Borobudur Educational Review
Vol. 5 No. 2 (2025) pp. 135-149
e-ISSN: 2797-0302

Improving students' English Vocabulary Mastery through the application of Minecraft Video Game-based Learning Media

Faris Mohammad Royyan [1*], **Arif Suryo Priyatmojo**[1]
[1] English Language Education/ Faculty of Languages and Arts/Semarang State University, Indonesia
*email: royyanfarismohammad@gmail.com

DOI: 10.31603/bedr.14995

Abstrak

Tujuan utama dari studi ini adalah untuk mengukur secara kuantitatif pengaruh penggunaan Minecraft terhadap peningkatan penguasaan kosakata Bahasa Inggris pada siswa kelas VIII SMP Negeri 2 Temanggung tahun ajaran 2023/2024. Penelitian ini mengadopsi metode kuasi-eksperimen dengan desain pre-test post-test control group. Sampel penelitian terdiri dari 61 siswa kelas VIII yang dibagi menjadi dua kelompok: kelompok eksperimen yang menerima perlakuan pembelajaran berbasis Minecraft (n=31), dan kelompok kontrol yang mengikuti pembelajaran konvensional (n=30). Instrumen pengumpulan data meliputi tes penguasaan kosakata (diberikan sebelum dan sesudah perlakuan), lembar observasi untuk mengukur keterlibatan siswa, serta angket untuk mengetahui respons siswa terhadap media pembelajaran. Analisis data menggunakan uji Independent Sample T-Test. Hasil penelitian menunjukkan adanya perbedaan performa yang signifikan antara kedua kelompok. Kelompok eksperimen yang menggunakan Minecraft menunjukkan peningkatan skor rata-rata post-test yang jauh lebih tinggi dibandingkan dengan kelompok kontrol. Selain peningkatan hasil belajar secara kognitif, data observasi dan angket juga mengungkapkan bahwa siswa di kelompok eksperimen menunjukkan tingkat antusiasme, partisipasi, dan motivasi belajar yang lebih superior. Siswa memandang Minecraft sebagai alat belajar yang menyenangkan, interaktif, dan efektif dalam mengurangi persepsi bahwa belajar kosakata itu sulit. Dengan demikian, dapat disimpulkan bahwa penerapan Minecraft sebagai media pembelajaran memiliki pengaruh positif yang signifikan dan efektif untuk meningkatkan penguasaan kosakata Bahasa Inggris siswa SMP.

Kata kunci: Kosakata Bahasa Inggris; Media Pembelajaran; Game Based Learning; Minecraft; Kuasi-Eksperimen;

Abstract

The main purpose of this study is to quantitatively measure the influence of the use of Minecraft on the improvement of English vocabulary mastery in grade VIII students of SMP Negeri 2 Temanggung for the 2023/2024 school year. This study adopts a quasi-experimental method with a pre-test post-test control group design. The research sample consisted of 61 grade VIII students divided into two groups: the experimental group that received Minecraft-based learning treatment (n=31), and the control group that

followed conventional learning (n=30). Data collection instruments include vocabulary mastery tests (before and after treatment), observation sheets to measure student involvement, and questionnaires to determine students' responses to learning media. The data was analyzed using an Independent Sample T-Test. The results showed a significant difference in performance between the two groups. The experimental group that used Minecraft showed a much higher increase in the average post-test score compared to the control group. In addition to improving cognitive learning outcomes, observational data and questionnaires also revealed that students in the experimental group showed superior enthusiasm, participation, and motivation to learn. Students view Minecraft as a fun, interactive, and effective learning tool in reducing the perception that learning vocabulary is difficult. Thus, the application of Minecraft as a learning medium has a significant and effective positive influence on improving the English vocabulary mastery of junior high school students.

Keywords: *English Vocabulary; Learning Media; Game Based Learning; Minecraft; Quasi-Experimental*

1. Introduction

Language plays an essential role in human life, serving as the main instrument for communicating and transferring meaning from one individual to another. In education, language is the foundation of all forms of learning. When a person learns a language outside their native language (L1), it is known as a second language (L2). To comprehensively understand any language, be it L1 or L2, mastery of a rich vocabulary is a non-negotiable prerequisite. Vocabulary is often considered the most crucial element in language acquisition, because without it, even the best grammatical structure cannot convey the message effectively (Juraboeva, 2023). Therefore, a strong vocabulary is key to unlocking overall language skills (Purwanto, 2023).

Linguists consistently affirm that vocabulary is a fundamental component in the language acquisition process. Vocabulary mastery is considered the core of language proficiency, and is often seen as more crucial than grammatical mastery. Wilkins (1972), mentioned that without grammar, very little can be conveyed; But without vocabulary, nothing can be conveyed.

A proper analogy is to think of vocabulary as a brick in a building. Without a sufficient number of "bricks", it would be impossible to build a solid and meaningful sentence structure, let alone to understand other more complex aspects of the language, such as grammar and syntax. In other words, adequate vocabulary is an absolute prerequisite for a language learner to produce their ideas and thoughts in oral and written form (Alqahtani, 2015; Sudarmaji & Yusuf, 2016)

On the global stage, English is often seen as a language of high prestige value, where mastery of it is considered to open up wider access to future educational and career opportunities. However, behind its superior status, one of the biggest challenges for learners is its unusually large vocabulary. As an illustration, modern linguistic research estimates that the average adult native speaker has a vocabulary of tens of thousands of words. This fantastic number is certainly a significant psychological obstacle for students in Indonesia. The process of memorizing thousands of new words takes enormous time and dedication and often leads to feelings of overload and frustration. This condition aligns with the findings of many studies that confirm that learners of English as a foreign language consistently perceive vocabulary acquisition as one of the most difficult and exhausting aspects of their learning journey (Ghalebi et al., 2020;

Nation, 2022). As a result, the long learning duration and high difficulty level are the main factors that hinder students' progress in mastering English.

In the midst of today's digital era, where technology has integrated into almost every aspect of life, the world of education must adapt. There is an urgent need for English educators to move away from traditional teaching methods and start integrating technology as an effective tool, especially in teaching vocabulary to students in Indonesia (EFL). Conventional methods have been shown to often create negative perceptions in students. The monotonous process triggers boredom and makes the material feel more difficult than it should. As a result, students' motivation decreases, and memorized-vocabulary tends not to last long in their long-term memory. This is because rote memorization often fails to build deep vocabulary knowledge, which requires mastery across multiple indicators. True mastery is not just about recalling a word's meaning, but also understanding its form (writing), how to use it correctly in context (usage), and how to pronounce it. Traditional methods often neglect these crucial dimensions, leading to shallow knowledge that is quickly forgotten. Therefore, using interactive and interesting digital media is no longer just an option, but a strategic need to create a more meaningful, fun, and effective learning experience that addresses all indicators of vocabulary mastery (Karakoç et al., 2022; Rahmawati et al., 2025).

Adopting the right learning method does not mean simplifying the material, but rather creating a more conducive learning environment. One of the most promising approaches is game-based learning. This approach changes the classroom dynamics, making students feel more comfortable, less easily bored, and less stressed, which often accompany traditional memorization methods. The main advantage of media such as video games is their ability to create an immersive learning experience, where students are often unaware that they are actively learning. New vocabulary is not presented in isolation, but rather is learned contextually as students complete missions or interact with elements in the game (Hadi & Wijaya, 2025). This naturally occurring acquisition process has significantly accelerated vocabulary comprehension and retention (Abidah et al., 2023). More than that, this virtual environment has also proven effective in fostering intrinsic motivation, collaboration, and active engagement among students (Wahyuni et al., 2023). Ultimately, this method is not just limited to the classroom; It empowers students to continue their learning process independently, turning playtime into productive language enrichment sessions.

The learning medium chosen in this study is Minecraft, a sandbox-type video game made by popular developer Mojang. This game offers an infinite virtual world composed of blocks, where players are given complete freedom to explore, create, and survive. The main game mode, Survival Mode, challenges players to actively collect natural resources such as chopping trees, mining ores, or farming and then craft them into tools, weapons, and buildings. This activity inherently forces the player to interact with hundreds of items, all with names in English, ranging from stone axes to furnaces.

The Minecraft world is designed to be very immersive, complete with various biomes (geographical environments), day-night cycles, dynamic weather conditions, and interactions with non-player characters (NPCs) such as villagers. In addition to the survival mode, there is also the

Creative Mode, which frees players from all threats and resource limitations, so they can fully focus on building anything they can imagine. This combination of exploration freedom and task-based gameplay makes Minecraft a learning environment rich in context and highly relevant for vocabulary acquisition.

Minecraft's global popularity continues to show positive trends and shows no signs of abating. The latest data at the end of 2023 shows that the game has sold over 300 million copies worldwide, with the number of monthly active players consistently exceeding 170 million (Brashears, 2024). These numbers cement its position as one of the greatest digital culture phenomena ever. This massive popularity, coupled with the rich vocabulary content, makes it an ideal medium for this research.

The academic world is also increasingly recognizing Minecraft's great potential as an educational tool. Recent studies have consistently shown its positive impact in the classroom. For example, a study found that Minecraft-based learning environments significantly improve students' collaboration skills and conceptual understanding more than traditional methods (Darmawan et al., 2025). The effectiveness stems from several inherent characteristics of Minecraft that align well with modern pedagogical principles. Firstly, its open-world *sandbox* nature offers unparalleled opportunities for contextual learning. Unlike rote memorization, Minecraft immerses students in a dynamic environment where new vocabulary (e.g., *crafting table, pickaxe, forest, mine, farm*) is encountered naturally as they explore, build, and survive. This contextual exposure is crucial for deeper understanding and retention, as highlighted by Waring (2013), who emphasizes the importance of context for effective vocabulary acquisition.

Secondly, Minecraft fosters active learning and engagement through its task-based and problem-solving gameplay. Students are not passive recipients of information; they actively engage in activities like gathering resources, building structures, or interacting with NPCs (*Non-Player Characters* like *villagers*). These tasks provide authentic opportunities to use and understand new words, thereby addressing various vocabulary mastery indicators such as usage and meaning. Research by Ishaq et al. (2021) confirms that game-based tasks accelerate vocabulary learning by requiring practical application.

Thirdly, the *multiplayer* aspect of Minecraft inherently promotes collaboration and communication. When students work together to achieve common goals—be it building a shared structure or surviving an in-game challenge—they are compelled to communicate using target language vocabulary. This social interaction transforms learning into a collaborative and interactive experience, aligning with principles of communicative language teaching (Dehghanzadeh et al., 2021).

Lastly, its highly visual and interactive interface provides immediate feedback and a low-stress environment for experimentation. Students can see the results of their actions instantly, making the learning process highly engaging and intrinsically motivating. This playful, experimental setting reduces anxiety often associated with language learning, creating a positive emotional context that enhances memory and learning (Ghalebi et al., 2020).

These findings are reinforced by other research that highlights how Minecraft can create more inclusive learning conditions and increase students' active engagement and creativity

(Slattery et al., 2024). Students not only become more focused on the material but also feel more motivated and happy during the learning process. Thus, the current empirical evidence further strengthens the argument that Minecraft is an effective, relevant, and helpful platform in the context of modern education.

Although various cutting-edge studies have confirmed the potential of Minecraft as an effective medium for increasing student collaboration and engagement, there are still significant gaps in the relevant literature. Specifically, there is still very limited quantitative empirical evidence that directly measures the effectiveness of Minecraft for improving English vocabulary mastery in the context of junior high school students in Indonesia. Most studies focus on more general aspects or are conducted on different demographics. In addition, direct comparisons with conventional methods applied in schools have often not been analyzed in depth, nor has the impact on students' affective aspects, such as motivation and learning perceptions, been systematically measured.

Therefore, this study is designed to fill the gap. The main purpose of this study is to measure and statistically analyze the significant influence of the application of Minecraft-based learning media on the English vocabulary mastery of grade VIII students at SMP Negeri 2 Temanggung. Furthermore, this study also aims to compare the effectiveness of this method with conventional learning methods that have been used, as well as describe students' responses and perceptions to the use of Minecraft as a learning tool to get a complete picture of the cognitive and affective impacts of the interventions carried out.

2. Methods

2.1 Researc Design

To investigate the influence of the Minecraft video game on students' vocabulary mastery, this study was designed using a quantitative approach. The research design is quasi-experimental with a pre-test post-test non-equivalent control group design model. This design was chosen because it allowed researchers to compare the group's condition before and after treatment, even though the study subjects were not randomly selected. According to Creswell and Creswell (2017), this design is particularly suitable for research in educational settings where the division of existing classes does not allow for reshuffling.

In this study, the independent variable (X) was the treatment using Minecraft as a learning medium, while the dependent variable (Y) was the students' English vocabulary mastery.

The implementation of the independent variable (X) in the experimental group followed several structured steps to ensure consistent treatment. First, students were instructed to use their smartphones to access the Minecraft application. The learning was conducted in 'Survival Mode' to encourage active engagement with in-game items and tasks. During the sessions, which lasted for 2 x 30 minutes, students were guided to perform specific tasks such as gathering resources (e.g., wood, stone, ore), crafting tools (e.g., pickaxe, furnace, sword), and identifying various elements within the game world. These activities required them to interact with and

understand English vocabulary in a contextualized and meaningful manner, thus facilitating natural language acquisition.

The dependent variable, students' vocabulary mastery (Y), was measured based on four key indicators derived from linguistic competence theories. These indicators were: (1) meaning, assessing students' ability to comprehend the definition of a word; (2) writing, evaluating the ability to write the word correctly; (3) usage, measuring the ability to apply the word accurately in a contextual sentence; and (4) pronunciation, assessing the ability to articulate the word correctly.

2.2 Research Participants

This research was carried out at SMP Negeri 2 Temanggung in the 2023/2024 school year. The study participants were 61 grade VIII students divided into two whole classes. Class 8A, consisting of 31 students, was designated as an experimental group, which received treatment in the form of learning vocabulary using Minecraft. Meanwhile, class 8B, consisting of 30 students, acted as a control group, which followed learning with conventional methods.

2.3 Data Collection Instruments and Procedures

Data collection in this study used three main instruments to obtain comprehensive results:

1. Vocabulary Mastery Test: The main instrument consists of a pre-test and a post-test, each containing 20 questions. This test measures four indicators of vocabulary mastery: meaning, spelling, usage, and pronunciation. Before use, the test instrument went through the validity test stage to ensure that the question items used were feasible and reliable in measuring the studied variables.
2. Observation Sheet: The researcher conducts structured observations to measure students' learning behavior during the treatment period. Aspects observed included student participation, response, and enthusiasm in both groups. This data aims to capture the difference in affective impact between the two learning methods.
3. Survey (Questionnaire): After the treatment is completed, the experimental group receives an online survey using Google Form. The survey is designed to explore students' perceptions and experiences while learning to use Minecraft, providing qualitative data to enrich the analysis.

The research procedure was carried out systematically. The initial stage is to pre-test both groups to gauge their initial abilities and ensure no significant differences. Furthermore, the researcher applies treatment according to the Learning Implementation Plan (RPP) that has been prepared. The experimental group learned for 2 x 30 minutes using the Minecraft application on their respective devices, while the control group learned for the same duration using conventional methods. After the treatment period ended, both groups were given a post-test to measure their improvement in ability. Finally, the experimental group was asked to complete a learning experience survey.

2.4 Data Analysis Techniques

All quantitative data collected from the pre-test and post-test results were organized using Microsoft Excel and then statistically analyzed using the SPSS (Statistical Package for the Social Sciences) version 27 program. This analysis aims to test the significance of the differences between the experimental and control groups so that valid conclusions can be drawn about the influence of Minecraft use on students' vocabulary mastery. Data from observation sheets and

surveys were analyzed descriptively to support and deepen the interpretation of quantitative results.

3. Results and Discussion

3.1 Students' English Vocabulary Mastery

The first stage in data analysis is to answer the fundamental question: "What is the level of mastery of students' English vocabulary before the treatment is given?" To measure these initial conditions, a pre-test was conducted for the experimental group (class 8A) and the control group (class 8B).

The results of statistical analysis from the pre-test showed that the initial ability of students in both groups was relatively low and equal. The experimental group obtained an average score of 45, while the control group obtained an average score of 44. Based on the Minimum Completeness Criteria (KKM) for English subjects in schools set at 75, the two average scores are included in the "less" category. This finding is reinforced by the fact that none of the students from either group (0%) achieved the KKM score on the pre-test.

This data indicates that before the intervention, the vocabulary mastery of grade VIII students at SMP Negeri 2 Temanggung was not optimal, and the learning methods that have been applied so far have not been effective enough to help students achieve the curriculum targets. More importantly, this initial score equivalence proved that the two groups had homogeneous or relatively balanced abilities before the study began. This condition of homogeneity is crucial, as it ensures that any significant differences later found in the post-test results can be validly attributed to the effect of the treatment (use of Minecraft), not due to differences in initial abilities between the two groups.

3.2 Students' Perceptions After Using Video Games

The following analysis answers the second research question, "How do students perceive after using video games as a learning medium to master English vocabulary?" based on statistical analysis, theoretical perspectives, and previous related research perspectives. To answer this, the writer conducted behavioral observations and surveys. The results showed that the behavior scores of students in the experimental group were higher than in the control group. Observations were made by observers in the 8th semester of the Department of English Education, UNES Semarang. The observed aspects consisted of three behaviors: response, enthusiasm, and participation. The score of each indicator ranged from 1 to 5, which was categorized as very bad, bad, adequate, good, and very good.

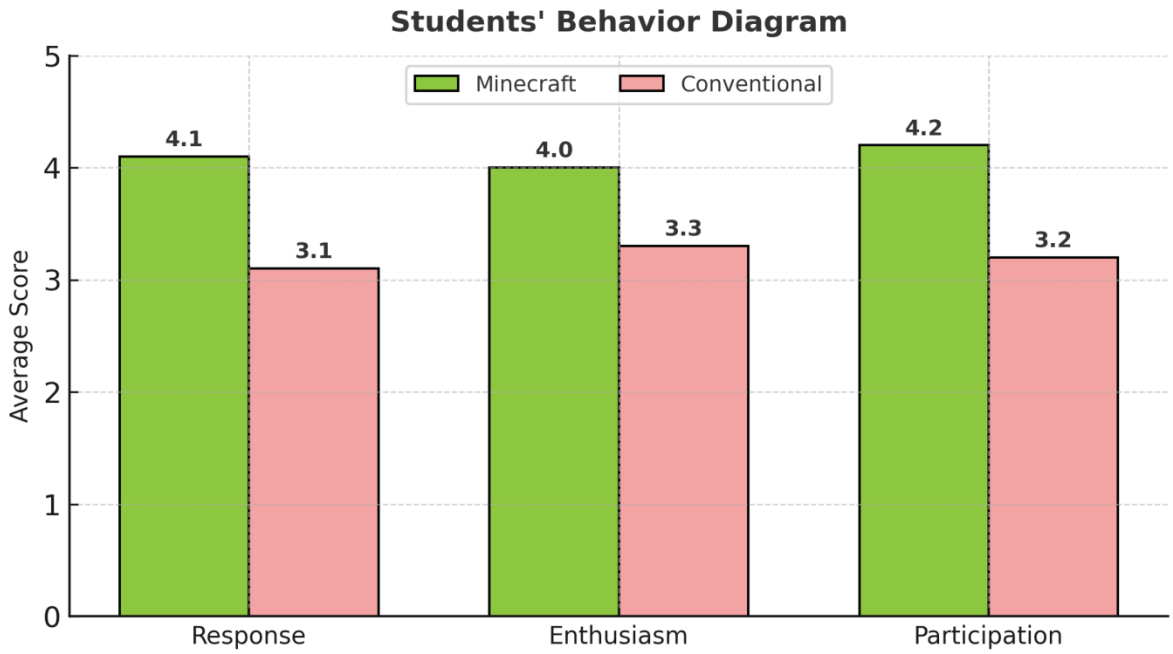

Figure 1. Students' Behavior Diagram

Based on the observation results shown in Figure 1, it is clear that the learning behavior of students in the experimental group showed much superior performance compared to the control group in the three aspects measured. In detail, regarding response, the experimental group that used Minecraft obtained an average score of 4.1 (good category), while the control group only achieved a score of 3.1 (good category). A similar pattern was also seen in the enthusiasm aspect, where the experimental group recorded a score of 4.2 (good category), significantly compared to the control group that obtained a score of 3.3 (fairly category). Finally, in the participation aspect, the experimental group received a 4.0 (good category) score, while the control group recorded a 3.2 (adequate category).

Overall, the experimental group consistently showed an average score above 4.0 (good) on all indicators, while the control group was in the range of 3.1 to 3.3 (adequate). The existence of a significant score difference, ranging from 0.8 to 1.0 points, indicates that Minecraft media substantially positively impacts students' engagement and active behavior during the learning process compared to conventional methods.

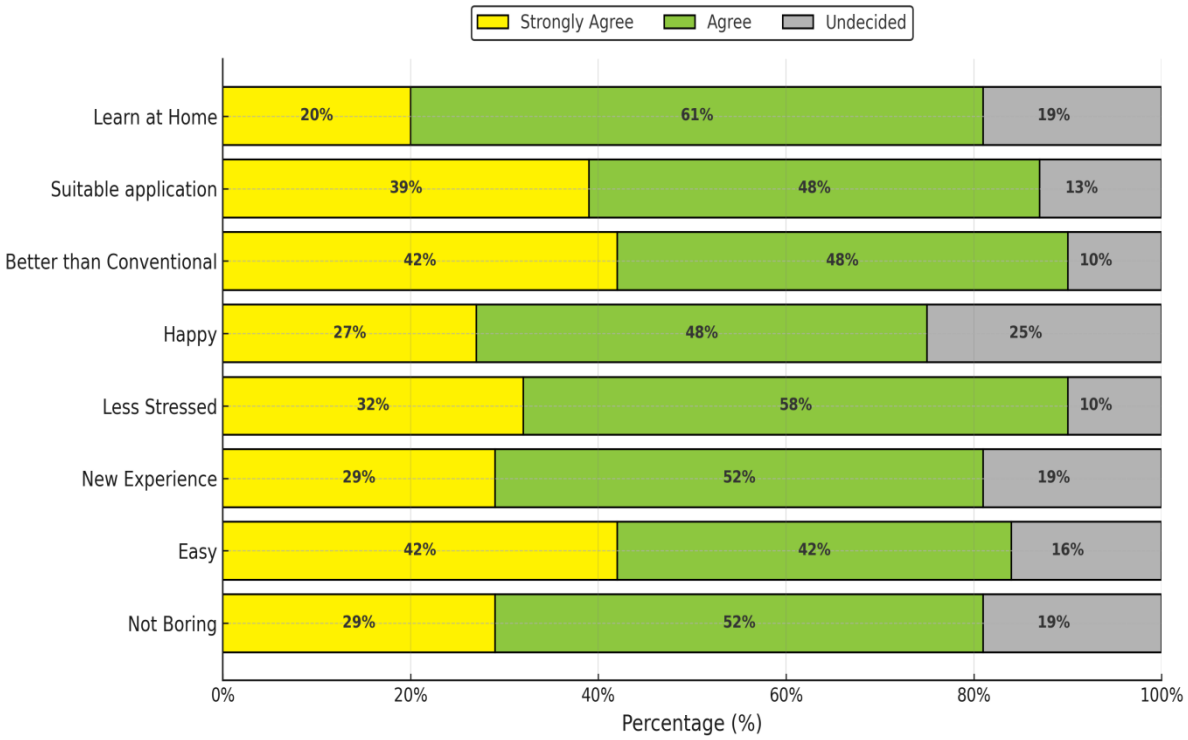

Figure 2. Survey Result

The survey results presented in Figure 2 clearly illustrate the very positive response of students after engaging in vocabulary learning using Minecraft. A significant majority of students agree with various positive aspects of this method. Specifically, more than 80% of students consistently agree that learning through Minecraft makes them less bored and feels easier than traditional methods. This figure is even higher when discussing its effectiveness, with 90% of students stating that it is better than conventional methods and is a perfect app for learning vocabulary while playing. They also find it helpful because this app can be played at home. The emotional aspect is also very prominent; 90% of students report feeling less stressed when learning vocabulary, which leads to a more enjoyable learning experience and makes them feel happier. It strongly indicates Minecraft has created a conducive learning environment and enhanced students' positive perspectives on English vocabulary acquisition.

This survey's positive findings align with the latest academic research examining the use of video games in education. The results of the survey, which showed that students felt happier, active, and less depressed when learning with Minecraft, directly supported the conclusions of the study by Darmawan et al. (2025). Their research found that Minecraft-based learning environments are significantly more effective in improving students' collaboration skills and conceptual understanding than traditional methods.

Furthermore, students' perceptions that this method is more fun and motivating are in line with the findings of Slattery et al. (2024), which highlight how Minecraft can create more inclusive learning conditions and increase active engagement and student creativity. In general, this trend confirms that Game-Based Learning can effectively increase intrinsic motivation and create a

lower-pressure learning environment, ultimately speeding up knowledge acquisition (Karakoç et al., 2022).

3.3 The Influence of Minecraft Video Games on Students' Vocabulary Mastery

The post-treatment data analysis definitively answered the third research question: "Is there a statistically significant positive effect of the use of the Minecraft video game on students' vocabulary mastery?". Quantitative data show that interventions using Minecraft as a learning medium provide significantly superior results than conventional methods.

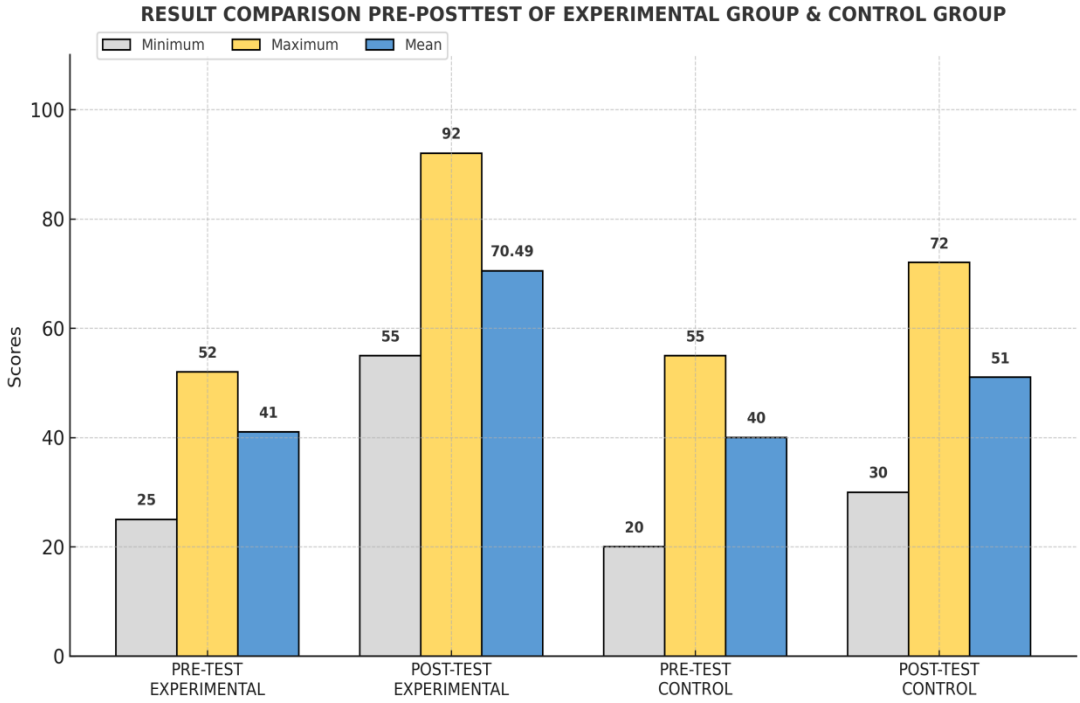

Figure 3. Result Comparison Pre-Postest of Experimental Group and Control Group

Based on the results in Figure 3, the comparison between the experimental group and the control group reveals a clear difference in students' learning outcomes. In the experimental group, the pre-test results showed a minimum score of 25, a maximum score of 52, and an average (mean) score of 41. These results indicate that students initially had a moderate level of English vocabulary mastery before the use of Minecraft as a learning medium. After the treatment, the post-test results demonstrated a significant improvement, with the minimum score rising to 55, the maximum score to 92, and the mean score reaching 70.49. This represents an approximate 72% increase compared to the pre-test average, showing a strong positive impact of using Minecraft in learning. Additionally, 39% of students (12 out of 31) achieved the Minimum Completeness Criteria (KKM) score of 71, and the overall performance of this group can be categorized as good.

In contrast, the control group, which used conventional teaching methods, showed lower improvement levels even after instruction. The pre-test scores ranged from a minimum of 20 to a maximum of 55, with a mean of 40—similar to the experimental group's initial results. However, the post-test results only improved slightly, with a minimum score of 30, a maximum score of 72,

and a mean score of 51. This marks an approximate 28% increase from the pre-test mean, which is considerably lower than the experimental group's gain. Only 15% of students (5 out of 32) in the control group met the KKM score of 71, and the group's performance can be categorized as adequate.

Furthermore, the results of the Independent Sample T Test showed that Sig. (2-tailed) was lower than 0.05 (0.000), which means Ha was accepted. It also indicates that the Sig. is 0.08 > 0.05, indicating that the data is homogeneous. It reveals a significant difference in average scores after using Minecraft as a learning method in mastering vocabulary. The students' improvement scores in the experimental group were also better than those in the conventional group. The efficacy of the experimental group was 48% while the control group was 37%. However, both efficacy results are categorized as medium efficacy.

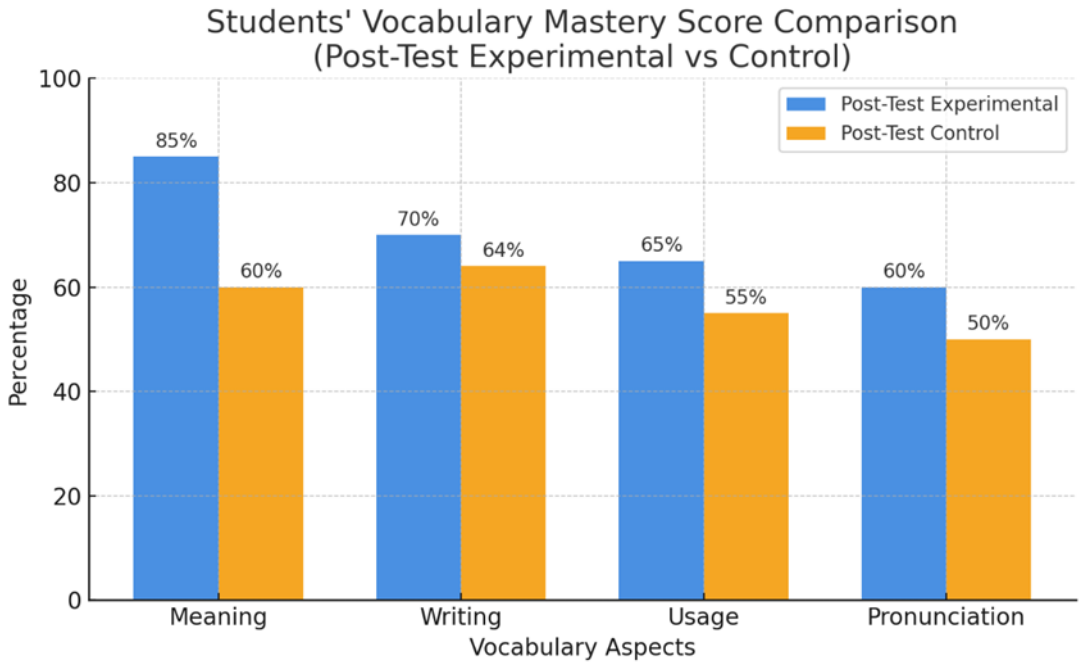

Figure 4. Result Comparison of Students' Vocabulary Mastery Score

Further analysis of the post-test results (see Figure 4) also showed striking differences in each aspect of vocabulary mastery measured (meaning, writing, usage, and pronunciation). In understanding meaning, 85% of students in the experimental group achieved high scores. This figure far exceeded the control group, where only 60% of students were able to achieve the same score level. This means that 25% more students in the experimental group showed an excellent understanding of vocabulary meaning.

The pattern of excellence of the experimental group was also seen in other aspects, although with more varied differences. In the writing aspect, 70% of the students in the experimental group were successful, slightly higher than the 64% of students in the control group. Similarly, for the usage aspect, 65% of the students in the experimental group were successful, surpassing the 55% of students from the control group. Significant improvements were also seen in the pronunciation aspect. Here, 60% of the students in the experimental group managed to get a high score, while in the control group, only 50% of the students achieved the score.

Based on the overall results for this aspect, Minecraft consistently provides better results than conventional methods in all vocabulary indicators measured. This reinforces that Minecraft positively and statistically significantly influences students' English vocabulary mastery. The effectiveness of this method can be attributed to specific in-game mechanics that directly address the various indicators of vocabulary mastery. First, for meaning and usage, Minecraft's task-based 'Survival Mode' forces students to learn words contextually. To survive, a student cannot simply memorize the word *'furnace'*; they must actively build one using *'cobblestone'* to smelt *'iron ore'*. This process intrinsically connects the word (the signifier) to its visual representation, its components, and its function within the game world, thus building a deep and practical understanding of both its meaning and its correct usage.

Second, the game's interface and crafting system directly reinforce writing. When students need to find an item in their inventory or search for a crafting recipe, they are required to type the word correctly. This repeated exposure and need for accurate text input serve as a constant, subtle spelling exercise.

Third, although Minecraft is not a voice-based game, the collaborative nature of its 'Multiplayer Mode' provides a natural platform for practicing pronunciation. While coordinating tasks, students are encouraged to verbally communicate terms like *'creeper'*, *'diamond'*, or *'let's build a shelter'*. This social interaction provides an authentic, low-stress environment for students to practice articulating new English words.

This multi-faceted approach, which integrates visual, contextual, and interactive elements, addresses vocabulary mastery more holistically than traditional methods. This multi-faceted approach, which integrates visual, contextual, and interactive elements, addresses vocabulary mastery more holistically than traditional methods. This finding is in line with research by Sadeghi et al. (2022), which specifically highlights that using game-based applications, including those with characteristics similar to Minecraft, significantly improves vocabulary retention in students. It suggests that vocabulary learned through games is easier to remember and lasts longer in students' memories, a crucial aspect that often challenges traditional learning methods. Furthermore, Sadeghi's study also underscores the increase in students' interest in learning, which suggests that the interactive and fun elements of games successfully change students' perceptions of previously considered boring or difficult learning. This increase in interest is an important foundation for sustainable student engagement.

Similarly, these findings are consistent with research from Wahyuni et al. (2023), who suggest that game-based learning plays a crucial role in increasing intrinsic motivation and active student engagement. The study shows that through games, students are encouraged to participate more proactively in the learning process and feel a more positive and fun atmosphere, away from the pressures that often arise in a conventional classroom environment. This empirical evidence, cumulatively, underscores that Minecraft, as a well-designed video game, has tremendous capabilities to transform the experience of learning vocabulary. It's not just about producing measurable improvements in students' language skills; it's also about creating a more effective, interactive, and highly motivating learning environment.

Based on the explanation above, this study conclusively shows that using Minecraft video games as a learning medium positively and statistically significantly influences the English vocabulary mastery of grade VIII students at SMP Negeri 2 Temanggung. Post-test data confirmed that the experimental group that learned with Minecraft far outperformed the control group on all aspects of vocabulary (meaning, writing, usage, and pronunciation), with the most noticeable improvements in pronunciation and understanding of meaning. More than just cognitive improvement, behavioral observations and student perception surveys also consistently show that Minecraft succeeds in creating a more enthusiastic, participatory, less boring, less stressful, and highly motivating learning environment, in line with recent research findings highlighting the effectiveness of game-based learning in improving students' vocabulary retention, interest, and active engagement.

4. Conclusion

This study comprehensively investigates the impact of Minecraft video games as a learning medium on grade VIII students' mastery of English vocabulary at SMP Negeri 2 Temanggung for the 2023/2024 school year. Several main conclusions can be drawn based on the analysis of quantitative data from pre-test and post-test tests, behavioral observations, and student perception surveys. First, the post-test results statistically show that the use of Minecraft has a positive and significant influence on improving students' English vocabulary mastery. The experimental group that received the Minecraft-based learning treatment showed a much higher average score and a more than double percentage of achievement of the Minimum Completeness Criteria (MCM) compared to the control group that used conventional methods. This improvement was consistent across all aspects of vocabulary, with the most noticeable effects seen in pronunciation and meaning comprehension.

Second, beyond the cognitive aspect, Minecraft has also been shown to impact students' affective aspects and learning behavior significantly. Classroom observations revealed that students in the experimental group showed substantially higher response, enthusiasm, and participation levels. These findings are reinforced by the results of the survey, where the majority of students report that learning with Minecraft feels easier, less boring, less stressful, more fun, and is a better method than traditional methods.

Thus, Minecraft is not just an entertainment tool but an effective, innovative, and highly motivating learning medium for acquiring English vocabulary. Its potential lies in its ability to create an immersive, contextual learning environment and encourage active student engagement, thereby overcoming the challenges of boredom and difficulties in vocabulary learning that are often experienced by students in Indonesia. This study recommends the integration of game-based learning, such as Minecraft, as a valuable supplement to the language learning curriculum.

5. Acknowledgments

The author sincerely expresses his gratitude and highest appreciation to all parties who have provided crucial support in completing this research. Special awards were presented to the

supervisor for the valuable direction, the Principal and all staff, and grade VIII students of SMP Negeri 2 Temanggung for the cooperation and facilities provided, and the entire academic community of Semarang State University, English Education Study Program.

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