***Dear research team***

*Firstly, I admire your efforts to write this manuscript. Secondly, I’m so delighted to review this precious manuscript, because these studies are one of my favorite’s interests and research fields. All of my below comments intend to improve and enrich your valuable manuscript. Please DON’T remove my comments from the attachment file for the next revision. If you miss or remove any comments, it may lead to rejection of your manuscript. Highlight by green color with point-by-point answers for next revision. Best wishes*

**Title:**

Your main title ought to be 15 words (Max).

Type of study should be written in the end of main title after colon punctuation.

Add running title below the main title (Max 8 words).

**Abstract:**

Write the abstract based on journal abstract format.

Background: It should have maximum 40 words, clear meaning and importance. Also, last paragraph ought to be passive and past grammatical structure for aim depiction.

Materials and Methods: Materials and Methods should be written scientifically. Also, you must indicate the study population, research location, time and name of research’s tools. Then, mention the name of statistical tests, statistical program and level of significance in maximum 70 words.

Results: It must be written vividly and clearly for better understanding and level of significance should be written until three decimal numbers in max 100 words.

Conclusion: Mention the main conclusion of your study until 40 words.

Total words for abstract should be Max 250 words.

All of your keywords must be on the MeSH PubMed (Max 5 keywords).

**Introduction:**

Total words for introduction should be nearly 750. Yours in roughly 500. Revise it.

Each sentence should have reference. Remember it.

Write your references exactly based on journal format (After punctuation mark and in superscript in the bracket).

Your introduction, included some major comments:

\* You didn’t follow the content coherency.

\* I’ve removed some parts of your introduction and kept its revisable part for you to improve it for next revision round. Please consider all of mentioned comments.

Use paragraph sectioning in your introduction (Max 3 paragraphs).

In fourth paragraph, you should write the aim of your study in the past and passive grammatical English structure.

**Materials and Methods:**

Follow journal headings and subheadings (For this section, consider this following subheadings based on journal policies: **Study Design, Setting and Participants, Sample Size** (Also add the Formula), **Randomization & Blinding** (necessary for RCT studies), **Data collection tool and technique** (For this part, create subheading for each tool. Then, introduce the name of each tool, its variables, sub scales, scoring, interpretation, validity and reliability with valid references in English and your country studies.). (Each manuscript must have demographic tool and write their variables below it in the sentence format.), **Intervention** (necessary for RCT studies. Also put Consort Diagram for RCT studies below the last paragraph of intervention section.), **Ethical Considerations** (Write it based on Helsinki guidelines and roles**. Each article must have Ethical committee code\*), Statistical and Data Analysis** (Mention the all statistical tests of your manuscript and put their performance in the parenthesis. Also, indicate the statistical program, its version and, level of significance).

If your tools are research-made, please report your CVI and CVR for its validity and, Cronbach’s alpha coefficient for reliability.

Each manuscript must have demographic tool and write their variables below it in the sentence format and be reported in the results section.

In the whole part of manuscript, don’t use “we”. Please use the “research team” or “current study ‘’ instead of it.

**Results:**

Please report your variables based on your statistical tests.

In the first paragraph of your quantitative research, explain about demographic variables, then refer to the main outcomes analytical reports until three decimals for P-value.

In each table, you must indicate the name of statistical test which used for P-value below its table as a footnote.

Each description should be understandable and visible in the tables.

Put your explanation about each table which you mean.

Each table should be cited correctly in the results context.

**Discussion:**

The total of words number of discussion should be 750 (Max).

The first sentence for discussion started with the aim of your research. Then, explain the most valuable of your findings. After that, you go to next line and start comparing your results with other consistent and inconsistent studies and related others’ authors findings. Also, consider that all of your references’ names must be same with the name of authors in the references section.

Don’t put year of study in the discussion.

In the last paragraph of your discussion, describe your limitations and strengths of your research (Max 75 words).

**Conclusion:**

At the first paragraph of your conclusion, indicate the results of your research (Max 40 words).

At the second paragraph of conclusion, write a policy brief based on health benchmarks (Max 125 words).

At the third paragraph of conclusion, write your recommendations (Max 75 words).

**References:**

Your references should be over 2018 in the Vancouver style.

Total number for references is maximum 40.

All of your references must have page numbers and DOI.

The maximum words of your article (except tables and references) must be 3500.

After modifying your manuscript, Consult with a Native English to solve any grammatical mistakes or errors.

**ENHANCING READING COMPREHENSION SKILLS OF GRADE 8 LEARNERS THROUGH GAMIFICATION IN A LEARNER-CENTERED FRAMEWORK**

**ABSTRACT**

|  |
| --- |
| This quasi-experimental study explored Grade 8 students’ perceptions of gamification as an instructional approach to improve reading comprehension, grounded in Self-Determination Theory (SDT). The research investigated how gamified instruction, emphasizing autonomy, competence, and relatedness, could improve student engagement and comprehension. Using a non-random sampling method, participants were divided into control and experimental groups and assessed through pre-test and post-test measures. Ethical considerations were observed to ensure participants’ rights and confidentiality. Statistical analyses analyzed using t-test were conducted to examine within- and between-group differences in reading comprehension scores. While both groups showed improvements, the difference between the experimental and control groups was not statistically significant. These findings suggest that although gamification may enhance student engagement and motivation, its short-term impact on reading comprehension may not surpass that of traditional instruction. Further research with extended intervention periods, varied game-based strategies, and larger sample sizes is recommended to better understand gamification's potential in literacy development.**Aims:** The study aimed to determine the **perception of Grade 8 learners** toward gamified reading instruction and its effect on their **reading comprehension.** It sought to explore how gamification as a learner-centered approach influences student engagement and comprehension outcomes.**Study Design:** The research employed a **quantitative quasi-experimental design,** using **pre-test and post-test measures** to compare the outcomes of a **control group** (traditional instruction) and an **experimental group** (gamified instruction).**Place and Duration of the Study:** The study was conducted in two secondary school in Davao City, Philippines. The research was carried out over a three-month- period, from February to April 2025.**Methodology:** Reading comprehension was assessed using a researcher-made 20-item multiple-choice test administered as both pretest and posttest. The control group received traditional instruction, while the experimental group engaged in gamified reading activities. Data analysis included paired t-tests to measure within-group improvements, and an independent t-test to compare mean gain scores between groups.**Results:** Findings revealed that both instructional approaches significantly improved students' reading comprehension, with the control group (traditional instruction) achieving a mean gain score of 1.90 (SD = 4.15), and the experimental group (gamified instruction) achieving a mean gain score of 1.73 (SD = 1.84). Paired t-tests indicated significant within-group improvements for both the control group (t = -3.51, p = .00087) and the experimental group (t = -7.23, p < .001). However, an independent t-test comparing gain scores between groups yielded no significant difference, t = -0.29, p = .77. These results suggest that while both methods are effective, gamification produced more consistent gains among learners, as reflected in its lower standard deviation.**Conclusion:** The study underscores the potential of gamified instruction to produce more consistent learning gains in reading comprehension, highlighting the need for sustained and well-integrated game-based strategies to maximize student engagement and achievement. |

*Keywords*: *reading comprehension, gamification, self-determination theory, quasi-experimental, student engagement, pre-test and post-test, control and experimental groups, T-test analysis, Literacy development*

**1.INTRODUCTION**

A student who cannot understand what they are reading is someone who is not reading at all. This scenario is common among learners particularly those who struggle with reading comprehension. Learners’ lack of interest in reading directly affects their motivation, which may be influenced by different learning needs, varying reading skills and digital distractions. Many learners struggle with reading comprehension and lack of interest and motivation in reading (Efriza et al., 2023). According to Organization for Economic Co-operation and Development (OECD, 2019) reported that traditional methods of teaching reading often fail to engage students, leading to inattention and academic underachievement.

In Cambodia, reading comprehension remains a significant concern despite ongoing efforts to address the issue. A study by Doung (2019) investigated English reading comprehension problems among Cambodian high school students, revealing that many learners struggle with understanding texts due to limited vocabulary, lack of background knowledge, and insufficient reading strategies. These difficulties hinder students' ability to engage critically with texts, affecting their overall academic performance. Additionally, Doung’s findings emphasized that students often rely on rote memorization rather than comprehension, making it difficult for them to analyze and interpret reading materials effectively. The research highlighted the need for targeted interventions to enhance reading comprehension skills in Cambodian educational settings.

Further studies have identified various factors contributing to poor reading comprehension in Cambodia**. A case study by the Cambodian Education Forum (2022) found that outdated textbooks and misaligned curricula hinder effective English language instruction in Cambodian high schools, creating a gap between students’ proficiency levels and the materials provided.** Many schools focus heavily on grammar and vocabulary drills rather than reading for meaning, which limits students’ ability to develop critical thinking and comprehension skills. Moreover, economic disparities in rural and urban areas further exacerbate the issue, as students in underserved communities often have limited exposure to books and reading activities (Vonn, 2021).

In the 2018 Programme for International Student Assessment (PISA), the Philippines participated for the first time and ranked lowest among 79 countries in reading comprehension, with an average score of 340, significantly below the OECD average of 487. This performance highlights substantial challenges in the country's education system, particularly in developing students' reading skills.

In addition to the previously mentioned challenges, Filipino students face several factors that contribute to their reading comprehension struggles. A study by Decena (2021) identified key difficulties among K-12 learners, including limited vocabulary, lack of motivation, and insufficient reading strategies. These challenges hinder students' ability to understand and engage with texts effectively.

Castillo (2017) highlighted that junior high school students often exhibit low levels of comprehension when reading literature, which can be attributed to inadequate background knowledge and ineffective teaching methods. The study emphasized the need for targeted interventions to enhance students' reading comprehension skills.

Talomo National High School in Davao City has implemented targeted reading programs to address ongoing literacy challenges. In the first quarter of the school year, the school conducted a group screening test for all students from Grades seven (7) to twelve (12). The results of the Philippine Informal Reading Inventory (Phil-IRI) assessment revealed that a significant number of students scored very low, identifying them as frustrated readers. Using the Phil-IRI data, the school determined students' reading levels and tailored instruction to meet their specific needs. These findings underscore the persistent challenges in reading comprehension among students in Davao City and highlight the need for continuous assessment and targeted interventions to improve literacy skills.

Self-Determination Theory (SDT), developed by Deci & Ryan, (2000), offers a helpful way to understand how motivation affects learning, especially in gamified educational environments. This theory suggests that people are most engaged when their basic psychological needs for autonomy, competence, and relatedness are fulfilled. According to Deci and Ryan (2000), learners are more likely to be intrinsically motivated when they feel a sense of control over their learning, believe in their ability to succeed, and experience meaningful social interactions.

Gamified learning environments align with Self-Determination Theory by incorporating elements that enhance motivation and engagement. Wang et al (2024) systematically reviewed the impact of gamification on reading instruction, finding that game-based strategies significantly boost reading comprehension and student motivation. When students interact with educational content in a game-like format, they are more likely to persist through challenges, retain information, and develop deeper comprehension skills.

In today’s digital age, students are naturally drawn to technology, making it easier for them to engage with lessons presented in **game-like formats or online interactive activities.** When learning feels like a game, students are more likely to follow instructions, stay motivated, and retain information. This shift highlights the importance of incorporating **gamification** into education to enhance comprehension skills and overall learning experiences. This perception was supported by the study of Wang et al (2024) systematic review the impact of gamification on reading instruction. The findings indicate that gamified learning environments can significantly boost reading comprehension and student motivation, leading to improved educational outcomes. This research underscores the potential of gamification as a valuable tool in modern educational strategies.

Zainudden et al. (2020) pointed out that gamified learning’s main goal is to transform traditional learning activities into more engaging activities that increase learner’s engagement and interest. Similarly, Jaramillo-Mediavill et al. (2024) emphasized that gamification in education can boost student motivation, increase engagement, and enhance learning outcomes. Their systematic review found that gamified learning environments positively impact students' academic performance and motivation. The study suggests that integrating game-based strategies into instruction can create a more interactive and engaging learning experience, potentially leading to improved comprehension and retention of knowledge.

The present situation urges teachers to immediately adapt and innovate by utilizing gamification as a key technique to help learners enhance their reading comprehension skills. Dichev and Dicheva (2017) described gamification in education as a developing approach aimed at increasing learners' motivation and engagement by incorporating game design elements into educational environments. Similarly, Subhash and Cudney (2018) highlighted that gamified learning can enhance student engagement, motivation, and learning outcomes by incorporating elements such as points, challenges, and leaderboards into educational activities. Given these insights, the question remains: Can gamified learning be effectively utilized to enhance learners’ reading comprehension skills?

**REVIEW OF RELATED LITERATURE**

Struggles of Students in Reading Comprehension

Reading comprehension is a fundamental skill necessary for academic success, yet many students face significant struggles in this area. These difficulties arise due to various factors, including limited vocabulary, lack of background knowledge, poor decoding skills, and insufficient metacognitive strategies.

One of the primary challenges in reading comprehension is limited vocabulary. According to Nagy and Scott (2000), vocabulary knowledge is a strong predictor of reading comprehension, as students with a richer vocabulary can better understand texts. When students encounter unfamiliar words, they may struggle to grasp the overall meaning of a passage, leading to comprehension breakdowns (Perfetti & Stafura, 2014).

Another factor affecting comprehension is background knowledge. Students who lack prior knowledge related to a text may find it difficult to connect new information with what they already know, which impairs their ability to make inferences and understand the text deeply (Kintsch, 1998). Without sufficient context, students may misinterpret the main ideas or fail to grasp the author's intended message.

Self-Determination Theory (Deci & Ryan, 2000)

Self-Determination Theory (SDT), developed by Deci and Ryan (2000), suggested that individuals have innate psychological needs for autonomy, competence, and relatedness. These needs are crucial for fostering intrinsic motivation, which is essential for effective learning. In the context of gamification, incorporating elements that satisfy these needs can enhance student engagement and motivation. For instance, gamified learning environments that allow students to make choices (autonomy), experience success (competence), and collaborate with peers (relatedness) can lead to improved reading comprehension outcomes (Ryan & Deci, 2017). By aligning gamification strategies with SDT principles, educators can create a more motivating and effective learning environment.

Gamification and Reading Comprehension

Gamification has emerged as an effective approach to enhancing students' reading comprehension by fostering engagement and motivation. Su and Cheng (2015) found that students who participated in game-based reading activities outperformed those in traditional classrooms in comprehension assessments. The interactive and immersive nature of gamified reading, particularly storytelling-based games, provided learners with contextualized experiences that deepened their understanding. Aligned with this, Gee (2003) expanded on the role of games in learning, emphasizing that video games create meaningful learning environments that support Situated Learning Theory, which suggests that learning is most effective when embedded in real-world contexts.

De Sousa Borges et al. (2014) conducted a systematic review on gamification in education, highlighting that game mechanics such as challenges, rewards, and narrative-driven engagement enhance reading comprehension by promoting active learning and critical thinking. Similarly, Huang and Soman (2013) noted that gamified learning fosters student engagement by breaking lessons into smaller, achievable levels, making complex reading tasks more manageable.

Deterding et al. (2011) defined gamification as the application of game design elements in non-game contexts, which can increase participation and improve learning outcomes. In support of this, Hamari, Koivisto, and Sarsa (2014) found that gamification transforms traditional learning environments into interactive and enjoyable experiences, fostering motivation and a sense of achievement. By integrating game-based strategies into reading instruction, educators can create more dynamic learning experiences that improve students’ comprehension and engagement.

The Role of Technology in Gamified Learning

With the rise of educational technology, digital platforms have facilitated gamified reading experiences. A study by Hamari et al. (2016) analyzed multiple gamification applications and concluded that game-based learning tools improve engagement and knowledge retention. Furthermore, Dicheva et al. (2015) emphasized that the success of gamification depends on effective instructional design, ensuring that game elements align with learning objectives rather than serving merely as entertainment.

Technology Integration in reading instruction has transformed traditional teaching methods. According to Wang et al. (2024), digital tools and online platforms adapts to individual student needs, allowing for differentiated instruction. A study by Wang et al. (2024) found that gamification strategies in reading instruction enhanced student engagement and comprehension skills. Similarly, Liman Kaban (2021) demonstrated that gamified e-reading experiences positively impacted reading comprehension and attitudes among learners. This technological integration supports a learner-centered approach, enhancing reading comprehension among learners.

Learner-Centered Frameworksin Gamification

Learner-centered education emphasizes the active involvement of students in their learning process. According to McCombs (2019), learner-centered education emphasizes the development of responsible and autonomous learners by fostering active engagement, critical thinking, and self-directed learning. McCombs highlights the importance of creating meaningful and interactive learning experiences to enhance student motivation and comprehension. Her article, Developing Responsible and Autonomous Learners: A Key to Motivating Students (2019), supports the idea that incorporating strategies that promote student autonomy, such as gamification, can create an engaging and dynamic learning environment that encourages participation and enhances knowledge retention. In a learner-centered framework, gamification can serve as a catalyst for engagement, allowing students to take ownership of their learning while developing essential reading skills (Dichev & Dicheva, 2017). This alignment between gamification and learner-centered principles can lead to improved educational outcomes.

Gamification strengthens **learner-centered frameworks** by fostering **active participation, personalized learning experiences, and intrinsic motivation** (Ryan & Deci, 2017). By integrating **game-like elements** such as **progress tracking, choice-based learning paths, challenges, and instant feedback,** gamification provides learners with greater control over their learning process, reinforcing the **principle of autonomy** (Nicholson, 2015). Additionally, gamified environments encourage **problem-solving, exploration, and collaboration**, which are key components of learner-centered education (Deterding, 2015).

**Objectives of the Study**

This study aims to investigate the effectiveness of gamification in enhancing the comprehension skills of the grade 8 learners in a learner-centered framework. Specifically, it aims to answer the following questions:

1. Is there a significant difference of the pretest and posttest mean scores of students who were taught using gamification?
2. Is there a significant difference in the pretest and posttest mean scores of students who were taught using the conventional way?
3. Is there a significant difference in the mean score improvements between students taught using gamification or those who were not taught using gamification?

**2. MATERIALS AND METHODS**

**2.1 Research Design**

This study employed a quasi-experimental quantitative research design to examine whether gamification enhances the reading comprehension skills of Grade 8 learners. A pretest-posttest approach was used, with participants selected through non-random sampling. The participants were divided into two groups: an experimental group, which received gamified instruction, and a control group, which underwent conventional instruction.

 The study was conducted over four weeks. Before the intervention, both groups took a pre-test to assess their baseline reading comprehension skills. The pre-test and post-test were aligned with the Department of Education’s DO 14, S. 2018 policy guidelines on the administration of the revised Philippine Informal Reading Inventory (Phil-IRI), which measures students’ reading performance in oral reading, silent reading, and listening comprehension.

The control group received traditional reading instruction through teacher-led discussions and comprehension exercises using printed materials, while the experimental group participated in gamified reading activities that integrated interactive and game-based assessments into the lessons. The intervention was conducted during regular class hours, and a post-test was administered to both groups afterward to evaluate changes in their reading comprehension skills.

**2.2 Research Respondents**

The study utilized a non-random sampling method by selecting specific sections of Grade 8 students to serve as research respondents. The selection was based on convenience, without the use of predefined criteria. The identified sections were then divided into two groups: the experimental group, which received gamified reading instruction, and the control group, which received traditional reading instruction.

**2.3 Research Instrument**

The primary instrument used in this study was a researcher-made 20-item reading comprehension test. The items were categorized according to the three levels of comprehension—literal, inferential, and critical—aligned with the structure and format of the Philippine Informal Reading Inventory (Phil-IRI) used in public schools. This test was designed to measure students’ reading comprehension before and after the intervention. The same instrument was administered as a pretest and posttest to both the control and experimental groups.

**2.4 Validation and Reliability**

To ensure the validity of the 20-item reading comprehension test, a pilot test was conducted with a group of students who were not part of the actual control or experimental groups. The pilot testing helped establish that the test items were appropriate, and consistent with the Phil-IRI standards. The validity of the instrument was confirmed based on the pilot group's test scores, indicating that the questions effectively measured reading comprehension across the three levels. As the results were satisfactory, no major revisions were made, and the instrument was subsequently used in the pretest phase of the actual study.

**2.5 Data Collection Procedure**

The study was conducted over four weeks. In the first week, both the control and experimental groups took a 20-item pretest to assess their baseline reading comprehension. The control group received traditional instruction, while the experimental group engaged in gamified reading activities. On the fourth week, both groups took the same posttest. A paired t-test was used to analyze within-group differences, and an independent t-test was used to compare the mean gain scores between the control and experimental groups.

**2.6 Data Analysis**

Test scores from the pretest and posttest were analyzed to determine improvements. The average scores and variations were calculated to summarize the results. A paired t-test was used to assess significant improvements within each group, while an independent t-test was conducted to compare the final scores between the experimental and control groups.

**3. RESULTS AND DISCUSSION**

This chapter presents the findings of the study based on the data gathered. The results are presented in tables and figures, followed by detailed narrative interpretations. Subsections are organized according to the statistical analyses performed.

**3.1 Mean Score of Control Group**

Table 1 presents the pre-test and post-test mean scores of the control group, which received traditional reading instruction. The study aimed to determine whether there was a significant difference in students’ scores after the intervention. The mean gain score was computed to assess improvements in reading comprehension.

As shown in Table 1, the control group’s average pre-test score was 12.93, which increased to 14.83 after traditional instruction, resulting in a mean gain of 1.90 points. A paired t-test confirmed that this improvement was statistically significant (t = -3.51, p = 0.00087), indicating that the traditional method contributed to reading comprehension gains.

However, the small increase in scores suggests that while traditional instruction helped, the progress was limited. The decrease in standard deviation from the pretest (SD = 4.04) to the posttest (SD = 3.38) indicates that the variability in student performance reduced, meaning some students improved while others made little or no progress. The standard deviation of the mean gain score (SD = 4.15) further suggests inconsistency in individual improvements.

These findings align with Slavin (2020), who argued that while traditional reading instruction can establish foundational skills, it often lacks the engagement and motivation necessary for significant comprehension improvements. Slavin emphasized that teacher-centered approaches, though effective in structured learning, may not adequately address individual learning differences or promote higher-order thinking skills in reading.

**Table 1 Mean Gain Score of Students in the Control Group**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Group** | **Participants (N)** | **Pretest Mean (SD)** | **Posttest Mean (SD)** | **Mean Gain Score (SD)** |
| Control Group | 59 | 12.93 (4.04) | 14.83 (3.38) | 1.90 (4.15) |

**3.2 Mean Score of Experimental Group**

The table below presents the pre-test and post-test mean scores of the experimental group, which received instruction through gamification. The goal of this study is to determine whether there is a significant difference between these scores after the intervention. The mean gain score was calculated to assess any changes in students' reading comprehension performance.

Table 2 presents how the group that received gamified reading instruction performed. Before the intervention, their average score was 13.17 (SD=4.00), and after the intervention, it increased to 14.90 (SD=3.04), giving a gain of 1.73 (SD=1.84) points. This suggests that using game-based methods helped improve the students' reading comprehension.

A paired t-test confirmed that this improvement was statistically significant (**t = -7.23, p = 1.20 × 10⁻⁹**), indicating that the use of gamified strategies contributed to learning gains. This aligns with previous research by **Hamari et al. (2014),** which found that gamification—through elements like interactive quizzes, rewards, and challenges—enhances learning by increasing student engagement and motivation.

Another notable observation is the decrease in standard deviation from **4.00 (pretest)** to **3.04 (posttest),** indicating that student performance became more uniform after the intervention. Additionally, the relatively small **SD of 1.84** for the mean gain score suggests that most students improved at a similar pace, implying that gamification can help create more consistent learning outcomes.

These findings are consistent with studies emphasizing that gamification fosters motivation and engagement, leading to better comprehension and retention of learning materials (**Hamari et al., 2014; Sailer & Homner, 2020**). Interactive features such as rewards, challenges, and real-time feedback promote active participation, encourage deeper cognitive processing, and make learning more enjoyable (**Sailer & Homner, 2020**).

**Table 2 Mean Gain Score of Students in the Experimental Group (Gamification)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Participants (N) | Pretest Mean (SD) | Posttest Mean (SD) | Mean Gain Score (SD) |
| Experimental Group | 59 | 13.17 (4.00) | 14.90 (3.04) | 1.73 (1.84.) |

**3.3 Significant Difference of Control and Experimental Groups**

To determine the statistical significance of the differences in performance gains between the control and experimental groups, an independent t-test analysis was conducted. The t-test is a common statistical method used to compare means between two groups and determine whether observed differences are due to chance or the effects of the instructional intervention. Given that the control group followed traditional instruction while the experimental group engaged in gamified learning, this comparison is essential in evaluating the effectiveness of game-based strategies in improving student achievement.

Table 3 reveals that both groups demonstrated improvements in reading comprehension, with the control group achieving a slightly higher mean gain score (1.90) than the experimental group (1.73). However, the standard deviation was significantly larger in the control group (SD = 4.15) than in the experimental group (SD = 1.84). This suggests that progress among students in the control group varied widely—some showed substantial improvement, while others made little or no progress. In contrast, the lower standard deviation in the experimental group indicates that students improved at a more consistent rate under gamified instruction.

An independent t-test (t = 0.29, p = 0.77) revealed that the difference between the two groups was not statistically significant. Notably, while gamified instruction was expected to produce greater improvements, the control group showed a slightly higher mean gain. This discrepancy suggests that while gamification may contribute to engagement and consistency in learning, it did not lead to significantly higher score improvements compared to traditional methods under the given conditions.

**Table 3 Significant Difference in Mean Gain Scores Between Control and Experimental Groups**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Mean Gain Score (SD) | t-value | p-value | Interpretation |
| Control Group | 1.90 (4.15) | -0.29 | 0.77 | Not Significant |
| Experimental Group | 1.73 (1.84) | -0.29 | 0.77 | Not significant |

**3.4 Summary of Findings**

Several factors may have influenced these results. First, the study was conducted within a limited time frame, which may not have allowed students enough exposure to fully benefit from gamified instruction. Second, the content and difficulty of reading materials were the same for both groups, meaning that any potential advantage of gamification in comprehension might have been neutralized. Third, students’ prior experience and familiarity with digital learning tools varied, possibly affecting how effectively they engaged with gamified activities. Lastly, external factors such as classroom environment, teacher guidance, and student motivation could have contributed to the observed outcomes.

These findings suggest that while gamification has potential as an instructional strategy, its impact on reading comprehension may depend on factors such as duration of implementation, student adaptability to digital tools, and the integration of gamified elements with lesson objectives. Further research may explore how different gamification strategies, extended exposure, or varied content difficulty affect literacy development.

**4. CONCLUSIONS**

The findings of this study indicate that while gamified reading instruction contributed to some improvement in reading comprehension, it did not yield significantly better results than traditional reading instruction. Both groups demonstrated progress, as reflected in their mean gain scores; however, the independent t-test results (t = 0.29, p = 0.77) confirmed that the difference between their improvements was not statistically significant.

Although students in the gamified learning environment showed increased engagement and consistency in their post-test scores, the results suggest that gamification alone may not be a decisive factor in enhancing reading comprehension. Several factors could explain this outcome, including the short duration of the intervention, the uniformity of reading materials across both groups, and varying levels of student familiarity with gamified learning tools. While structured game-based activities may have contributed to a more consistent learning experience, the overall effect was not substantial enough to indicate a clear advantage over traditional instruction.

Despite the lack of significant differences, this study adds to the ongoing discourse on gamification in education. While gamification is widely acknowledged for increasing student motivation and engagement, its influence on reading comprehension may depend on factors such as instructional design, the selection of gamified elements, students’ adaptability to game-based learning, and external variables like prior knowledge and classroom environment. Future research could explore extended intervention periods, diverse gamification strategies, and a more detailed analysis of student engagement to determine how gamified learning can be effectively integrated into reading instruction.

**ETHICAL APPROVAL AND CONSENT**

The study adhered to ethical standards for research involving student participants. Participation was voluntary, and written informed consent was obtained prior to participation.

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