidence in mathematics. Overall, the study concludes that integrating Nearpod as a gamification tool significantly enhances grade two students' mathematics achievement. The findings suggest that gamified digital platforms like Nearpod offer a powerful and practical pedagogical approach for improving mathematics learning. The study recommends broader integration of gamification and ICT tools in classroom instruction and further research with larger samples and extended intervention periods to strengthen generalizability.

Keywords: Gamification tool; Learning achievement; Mathematics; Mixed method; Nearpod

1. Introduction

Mathematics education plays an important role in formal education because it supports students' cognitive development, problem-solving skills, and academic achievement. In this sense, mathematics learning provides a foundation for understanding more complex concepts and for meaningful engagement in further scientific and technical learning (Asiedu Menlah & Boateng, 2025; Bimbim et al., 2026; Orhani & Alija, 2026). Similarly, Fallon et al. (2013) claim that children learn to solve real-world problems in mathematics, which enhances their capacity for logical thought and reasoning and helps them get ready for the future.

To equip children with the competencies needed for the future, education systems must effectively utilize available tools, draw on international best practices, and create teaching–learning environments that are responsive to contextual needs. Consistent with this perspective, the Royal Kasho on education reform emphasized the importance of promoting self-discovery and exploration, positioning learners as active co-constructors of knowledge rather than mere consumers, and integrating STEM subjects into students' everyday language (Bhutan Broadcasting Service, 2021).

It is critical that the education system adapt to this significant transition in the nature of the learners, as 21st-century learners are digital natives who spend most of their time toying with devices (Dei, 2024). As a result, education should be designed to reflect students' enthusiasm for modern technologies.

The experience of having taught different subjects to classes from Pre-primary to three for the past three years was an opportunity to see teaching and learning process from different perspectives. Looking at the performance of students in the school, the researcher found that the grade two student's performance in mathematics was subpar while comparing to other subjects in

the previous year's assessment.

Students often attribute their lack of performance to minimal resources, poor understanding of concepts, and indifference towards subject. Other prominent factor for low performance could be due to approaches and methodologies used to deliver the concept. Mathematics teachers of the school made every effort to improve the student's achievement by incorporating technology (PPT and Short video clips) in their teaching. Nevertheless, it did not come to their rescue. Recognizing this issue, the researcher felt the need to enhance mathematics achievement by applying alternative teaching methods that cater to their varied learning needs of the students. Considering all these shortcomings, this research will focus on using Nearpod as a gamification tool for improving mathematical achievement of grade two students.

2. Literature Review

In the world of information and technology, there are rapid changes in the approaches of instruction in the schools towards the creation of the best education system. There has been an increased use of different multimedia technology to enhance the learning and teaching of mathematics and science with the help of computers and software in schools and universities (Zakaria & Lee, 2012). Learners found that learning mathematics with the use of technology helped them to learn faster and easier to understand (Isbel & Robertson, 2019). Moreover, integrating technology in the teaching and learning process provides opportunities for young learners to enhance their abilities and helps in acquiring the fundamental skills of mathematics. Integration of technology in the classroom should be continuing process in mathematics teaching, regardless of students' grades to produce students with skills in using technology and expert in academics (Zakaria & Lee, 2012). The use of technology in the learning and teaching process is inevitable in the era of technology.

Amongst numerous strategies used for teaching and learning Mathematics integrating technology, gamification is considered as an effective method for enhancing students' mathematical understanding, problem-solving skills, and critical thinking abilities. Gamification is presented in the scientific literature as a promising method in education for improving academic performance, student engagement and scholars' motivation. Gamification is a technique used in education to promote students' engagement and learning (Lin et al., 2018).

It is worth mentioning that educational games, or game-based learning methods, have gained many researchers' attention because they are effective learning tools that engage and motivate students and, thus, improve their academic achievement (Hooshyar et al., 2018; Zumbach et al., 2020). The basis of gamification is that it occurs in a non-game context (Delgado-Algarra, 2022), which means it would be applied without disrupting current learning practices but rather by making them more interesting involving HOTs (higher-order thinking skills) for students. Additionally, the study established that gamification can lead to a more spontaneous willingness to join in the classroom, a more active desire to solve problems, and more practical application in learning because the tasks become interesting and varied (Liu & Razali, 2023). Thus, using gamification can lead to a more spontaneous willingness to join in the classroom, a more active desire to solve problems, and more practical application in learning because the tasks become interesting and varied.

Nearpod is an interactive learning tool designed for educators to create and deliver engaging lessons to students. It allows teachers to incorporate multimedia content, such as videos, quizzes, polls, and interactive activities, into their lessons. Nearpod provides a variety of interesting features to support learning activities, such as the Nearpod Library, material simulations, various activities such as quizzes and games, and various other interesting features (Lowry-Brock, 2016). Nearpod also provides a facility for material to be revisited after the session in "student paced" mode so that students can work through material in their own time. Nearpod has a variety of interactive learning variations and can provide direct feedback (Musa & Al Momani, 2022). That way, a teacher can design learning activities including material, questions, quizzes or games that are interesting and fun (Dewi, 2021).

Nearpod aims to enhance the teaching and learning experience by making lessons more interactive and engaging. Sanmugam et al. (2019) recommended the use of Nearpod as it maximizes the interaction and learning. In addition, Hakami (2020) also reported that students were satisfied with the use of integrated learning environments, and they recommended using Nearpod in every course. Likewise, McKay and Ravenna (2016) also found that the Nearpod increases students' engagement and whole group assessment in a single lesson. A similar effect is reported by Shehata et al. (2019) in Egypt, where they found that use of Nearpod was instrumental in performing formative assessment, and it also heightened the students' interest and positively affected their learning. Therefore, this paper's main focus is on the application of Nearpod as a gamification tool to enhance mathematics achievement of class two in Khangrab Primary School.

3. Methodology

3.1. Research Design

For this study a mixed-methods approach was used, integrating both qualitative and quantitative data collection tools. Semi-structured interview and survey were used to gather data about the student's perception towards the use of Nearpod while teaching and learning mathematics. To collect quantitative data, a pretest-posttest will be administered.

3.2. Participants

The target population of this study was grade two students studying mathematics in one of the schools in Bhutan. The school is located in Bumthang district which fall in central part of Bhutan. The research school has only one class of grade two students for the 2025 academic year. The participant comprises of 11 Bhutanese students, 6 boys and 5 girls. Therefore, researcher used entire students of grade two as a research participant. The age range of the population are of 8 -10 years old.

3.3. Data Collection Tools

The study employed three instruments for collecting the data, as discussed below:

3.3.1. Achievement test

Learning achievement test was administered before and after the intervention to compare the learning achievement of the students. Learning achievement test consist of 15 multiple choice questions and 5 true or false question.

3.3.2. Survey

The survey questionnaire with 15 statements was administered to the research participants to study the perception towards use of Nearpod as a gamification tool in learning mathematics. The statements are labeled under three broad themes; fun and engagement, learning and understanding, and user friendly. The data collected through the survey questionnaire was analysed using descriptive statistics such as mean and standard deviation.

3.3.3. Semi-structured interview

In order to find out the students' perception towards the use of Nearpod in learning mathematics, each student had a face-to-face interview with the researcher after the intervention of the approach. The interview consists of eight questions adapted from (Peldon, 2018).

3.4. Intervention Plan

Pre-test was administered to the research participants before the intervention. The intervention was conducted over four weeks (two periods per week, with each period lasting 45 minutes) from the first week of August to the fourth week of August using Nearpod as a gamification tool. After the intervention post-test was administered to the research participants. In order to find out the students' perception towards the use of Nearpod as a gamification tool in learning mathematics, each student had a face-to-face interview with the researcher after the intervention of the

approach. Each student was given approximately take 7-10 minutes to respond and were given the freedom to speak in the language of their choice (English or Dzongkha, national language of Bhutan). The responses of each student were audio recorded during the interview. It was followed by research participants responding to survey questionnaire.

Students were taught how to use nearpod before the implementation of intervention using school-provided desktops in the ICT class. The teacher-researcher also monitored and supervised device usage to ensure a focused learning environment.

3.5. Data Analysis

Quantitative data from one group pre-test and post-test and survey were analyzed using descriptive statistics to summarize students' learning achievement. A paired sample t-test was conducted to compare students' pretest-posttest result using Jamovi and MS Excel 13. The qualitative data collected through interview was analyzed using thematic analysis (Braun and Clarke, 2006) to identify student's perception toward the use of Nearpod as a gamification tool in learning mathematics. To interpret the survey data, mean score intervals derived from a five-point Likert scale were employed. Specifically, mean scores of 4.51–5.00 were classified as strongly agree and interpreted as indicating the *highest* level of perception; scores of 3.51–4.50 as agree and a *high* level of perception; scores of 2.51–3.50 as neutral and a *moderate* level of perception; scores of 1.51–2.50 as poor and a *low* level of perception; and scores of 1.00–1.50 as very poor and the *lowest* level of perception. These categories served as the basis for the descriptive analysis and interpretation of the findings. Qualitative data from interviews were analysed thematically. The analysis involved familiarisation with the transcripts through repeated reading, the systematic generation of initial codes, the clustering of related codes into potential themes, and the subsequent review, refinement, definition, and naming of those themes. The final themes were then interpreted in relation to the study objectives and supported with representative participant quotations. This approach was considered appropriate because it allowed for the systematic identification of patterns within the qualitative data while preserving the depth and contextual richness of participants' accounts.

4. Findings

4.1. Analysis of One-group Pretest-posttest Result

The data collected from the pretest and posttest scores were analyzed to compare the learning achievements of the grade two students before and after the intervention as described in Table 1 below. It shows the result of the descriptive statistical analysis for the sample group's achievement test scores. A dependent sample t-test at the 95% confidence level revealed a significant difference between pre-test and post-test scores ($p < .001$). The mean score for the pretest and the posttest was 11.8 and 17.9 respectively. It is evident from the results presented in the table that the posttest mean score ($M = 17.9$) of the group was higher than that of the pretest mean score ($M = 11.8$) with a mean difference of 6.09. The greater mean score in the posttest indicated the efficacy of using Nearpod as a gamification tool. The standard deviation of the pretest and posttest were 2.44 and 2.02 respectively as shown in Table 1. The effect size was 2.70 (≥ 0.8) indicating that the use of Nearpod as a gamification tool enhanced academic achievement in Mathematics.

Table 1
Comparison of the Pre-test and Post-test score

	N	*Mean*	*Median*	*SD*	*p-value*	*Mean difference*	*Effect Size (d)*
Post-Test	11	17.9	18	2.02	<.001	6.09	2.70
Post-Test	11	11.8	12	2.44			

Note. $H_a\ \mu_{Measure\ 1\ -\ Measure\ 2} \neq 0$

4.2 Students' Perception form Survey

4.2.1. Fun and enjoyment

Table 2 summarizes the descriptive statistics related to respondents' Fun and Enjoyment towards the use of Nearpod as a gamification tool in learning mathematics.

Table 2
Descriptive Statistics on Fun and Enjoyment of Respondents towards Nearpod as a Gamification Tool in Learning Mathematics

Item No.	*Items*	*N*	*Mean*	*SD*	*Level of perception*
1	I have fun when I use Nearpod in mathematics class	11	4.72	0.65	Highest
2	I like playing games on Nearpod during Mathematics lessons.	11	4.45	0.82	High
3	Nearpod makes Mathematics more exciting for me.	11	4.72	0.47	Highest
4	I look forward to using Nearpod in mathematics class	11	4.36	0.67	High
5	Nearpod mathematics games makes me happy	11	4.90	0.30	Highest
	Overall	11	4.64	0.58	Highest

The results of the descriptive analysis on respondents' factors (i.e. fun and enjoyment) reveal that respondents have a very high level of perception towards the use of Nearpod as a gamification tool in learning Mathematics, with an overall mean of 4.64 and a standard deviation of 0.58 (Table 2), interpreted as the "Highest" level of fun and enjoyment. Among the items, the statement "*Nearpod Mathematics games make me happy*" obtained the highest mean score (4.90), indicating that most respondents strongly agreed that Nearpod contributes positively to their emotional experience during Mathematics lessons. Similarly, the items "*I have fun when I use Nearpod in Mathematics class*" and "*Nearpod makes Mathematics more exciting for me*" both garnered mean scores of 4.72, reflecting that Nearpod effectively makes the learning process more fun and engaging.

Although all items were rated "High" to "Highest," slight variations were noted in responses. The statement "*I like playing games on Nearpod during Mathematics lessons*" (M = 4.45, SD = 0.82) and "*I look forward to using Nearpod in Mathematics class*" (M = 4.36, SD = 0.67) had comparatively lower means and higher variability, suggesting that while fun and enjoyment is generally strong, levels of enthusiasm and anticipation differ slightly among students. Overall, the results indicate that Nearpod successfully enhances students' motivation, enjoyment, and positive attitude toward Mathematics, reinforcing its value as an effective gamification tool that fosters a fun and engaging learning environment.

4.2.2. Learning and understanding

Table 3 shows the descriptive statistics on learning and understanding of respondents' perception towards Nearpod as a gamification tool in learning mathematics.

The results of the descriptive analysis on respondents' factors (i.e. learning and understanding) indicate that respondents have a highest level of learning and understanding towards Nearpod as a gamification tool in learning Mathematics, with an overall mean of 4.69 and a standard deviation of 0.44 (see Table 3), interpreted as a "Highest" level of perception. The highest-rated items were "Nearpod helps me learn Mathematics better" and "I remember Mathematics lessons more when I play Mathematics games on Nearpod", both obtaining a mean of 4.91 and a standard deviation of 0.30, categorized as "Highest". These results suggest that Nearpod significantly supports students' comprehension and retention of mathematical concepts. Likewise, the statement "I feel smart when I play Mathematics games on Nearpod" (*M* = 4.89, *SD* = 0.65) reinforces that Nearpod boosts

students' confidence and cognitive engagement in Mathematics.

Table 3
Descriptive Statistics on Learning and Understanding of Respondents towards Nearpod as a Gamification Tool in Learning Mathematics

Item No.	*Items*	*N*	*Mean*	*SD*	*Level of perception*
1	Nearpod helps me learn Mathematics better.	11	4.91	0.30	Highest
2	I learn Mathematics more when I use Nearpod.	11	4.45	0.69	High
3	I remember Mathematics lesson more when I play Mathematics games on Nearpod.	11	4.91	0.30	Highest
4	Nearpod helps me to learn in a way that is easy for me.	11	4.27	0.30	High
5	I feel smart when I play Mathematics games on Nearpod.	11	4.89	0.65	Highest
	Overall	11	4.69	0.44	Highest

On the other hand, the items "I learn Mathematics more when I use Nearpod" (M = 4.45, SD = 0.69) and "Nearpod helps me to learn in a way that is easy for me" (M = 4.27, SD = 0.30) were rated "High," showing that while students agree that Nearpod enhances their learning, there are slight differences in perception regarding its ease of use and learning effectiveness. Overall, the findings reveal that Nearpod effectively aids in improving students' understanding, memory retention, and confidence in Mathematics. This demonstrates that integrating gamified learning platforms like Nearpod can promote a deeper and more enjoyable learning experience, making mathematical concepts easier to grasp and apply.

4.2.3. User friendly

Table 4 shows the descriptive statistics on User friendly of respondents' perception towards the use of Nearpod as a gamification tool in learning mathematics.

Table 4
Descriptive Statistics on User Friendly of Respondents towards Nearpod as a Gamification Tool in Learning Mathematics

Item no.	*Items*	*N*	*Mean*	*SD*	*Level of perception*
1	Nearpod is easy for me to use.	11	4.91	0.30	Highest
2	I know what to do when I use Nearpod in class.	11	4.45	0.52	High
3	I like how Nearpod looks and works.	11	4.82	0.40	Highest
4	I can use Nearpod by myself without much help.	11	4.45	0.52	High
5	I want to use Nearpod more in Mathematics class.	11	4.72	0.47	Highest
	Overall	11	4.67	0.44	Highest

The descriptive statistics show that respondents perceive Nearpod as a highly user-friendly gamification tool in learning Mathematics, with an overall mean of 4.67 and a standard deviation of 0.44 (Table 4), interpreted as the "Highest" level of perception. The statement "*Nearpod is easy for me to use*" obtained the highest mean score of 4.91, followed closely by "*I like how Nearpod looks and works*" (M = 4.82) and "*I want to use Nearpod more in Mathematics class*" (M = 4.72), all interpreted as "Highest." These results indicate that students find Nearpod both visually appealing and easy to navigate, contributing to a positive user experience. The high ratings also suggest that Nearpod's design and functionality effectively support student engagement and accessibility in Mathematics

learning.

Meanwhile, the items "*I know what to do when I use Nearpod in class*" and "*I can use Nearpod by myself without much help*" both obtained a mean of 4.45, interpreted as "High," indicating that while most respondents are confident in using Nearpod independently, a few may still require minimal guidance. Overall, the findings reveal that Nearpod is not only user-friendly but also encourages continued use among students. Its intuitive interface, appealing design, and ease of operation make it an effective digital learning platform that promotes autonomy and sustained interest in Mathematics learning.

4.3. Findings Based on Qualitative Data

The qualitative data was collected through semi-structured interview to further respond to the second objective of the study. The second objective of the study was to investigate the student's perception towards the use of Nearpod as a gamification tool in teaching mathematics. To investigate, the researcher conducted interviews with all the students in the sample group after completing teaching. To keep the privacy of the research participants, the researcher used the same student code used during pretest and posttest during the interview. The students were given the freedom to speak in the language that they felt comfortable in sharing their opinions on the study.

The data from the students' interviews are analyzed under three themes: 1) Interesting and Fun, 2) Facilitated Learning Satisfaction and 3) self-confidence.

4.3.1. Interesting and fun

Students in the classroom had fun and thoroughly enjoyed their lessons when Nearpod was incorporated into the learning process. When using Nearpod, students to play with math ideas, making them easier to understand. They had so much fun exploring the concepts and using their creativity and problem-solving skills to solve the problems. These exciting ways of learning not only helped students understand math better but also made the whole class enjoyable and memorable learning atmosphere.

"Especially getting to play with Nearpod individually made the learning interesting and fun. We understood the concepts much better, and enjoyed a lot." (participant 1,3,4,7 and 9).

"Using Nearpod was most interesting and it motivated me to learn mathematics. We are having fun to learn the concepts for the first time." (participants 2, 3, 5,6 and 10).

"The lesson was interesting when teacher taught us suing Nearpod as we got to learn and solve mathematics problems using different strategies." (participants 1,4, 7, 8, 10 ang 11).

Thus, it is evident from the quotes that using Nearpod as a gamification tool to teach mathematics to students was enjoyable. Additionally, concepts are better understood when the lesson is presented in a fun way.

4.3.2. Facilitated learning satisfaction

Visual images, videos and online activities significantly enhanced learning satisfaction in understanding mathematics. These tools provided students with real-world examples, making abstract concepts more relatable. This approach facilitates comprehension, retention, and results in greater learning satisfaction. The following are some of the opinions of the participants.

"When we got watch videos and solve activities using Nearpod, we understand easily. Teacher showing different videos helped us to understand the concepts more easily." (participants 1, 2, 4, 5, 6, 8 and 11).

"I can understand better, if the teacher uses Nearpod to teach other topics as well just like learning mathematics." (participants 2, 4, 7, 8, 9 and 10).

4.3.3. Self confidence

The use of visual images in teaching mathematics when using Nearpod has significantly boosted students' confidence. By providing a visual lesson input and activities helped learners better understand and relate to abstract concepts. As they successfully interacted with visual activities, learners experienced a sense of accomplishment that increased their self-confidence in their

mathematical abilities.

"I was able to understand better and more easily by playing with Nearpod and having videos to guide me." (participants 1,3,4, 7, 8, 10 and 11).

"Before we use to learn mathematics using chalk and chalkboard, but when Mathematics was taught to us using Nearpod, it was interesting, and I believe I can perform better in mathematics." (participants 2, 3, 6 and 11).

It is clear from the responses given above that they enjoyed learning mathematics when Nearpod was used as many of the students experienced new learning environments that were enjoyable and fascinating. Moreover, students' confidence was further increased in learning mathematics as they could understand the concept in a better way and be apply the concepts in real-world situations.

Thus, the researcher concluded that using Nearpod as a gamification tool when teaching mathematics has not only improved learning achievement and students' learning satisfaction but also boosted their confidence in learning mathematics, which has a direct relationship to the growth of students' overall academic performance.

5. Discussion

The quantitative findings from the one-group pretest–posttest design clearly indicate that the use of Nearpod as a gamification tool significantly improved students' mathematics achievement. The posttest mean score was significantly higher than the pretest mean score, with a statistically significant difference and a very large effect size. This strong effect suggests that the intervention was not only statistically effective but also educationally meaningful. The improvement in achievement is parallel to earlier research that highlights the positive impact of technology that stated enhanced and gamified learning environments on students' understanding and performance in mathematics (Lin et al., 2018; Robertson, 2019; Zakaria & Lee, 2012).

The notable increase in achievement can be attributed to the interactive and engaging features of Nearpod, which transformed abstract mathematical concepts into visually rich, game-based learning experiences. For young learners, particularly grade two students, such concrete and interactive representations are crucial for developing conceptual understanding. This finding aligns with Hooshyar et al. (2018) and Zumbach et al. (2020), who reported that educational games enhance motivation and cognitive engagement, leading to improved academic outcomes.

Students' perception data further strengthens the quantitative results. Across all three dimensions: fun and enjoyment, learning and understanding, and user friendly, students reported high to highest levels of agreement. The "fun and enjoyment" dimension recorded at highest perception level, indicating that Nearpod successfully created an enjoyable learning environment. This is significant because students' emotional engagement plays a vital role in supporting attention and motivation, especially in mathematics, a subject often perceived as difficult. The findings resonate with Liu and Razali (2023), who found that gamification fosters spontaneous participation and a stronger desire to solve problems.

Similarly, the "learning and understanding" dimension yielded a highest perception level, suggesting that students perceived Nearpod as an effective tool for improving comprehension, memory retention, and confidence. Items such as "Nearpod helps me learn Mathematics better" and "I remember Mathematics lessons more when I play Mathematics games on Nearpod" were rated at the highest level. These results are in line with Musa and Al Momani (2022), who emphasized that Nearpod's interactive activities and immediate feedback enhance understanding and formative learning. For grade two learners, the ability to revisit content and engage with visuals and games appears to have reinforced learning and supported long term retention.

The highest perception ratings in the "user-friendly" dimension too indicate that Nearpod was easy to use for young learners, despite their limited ICT experience. This finding is particularly important in a rural school context, where students may have less exposure to advanced technologies. The intuitive design of Nearpod enabled students to work independently with minimal assistance, promoting learner autonomy and confidence. This supports Dewi's (2021)

study that well-designed digital platforms can empower students to take greater ownership of their learning.

The qualitative findings from the semi-structured interviews further illuminate how and why Nearpod enhanced students' mathematics learning. Three key themes 1) interesting and fun, 2) facilitated learning satisfaction, and 3) self-confidence emerged from students' responses. Students consistently described learning mathematics through Nearpod as enjoyable and motivating, confirming the survey findings related to fun and engagement. The use of videos, images, and interactive games helped students understand concepts more easily. This was supported by study carried out by Sanmugam et al. (2019) and Shehata et al. (2019), who found that Nearpod increases interaction, interest, and learning satisfaction.

Moreover, the theme of self-confidence is especially noteworthy. Many students expressed that they felt more capable and believed they could perform better in mathematics after learning through Nearpod. Confidence is a critical factor in mathematics achievement, as students who believe in their abilities are more likely to persist in problem-solving tasks. The findings suggest that Nearpod not only improved academic performance but also positively influenced students' attitudes and beliefs about mathematics, which can have long-term benefits for their overall academic development.

In summary, the discussion of findings demonstrates that using Nearpod as a gamification tool effectively enhanced grade two students' mathematics achievement, engagement, learning satisfaction, and confidence. The results are consistent with existing literature on technology integration and gamification in education and are particularly significant given the rural school context and small class size. While the study was limited to a single group and a short intervention period, the strong positive outcomes suggest that Nearpod has considerable potential as an instructional tool for early-grade mathematics. Future studies may consider larger samples, control groups, and longer intervention periods to further validate and extend these findings.

6. Conclusion and Recommendation

This action research investigated the effectiveness of using Nearpod as a gamification tool to enhance Grade Two students' Mathematics achievement. The findings conclusively demonstrate that the integration of Nearpod significantly improved students' academic performance, engagement, learning satisfaction, and self-confidence in Mathematics.

The significant increase in posttest scores, supported by a very large effect size, confirms that Nearpod is an effective instructional tool for enhancing Mathematics achievement among young learners. Students' positive perceptions of fun and enjoyment, learning and understanding, and user-friendliness further indicate that Nearpod creates an engaging and supportive learning environment that caters to diverse learning needs. The qualitative findings reinforced these results by revealing that students found learning Mathematics more interesting, easier to understand, and more confidence-building when Nearpod was used.

The study concludes that Nearpod, when used as a gamification tool, not only enhances cognitive outcomes but also positively influences affective factors such as motivation, enjoyment, and self-confidence, which are essential for sustained academic success. Therefore, integrating Nearpod into Mathematics instruction can be a powerful pedagogical approach, particularly in primary schools with limited resources, as it maximizes student engagement and learning outcomes through effective use of ICT.

Based on the findings, it is recommended that teachers incorporate gamified digital tools like Nearpod more frequently in Mathematics lessons and extend their use to other subjects. School leaders and policymakers may also consider providing professional development opportunities for teachers to effectively integrate ICT and gamification strategies in the classroom. Future studies could involve larger sample sizes, multiple schools, or comparative groups to further validate the effectiveness of Nearpod and similar gamification tools in enhancing students' learning outcomes.

In conclusion, the use of Nearpod as a gamification tool has proven to be an effective and innovative approach to improving grade two students' Mathematics achievement, supporting

Bhutan's broader educational goal of preparing learners for a technologically driven and knowledge-based future.

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