THE EFFECT OF INTERACTIVE MULTIMEDIA WORDWALL ON STUDENTS' VOCABULARY LEARNING OUTCOMES AT SMA NEGERI 1 HURUNA

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CHAPTER I
INTRODUCTION

A. Background of the Problem

English is one of the dominant languages used globally in education, business, commerce, science, law, tourism, international relations, health, and technology. Learning English gives learners the opportunity to communicate with global citizens from different cultural backgrounds. By mastering English, learners will have greater opportunities to interact using various texts. From these interactions, they gain knowledge, learn skills and human behaviors needed to live in a diverse world culture. The national curriculum provides opportunities for learners to broaden their horizons with regard to themselves, social relationships, culture, and the employment opportunities available globally. Learning English gives learners the ability to gain access to the outside world and understand different ways of thinking.

In English, especially in schools that use the 2013 curriculum (K13) there are four language skills that must be mastered, namely: listening, speaking, reading and writing. Reading is important. The ability to read has a very important role, both in the context of education, career, and in everyday life. In the scope of education, reading is a basic skill for learners to improve their ability to understand subject matter and follow instructions more effectively. In today's digital era, information technology has brought significant changes in various aspects of life, including in the field of education. Davidson (2022) examines how technology affects the way people learn and work, thus the need for adaptation in education to utilize technology in a way that supports collaborative skills and creativity. The integration of technology into the learning process provides various benefits, such as increasing learner interaction, motivation and understanding. One form of technology that is increasingly popular in education is interactive multimedia, which combines text, images, sound and video to create a more engaging and effective learning experience.

Vocabulary learning is an important component in mastering reading skills. Vocabulary teaching in schools is intended to improve learners' ability to communicate and their ability to speak well and correctly. Repetition of vocabulary in various contexts can improve retention and comprehension, and strengthen overall reading skills (Kuhl, 2022). A rich and varied vocabulary allows learners to understand texts better and improve their overall reading ability. However, many learners find vocabulary learning a boring and difficult activity. Difficulties in vocabulary use can be a problem for learners, especially in writing, reading and speaking (Graves, 2020). The lack of oral and written vocabulary knowledge of students, especially at SMA Negeri 1 Huruna, is a problem that makes learning objectives not achieved optimally. This is the reason why teachers must keep up with the times that their students are going through by utilizing the internet which has become a common access for students, looking for new ideas to attract students' interest and creating a different learning model from the previous learning model. Students learn more easily with media and the impact on student motivation, interest and enthusiasm for learning is greater than explaining with the lecture method alone (Septiawan & Abdurrahman, 2020). To address this, various vocabulary learning strategies have been developed, one of which is the use of interactive multimedia. The use of digital devices without appropriate strategies can exacerbate vocabulary problems if not accompanied by effective practice and application (Eachern, 2022).

Wordwall is an interactive multimedia platform that offers various educational tools and games to help vocabulary learning. This platform allows teachers to create interactive activities that can be tailored to the needs and reading levels of students. Using fun learning with Wordwall can improve students' reading comprehension skills (Rahmawati & Wijayanti, 2022). Wordwall is easily accessible via mobile phone, PC or laptop by playing according to instructions previously set by the host. According to Harlina, et al. (2020), Wordwall is an alternative choice from a variety of

interactive learning media that can make the learning process fun and not boring for students and for teachers in providing vocabulary learning materials. Hasram, S. et al., (2021) suggested that Wordwall online games have a positive impact on students' English vocabulary learning. Some studies show that the use of wordwall can increase students' motivation and participation in learning, but in-depth research on its effectiveness in vocabulary learning strategies in reading skills is still limited.

Based on the above problems, the researcher intends to conduct a study to determine the impact of students' vocabulary learning outcomes by applying interactive multimedia learning based on Wordwall application at SMA Negeri 1 Huruna, and this study was conducted to find out the extent to which Wordwall can give positive effect on students' reading skills at SMA Negeri 1 Huruna.

Based on the description of the research objectives above, the author intends to conduct research centered on the impact of using interactive multimedia, with the title "*The Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna*".

B. The Identification of the Problems

The Identification of the problems in this research as follows:

1. Students are unable to absorb and identify the meaning of the vocabulary present.
2. Students are not able to show a high level of involvement and motivation in learning and understanding the vocabulary material provided
3. Students do not have good and correct vocabulary reading skills in English.

C. The Limitation of the Problems

From the identification of the problems above, the researcher limits herself to looking for the Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna.

D. The Formulation of the Problems

Regarding the above limitations, the researcher formulated the problem as follows, "Is there any Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna?."

E. The Purpose of the Research

The purpose of this study was to find whether there is an Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna.

F. The Research Hypothesis

The hypothesis of the research are formulated as follows:

Ha= There is a significant Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna.

Ho= There is no significant Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna.

G. The Significance of the Research

The significance of the research as follows:

1. For researchers, research as an introduction to teachers about the Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes.
2. The English teacher and students, motivation to develop reading skills on vocabulary comprehension and as a basis for developing teaching methods by utilizing interactive multimedia.
3. The Readers, gain knowledge about the importance of learning interactive media to support the implementation of vocabulary learning.

H. The Assumptions of the research

In doing the research, the researcher has the following assumptions:

1. Learners have adequate access to technological devices and internet connection needed to use wordwall anytime and anywhere.
2. The content and activities provided by the wordwall are relevant and appropriate to the educational level, abilities, and needs of the learners.
3. The utilization of wordwall interactive multimedia allows learners to experience new and fun learning situations and to absorb new information easily and quickly.

I. The Limitation of the Research

The limitations of the research as follows:

1. The study population consisted of tenth-grade students at SMA Negeri 1 Huruna
2. The research focus is to find out the Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna.
3. Students' ability in understanding vocabulary as the object of this study.
4. In conducting this study, the researcher used experimental research to determine the cause and effect of interactive multimedia wordwall on students' vocabulary reading skills.

J. The Key Terms Definition of the Research

This research has key terms definition should be explained and become clear to the readers, such as:

1. Vocabulary is one of the learning materials in schools that occupies an important role as the basis for students' mastery of mastery in English subject matter.
2. Vocabulary teaching is intended to improve students' ability to read and speak well and correctly.
3. Interactive multimedia wordwall is one of the popular learning media in today's digital era to support the achievement of learning objectives that are more effective, efficient, easy and fun.

4. Interactive multimedia wordwall supports vocabulary learning strategies for students, helps students to easily absorb the material presented and helps students understand the meaning of the material present.

CHAPTER II
REVIEW OF RELATED LITERATURE

A. Theoritical Framework

1. Interactive Multimedia

a. Definition of Interactive Multimedia

Interactive Multimedia is one of the popular media in today's digital era that includes text, images, sound, video and animation that are channeled using tools that are physically used to distribute information. Mayer (2021) developed a multimedia learning theory that explains how multimedia can support the learning process by combining text, images, and sound to increase understanding of informal retention and the importance of interactive multimedia design to encourage active learner involvement. Interactive multimedia is a medium equipped with tools whose purpose is to control and can be operated by the user, so that the user can choose what is desired for the next process. Davidson (2023) argues that interactive multimedia can remodel education by offering a more dynamic and collaborative learning experience and how technology can be used to encourage innovation in teaching and learning methods. In other words, Interactive Multimedia is media with a learning resource component or containing material that can attract students' interest and attention to learning. Media affects the learning, privacy, and behavior of children and adolescents (Livingstone, 2023). The word "media" comes from the Latin word "medium" which means "intermediary" or "conveyor". Digital media and technology affect social relationships, communication, and interactions that change the way we relate and understand each other (Turkle, 2021).

Interest in learning with learning media has a positive and significant relationship to learning outcomes (Rusdiyanah & Bektiningsih, 2021). The use of interactive multimedia by choosing the right educational learning media is among of the effective ways to enhance students' interest, motivation and activity. Education only contains textual material, exercises, and tests to achieve the cognitive targets of each subject. In this era of rapid

technological advancement, where students spend a lot of time using their gadgets (Sundus, 2017), the learning process must adapt to the needs and preferences of students (Djamas et al., 2018).

This is where Interactive Multimedia plays a role to balance the backwardness of some schools that have minimal knowledge of the development of Science and Technology (IT). Interactive multimedia is accessed online with a cellphone / android or PC / laptop and does not provide age restrictions, which means it can be accessed by everyone. Another benefit of android application media as teaching material is that it provides a new spirit of learning that increases student enjoyment and interest in the learning process (Ningsih, 2020).

b. Types of Interactive Multimedia

According to Mayer (2021), interactive learning multimedia includes interactive media such as videos and animations combined with text and graphic elements. This type is designed to improve comprehension and retention of information by allowing students to actively interact with the material.

There are several types of interactive learning media that can be easily found on the internet, namely:

1) E-learning based interactive learning multimedia
2) Educational website learning media online learning sites
3) Software-based interactive media
4) Interactive learning media based on android/PC application

The types of interactive multimedia above include a variety of approaches and technologies designed to increase engagement, interaction, and learning effectiveness through the use of innovative multimedia. In this section, the researcher focuses on interactive learning media based on android/PC applications, namely wordwall applications that can be accessed using android or PC (Personal Computer). Interactive multimedia such as platforms and applications allow students to interact and work together both real-time and online discussions through applications and websites (Davidson, 2022).

c. Interactive Multimedia Learning Principles

he first principle is that learning with interactive multimedia integrates various media components. Rose (2022) suggests that interactive multimedia elements should be designed to promote active engagement and student interaction, such as through quizzes, simulations, practical exercises, to increase motivation for learning. Interactive multimedia is a computer-based independent learning media that integrates various elements of text, video, images/photos, audio (in the form of music/narration/recording), and animation in the applied learning application product.

Mayer (2021) emphasizes that the main element of interactive multimedia is the combination of various media such as text, video, images, audio, and animation. This combination is designed to convey information in a way that complements each other and increases understanding and retention. The elements of interactive multimedia include:

1) Text: words or sentences that explain the material or instructions for using the media.
2) Video: Video is a form of visual media that combines moving images, usually in color format, accompanied by audio.
3) Picture/Photo: Simulation of the environment to illustrate the material being explained.
4) Audio: background sound from a video, music / song, narration in audio form, sound effects, or conversation (speech), voice recordings that contain information that supports the material presented.
5) Animation: moving images or live images to simulate an event formed from a set of objects.

The elements of interactive multimedia emphasize various important aspects of interactive media design that provide responsive feedback to learner interactions that can help direct learning and improve understanding (Laurillard, 2023).

d. Benefits of Interactive Multimedia

According to Laurillard (2022), the benefits of interactive multimedia are to provide adaptive feedback tailored to the needs and progress of individual learners which allows personalization of the learning experience and increases the effectiveness of learning. Interactive multimedia can accommodate different ways of learning. Interactive multimedia can improve understanding and retention of information by utilizing a combination of text, audio images, video, and animation to convey material more effectively and assist in better absorption of information through various sensory channels (Mayer, 2021). According to Mayer, interactive multimedia has the potential to create a multisensory environment that supports certain ways of learning. Based on this, the use of interactive multimedia in the learning process contains certain benefits or values, including:

a) Interactive multimedia can help students learn broad subject matter, which contains various concepts, facts, principles, attitudes and skills.
b) Interactive multimedia can foster learning motivation, attitudes, and more effective ways of learning and foster higher perceptions of what is learned.
c) Interactive multimedia helps students and teachers in the instructional process of a field of study, which is supported in a multi-disciplinary manner.
d) Interactive multimedia contributes to increasing satisfaction and success according to the wishes of each teacher. Good teachers want their students to be satisfied and successful.
e) Interactive multimedia helps students who are generally inclined to learn many things and at the same time go deep.
f) Interactive multimedia helps students and teachers in the instructional process to meet the demands of the curriculum, which is constantly evolving in line with developments in science and technology and the dynamics of society.

These benefits show how interactive multimedia can enrich learning and communication experiences with various elements that can customize learning materials according to the needs and progress of each individual learner.

2. Wordwall

a. Definition of Wordwall

One of the media that can be used to support an innovative and more varied learning process is Wordwall (Putri, 2020). As part of interactive multimedia, wordwall is a website-based application or application that can be used as an interactive learning media. According to Sari & Yarza (2021) Wordwall is an application that can be used as a learning media and assessment tool that can foster attractiveness for students in the learning process. Wordwall is a web-based learning media in the form of a simple game where students are invited to follow existing commands and choose the correct answer by clicking on the specified object, where this application is fairly easy to use by students and educators (Minarta & Pamungkas, 2022) Wordwall consists of several types of games that can be used including quizzes, matching, anagrams, random words, word searches, grouping, etc. Wordwall is one of the interactive learning media for students. Wordwall is one of the interactive learning media that has begun to be recognized and the effectiveness of this application has been proven. The use of wordwall application is one way to be able to increase students' learning activities that are varied and interactive by utilizing technology such as smartphones or laptops. Wordwall is one of the interactive learning media that can be accessed for free. This application can be designed to improve learning activities both in groups, or individually which involves students to be more active during the learning process. Wordwall media is expected to improve students' understanding of material without having to always depend on books or explanations given by teachers (Turohmah et al, 2020).

b. Wordwall Key Features

Davidson (2022) suggests that the ability to customize activity templates is a key feature of wordwall. Customizable templates allow educators to create materials that suit their specific needs and learning objectives. Turkle (2022) emphasizes how interactive elements in platforms like wordwall can increase learner engagement. Features such as quizzes and games that can be accessed online allow learners to engage directly with learning materials. Some of the main features of wordwall are:

1) Interactive Activity Creation

   Users can create different types of activities such as quizzes, puzzles, and games easily using the templates provided.

2) Customization and Flexibility

   The tool offers flexibility in activity customization, allowing users to add text, images, and sounds as needed.

3) Various Types of Activities

   Wordwall provides various types of activities, including:

   - Match-up: Connecting pairs of items.
   - Quiz: Composing questions and answers.
   - Word Search: Searching for words in a grid.
   - Crossword: Compose words based on clues.
   - Spin the Wheel: Random selection from available options.

4) Integration and Accessibility

   The activities created can be accessed online and shared easily with students through links or embeds on websites or other learning platforms.

5) Uses in Learning

   Wordwall can be used for a variety of educational purposes, from vocabulary practice to evaluating concept understanding.

c. Wordwall Characteristics

Rose (2020) notes that ease of use and accessibility are key characteristics of a wordwall. The platform is designed to be intuitive and accessible to users with varying levels of technical skills, as well as compatible with a wide range of devices. Some characteristics of Wordwall learning media include the following:

1) Difficulty Level, this relates to the level of each game. If students play a high-level game then the difficulty level is high, and vice versa. This level can be set by the teacher, it can be placed at the end or at the beginning of the game.
2) Interesting and fun, this can make students interested in finding out the meaning of each vocabulary provided and help them achieve the desired goals according to their abilities.
3) Sharpen skills, students playing each game can certainly fail, but they can repeat it so that the ability to identify vocabulary and work on each problem can increase and continue to be honed.
4) Can be played alone/group. And easily accessible.

The above characteristics show how wordwall can be used to enhance the learning process through multimedia integration, interactive design and ease of use.

d. Advantages Disadvantages of Wordwall

1) Advantages of Wordwall

Overall, Wordwall is a useful tool for creating dynamic learning experiences with a focus on interactivity and student engagement. Turkle (2022) highlighted that the easy-to-understand menu design of the Wordwall app can increase student engagement in its use. Wordwall's flexibility in providing templates that can be customized to meet specific teaching needs, supports customized learning (Davidson, 2022). Below are some of the advantages of wordwall including:

- High Interactivity: Wordwall offers various interactive activities such as quizzes, puzzles, and educational games, which can make learning more interesting and actively engage students.
- Ease of Use: The platform is designed to be easy to use, even by educators who do not have high technical skills. The templates provided make it easy to create learning materials.
- Activity Customization: Users can customize activities according to curriculum needs and learning preferences, such as adding text, images, and audio.
- Accessibility: Wordwall is accessible from various devices and can be shared via links or embedded on websites or other learning platforms, making it easy to distribute materials to students.
- Real-Time Feedback: Activities on Wordwall often provide students with immediate feedback, which can help them understand concepts better and correct mistakes quickly.

2) Disadvantages of Wordwall

Wordwall is a useful tool with many benefits for interactive learning, but it also has some limitations that need to be considered according to the specific needs of the user. Laurillard (2021) suggests that Wordwall may lack in-depth analytics and reporting features, which are important for assessing the overall effectiveness of learning. Below are some of the shortcomings of wordwall including:

- Limited Features in the Free Version: The free version of Wordwall is limited in features and customization options compared to the paid version, which may limit the user's ability to create more complex materials.
- Dependence on Internet Connection: Since Wordwall is a web-based platform, access to its activities requires a stable internet connection. This can be an obstacle in locations with poor internet connection.

- Lack of Reporting and Analytics Features: Some users may find that Wordwall does not provide in-depth analytics and reporting features to track the progress of students' progress or the overall effectiveness of the activity.
- Limited Design and Customization: While Wordwall offers a variety of templates, some users may find that the design and customization options are still limited compared to other more flexible learning tools.

3. Vocabulary Learning Outcomes

a. The Importance of Knowing Vocabulary Learning Outcomes

English is one of the subjects taught in schools from kindergarten to university level. English is a language subject that is still difficult to master by students from elementary school to college level in Indonesia in general. Teachers are required to be able to adapt and adjust to all existing changes to be able to guide and direct students (Misla & Mawardi, 2020).

There are four skills in English which are, listening, writing, reading and speaking skills that are taught to learners. A broad vocabulary affects speaking, writing, listening and reading skills (Beck & Kucan, 2020). To support the mastery of these four language skills, especially in reading, learners must master language components or aspects such as vocabulary, grammar, and pronunciation. One of the language components that is very important to support language skills is vocabulary mastery. Vocabulary is the total number of words in a language, which is also the words that a person has, knows, and uses in speaking, listening, reading or writing. Therefore, teaching vocabulary should be given top priority in the early stages of language learning. Stahl and Nagy (2006) show that there is a strong relationship between vocabulary acquisition and academic achievement such that learners with better vocabulary tend to have higher academic achievement. However, of course, the application of appropriate strategies in the learning process will greatly help students in learning. Good vocabulary mastery can be achieved by using the right strategies in learning.

Effective strategies can help students to master vocabulary quickly and well. Inappropriate strategies in the implementation of learning can lead to student boredom in participating in learning.

There are several things that affect students' vocabulary learning difficulties, such as:

1) Lack of interest in the material,
2) Learning methods that do not fit the context of the material,
3) Students feel bored,
4) Strategies that are not in accordance with students' abilities,
5) Students can learn if they are helped by their friends in explaining the material,

To improve learning, here are some strategies that can be used to improve student vocabulary as follows:

1) Wordwall, Wordwall is a website program that can be accessed through the site using a mobile phone or laptop / PC. This application will be a fun learning asset, media, and assessment tool for students.
2) Memory, Memorization is one of the strategies commonly used when learning vocabulary. Memorization is repeating words that have been spoken without using tools such as writing, books, or other objects.
3) Cluster, with the cluster method students can find the desired words made in a bubble diagram. This technique will make it easier for students to find target words to say and use them when they find the right situation based on context clues they already know.
4) Cooperative Learning, Cooperative learning is one of the strategies that provide opportunities for students to work together with fellow students on structured tasks.
5) Suggestions, Suggestopedia strategy is a method used to make students relax while learning. The suggestopedia method is a method used in an ongoing learning process to make students relaxed, open, and calm during the learning process.

6) Drill, this method helps in the learning process by giving exercises to students to repeat the material that has been taught.

In this case, what is raised in this study is the application of vocabulary learning strategies using interactive multimedia, namely the Wordwall application. Given the importance of vocabulary mastery, language learning should also pay attention to how to apply appropriate vocabulary learning strategies at various levels and types of education. Effective vocabulary learning strategies are essential in second language learning including the use of words in context, understanding of the meaning of new words, and engagement in repeated practice (Nation, 2020).

b. Adaptation to Student Needs

Adapting learners' needs to vocabulary learning is important to ensure they have an effective and relevant learning experience. Vocabulary is the knowledge of the meaning of words in a language. According to Tomlinson (2020) teachers should adapt teaching based on learners' needs, interests and learning profiles. In the context of vocabulary, this means providing materials that match learners' ability levels and using a variety of strategies to teach vocabulary. Teachers need a variety of strategies in the implementation of the learning process so that students have the opportunity to feel new experiences that are more enjoyable when following the implementation of the learning process. Warschaver & Kern (2022) highlight the importance of technology in supporting adaptive and interactive vocabulary learning. They propose the use of internet-based learning applications that can customize vocabulary exercises based on learners' individual performance and needs. The suitability of the strategies used in the implementation of learning has an important role in achieving the expected learning objectives.

4. Vocabulary

a. Vocabulary in Reading

Improving vocabulary is essential for improving reading comprehension and overall reading skills. Rasinski (2021) emphasizes that vocabulary is a fundamental component of reading fluency. He argues that learners who have strong vocabulary knowledge not only read more fluently but also quickly understand the texts they read. According to Rasinski, expanding students' vocabulary directly improves their ability to read more effectively and efficiently. Vocabulary knowledge is essential in reading as it directly affects one's ability to comprehend and enjoy the text they are reading. Here are some reasons why vocabulary plays a crucial role in reading:

1) Understanding The Meaning Of The Text

   A rich vocabulary allows learners to understand the meaning of the words in the text. Without a good understanding of vocabulary, learners will struggle to interpret what they read, which can hinder overall comprehension.

2) Improves Reading Comprehension

   The more words learners know, the better they are at understanding the relationships between words and ideas in the text. Good vocabulary knowledge helps in identifying context, nuances of meaning and more complex concepts.

3) Expanding Critical And Analytical Thinking

   With a wider vocabulary, learners as readers can be more critical and analytical of texts. They can evaluate and connect information more effectively, thus improving critical thinking skills.

4) Improve Reading Fluency

   Reading fluenc refers to the capability to read swiftly and effortlessly, is greatly influenced by vocabulary knowledge. When readers don't need to stop to understand words, they can read faster and with fewer distractions, which improves the flow of comprehension.

5) Increasing Reading Enjoyment

   Reading becomes more enjoyable when learners as readers can understand and appreciate the content of the text without constantly stumbling over unfamiliar words. This encourages interest in reading and helps in developing positive reading habits.

6) Supports Lifelong Learning

   Extensive vocabulary knowledge allows students to continue learning from the texts they encounter as long as they see them.

7) Improves Communication

   A good vocabulary also helps in improving writing and speaking skills. Students who have a large vocabulary can express themselves more clearly and effectively in both writing and conversation.

Overall vocabulary knowledge is the foundation of good reading skills. It affects not only basic comprehension but also the ability to think critically, analyze and enjoy the reading process itself. Expanding vocabulary is therefore an important investment in improving literacy skills.

b. Vocabulary Learning

Vocabulary learning is the process by which individuals develop and enrich their knowledge of words including their meaning, usage, and pronunciation. Appel (2022) introduces new approaches that utilize technology for vocabulary learning, including apps and digital platforms that facilitate more interactive and adaptive learning. A rich and diverse vocabulary is one of the main keys to reading, writing, speaking and listening well in any language.

1) Learning Process

   - Exposure: Exposure to new words through reading, listening and speaking is the first step in vocabulary learning. New words can be found in a variety of contexts, such as books, conversations, media, and the surrounding environment.

- Repetition: New words must be repeated often in various contexts in order to be well understood and remembered. Repetition helps strengthen memory and understanding of the word.
- Active Use: Using new words in speaking and writing helps deepen understanding and improves the ability to use the vocabulary actively.
- Reflection and Association: Relating new words to existing knowledge or personal experiences can make vocabulary learning easier.

2) Characteristics of Effective Vocabulary Learning
   - Contextual: Words are learned in meaningful contexts, whether through sentences, paragraphs, stories, or real-life situations. Learning vocabulary in context helps for deeper understanding and easier recall.
   - Integrated: Vocabulary learning should be integrated with additional language skills, such as writing, listening reading and speaking. This ensures that new words are not only memorized but also used in various language activities.
   - Repetitive and Continuous: Vocabulary cannot be learned instantly. It requires repeated exposure over a period of time for the new words to be fully understood and mastered
   - Personalized: Effective vocabulary learning should be tailored to individual needs, interests and ability levels. This can be done by selecting words that are relevant to daily life or learning objectives.

3) Properties of Vocabulary Learning
   - Incremental: Vocabulary learning is a gradual process in which understanding of words progresses from basic understanding to more complex understanding, including nuances of meaning and appropriate usage.

- Interconnected: Vocabulary is not learned in isolation, but is interconnected with knowledge of other words. For example, understanding one word can help understand another related or opposite word.
- Dynamic: Vocabulary is something that is constantly evolving. Everyone continues to add and improve their vocabulary knowledge throughout life, whether through experience, education, or social interaction.

4) Factors Affecting Vocabulary Learning
    - Motivation: An individual's level of motivation in vocabulary learning greatly affects their success. Motivation can come from the need to communicate, the desire to learn a new language, or personal interest.
    - Environmental Context: The environment one is in plays an important role in vocabulary learning. Language-rich environments, such as schools, literacy-supportive homes or multilingual communities, can accelerate the learning process.
    - Technology and Media: The use of technology and digital media, such as language learning apps, videos and online resources, can enrich the vocabulary learning experience by providing interactive and engaging content.

5) Strategies in Vocabulary Learning
    - Explicit Learning: This involves direct teaching of vocabulary with definitions, examples, and usage in sentences. It is usually done through activities such as flashcards, vocabulary lists, or quizzes.
    - Learning Through Context: learners learn new vocabulary by seeing words in the context they are used. This could be through reading books, articles, or watching videos, where words appear in meaningful sentences.

- Use of Technology: Technology can be used to reinforce vocabulary learning through apps, digital games and online resources that provide interactive exercises and immediate feedback.
- Collaboration and Discussion: Learning vocabulary collaboratively through discussion, conversation or group work helps to reinforce the understanding of new words as students can share their understanding and use of words.

Vocabulary learning is a fundamental aspect of broader and ever-evolving language acquisition. Through the right methods, vocabulary learning can be a dynamic, fun and highly rewarding process.

c. Vocabulary Outcomes

Vocabulary learning outcomes are the expected achievement or impact of the vocabulary learning process. Murphy (2023) points out that success in vocabulary learning can also be seen from students' ability to make connections between vocabulary in different languages and diverse social situations. These outcomes include various aspects that show how well learners understand, remember and use new vocabulary in different contexts. Vocabulary outcomes reflect achievements in vocabulary acquisition that can lead to overall improvement in language skills, both in academic contexts and everyday communication. Duke (2020) mentioned that successful vocabulary learning outcomes include improved reading comprehension and students' ability to use new vocabulary in appropriate contexts. According to him, a rich vocabulary allows students to capture deeper meaning from texts and participate more actively in discussions and writing. Some key aspects of vocabulary outcomes include:

- Contextual understanding: the ability to understand words in the context of sentences and broader situations
- Active application: the ability to use new vocabulary actively in reading

- Integration in language skills: the positive impact of vocabulary learning on reading, writing, speaking and listening skills.
- Improving academic and social performance: the influence of vocabulary on academic success and the ability to communicate in social contexts.

These vocabulary outcomes cover various aspects of improved language skills, from reading comprehension and active communication to independence in learning vocabulary and application of vocabulary in multilingual contexts. and the application of vocabulary in multilingual contexts. These outcomes demonstrate the importance of vocabulary in improving overall language skills across the board.

5. The Relation Between Multimedia Interactive Wordwall and Vocabulary Learning Outcomes

a. Multimedia Interactive Wordwall and Vocabulary Learning Outcomes

The presence of technology has brought many changes to the world of education, one of which makes learning no longer centered on educators (teacher-centered), but focuses more on students who learn (student-centered) (Lestari, 2019). Seeing the need for mastery of English, schools play an important role as a place to equip, train and familiarize students to speak English.

English subjects are directed to develop listening, speaking, reading, and writing skills so that after graduating from school students are able to communicate and discourse in English at a certain level of literacy. Pearson (2019) argues that reading comprehension depends on the reader's ability to link new information with existing knowledge (schemata). At the SMA/MA level, students are expected to reach the informational level because they are prepared to continue their education to higher education. English is known as one of the less desirable subjects. Hammond (2020) emphasizes that learners are often not interested in vocabulary because they do not see the relevance of the words in their daily lives. Teaching that is

not contextualized or related to students' experiences can reduce their interest. Lack of vocabulary mastery and infrequent reading practice in English are among the causes of this daunting prospect for learners.

Multimedia is divided into two categories, namely: linear multimedia and interactive multimedia. Linear multimedia is a multimedia that is not equipped with any controller that can be operated by the user. for example: TV and movies. Interactive multimedia is a multimedia equipped with a controller that can be operated by the user, so that the user can choose what is desired for the next process. Examples: interactive learning multimedia, game applications, and so on. Gee (2020) in his research on game-based learning shows that game elements can increase student motivation and engagement. Wordwall as part of interactive multimedia with its word game features and activities has an impact that makes learning vocabulary more fun and effective.

The use of multimedia based on wordwall application is very feasible to be used in the learning process at all levels of education, because it supports students' vocabulary acquisition and reading skills. This is because in the learning process the use of wordwall applications as interactive teaching materials can increase efficiency, motivation, and facilitate active learning, and interesting thus enhancing motivation, activeness, interest, understanding and results/outcomes of learning in students.

So interactive wordwall multimedia is very effective in learning and supporting students' reading skills because it is fun and not easily bored so that students are more enthusiastic in participating in the learning process.

b. Benefits of Wordwall Interactive Multimedia in Supporting Vocabulary Learning

The use of interesting animations and designs in the application components attracts students' interest and motivation, so that these components can increase understanding and improve students' vocabulary learning outcomes. Quizzes available in the application as an evaluation

material for students after learning the material are able to determine the improvement of learning outcomes and students' vocabulary knowledge.

Interactive wordwall multimedia is also able to eliminate students' boredom in the learning process which previously only centered on the teacher (teacher centered) to be more interactive. The interactivity of multimedia makes students focus on their cellphones/PC/Laptop, the classroom atmosphere becomes conducive so that learning time is more efficient. Diverse digital content in the form of text, images, animations, sounds, and videos make all students with various learning styles able to understand learning materials or messages well (Rini & Wiyarno, 2019).

Interactive multimedia a tools like Wordwall can have a significant and advantageous impact on vocabulary learning outcomes in the following ways:

1) Engagement:

   Wordwall allows students to actively participate in learning activities, which increases their engagement. Activities such as word games, quizzes and interactive puzzles make learning more interesting. The platform provides immediate feedback, which helps students know their answers are right or wrong immediately, increasing motivation and active learning.

2) Differentiation:

   Adjustment of Difficulty Level: Teachers can adjust the difficulty level of activities based on students' abilities, allowing for differentiation in diverse classes. This ensures that each student learns at a level that suits them. Multiple Learning Formats Wordwall offers a variety of activity formats (such as matching, multiple choice, word stacking), which allows teachers to use various methods to teach vocabulary, adapting to different learning styles.

3) Repetition and Practice:

   The platform allows students to repeat vocabulary exercises as many times as needed, reinforcing comprehension and retention of new

words. Anytime Access with Wordwall, students can access vocabulary activities anytime and anywhere, providing flexibility to study outside of school hours and reinforcing learning through repeated practice.

4) Contextual Learning :

   Use in Context: Teachers can create activities that use words in the context of real sentences or situations, helping students understand the meaning and use of new words in everyday situations. Theme-Based Content: Activities can be customized to specific themes or topics relevant to the curriculum or students' interests, increasing the relevance and appeal of vocabulary learning.

5) Collaborative Learning :

   Group Activities: Wordwall enables group activities, where students can work together to complete vocabulary tasks or challenges, improving their collaborative and social skills. Healthy Competition: Features such as leaderboards and challenges between students can encourage healthy competition, which can motivate students to study harder

6) Monitoring and Assessment :

   Progress Tracking: Teachers can track student progress through activity results on Wordwall, allowing for a more accurate assessment of student understanding and mastery of vocabulary. The data collected can be used to customize instruction and learning interventions, providing additional support where needed.

By integrating interactive multimedia such as Wordwall in vocabulary learning strategies, teachers can create a more dynamic, personalized and effective learning environment that suits students' needs and learning styles.

C. Conceptual Framework

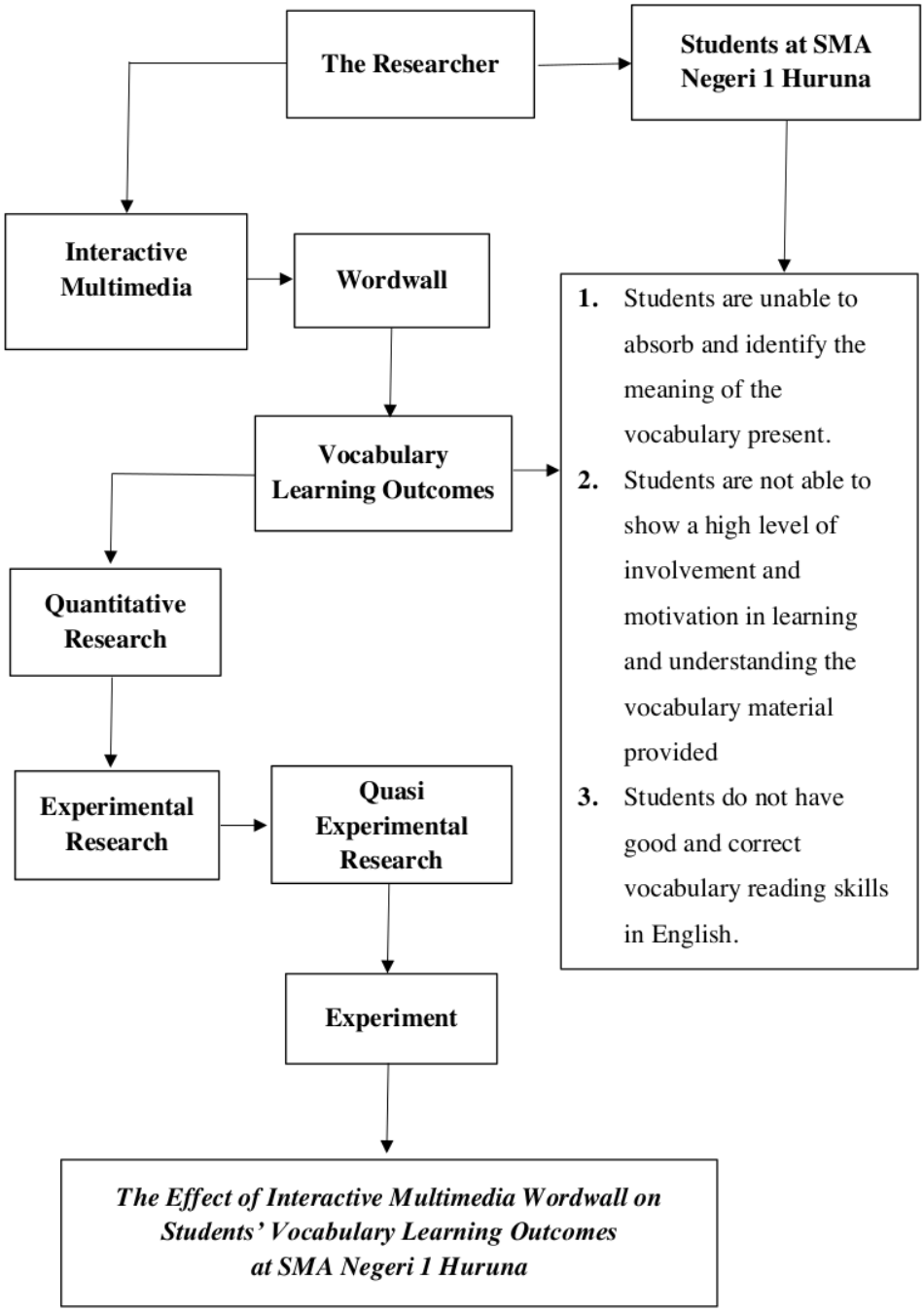
In vocabulary learning, teachers must think of strategies in the learning process, in this case the teacher can attract students' attention, students' interest, and students' motivation, to achieve the expected learning objectives. Learning will feel very easy to do if you use strategies and really help every student in learning. Gee (2021) emphasizes that game elements in learning can increase student motivation. Wordwall uses game mechanism to make vocabulary learning more interesting and fun. In this study, the researcher applied wordwall interactive multimedia as a vocabulary learning strategy to determine the effect of students' ability in vocabulary comprehension at SMA Negeri 1 Huruna.

In this research entitled "The Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna". The researcher intends to find out how students' ability to master vocabulary by using interactive media that has never been applied in their learning. In addition, the researcher tried to find out whether vocabulary learning strategies by applying interactive multimedia wordwall are more effective in encouraging students' ability to understand vocabulary material.

To implement the strategy, there are several steps to be taken as follows:

1) First, log in to the wordwall application (via the link), then fill in the commands and enter the materials/questions to be displayed/worked on by the students.
2) After that, the researcher asked students to identify the material containing vocabulary according to the specified time, then closed the application window again.
3) And then the researcher reviews how much vocabulary is remembered and identified by students.
4) In this part, the researcher will observe how much vocabulary is absorbed by the students. At that time, the students will remember the vocabulary they got.
5) And finally, discussing the material containing vocabulary with students to remind them of the meaning of the vocabulary.

To understand the researcher description of the procedure for implementing vocabulary learning strategies using wordwall, the researcher will include the following conceptual framework:


The Researcher
Students at SMA Negeri 1 Huruna
Interactive Multimedia
Wordwall
Vocabulary Learning Outcomes
1. Students are unable to absorb and identify the meaning of the vocabulary present.
2. Students are not able to show a high level of involvement and motivation in learning and understanding the vocabulary material provided
3. Students do not have good and correct vocabulary reading skills in English.
Quantitative Research
Experimental Research
Quasi Experimental Research
Experiment
The Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna

CHAPTER III

RESEACRH METHOD

A. Type of the Research

In this research, researcher used quantitative research. A quantitative approach is an approach that emphasizes its analysis of numerical data (numbers) processed by statistical methods. According to Sinambela (2020) quantitative research is a type of research that uses numbers in processing data to produce structured information. The characteristics of quantitative research aim to obtain data that describes the characteristics of objects, events, or situations. According to Sugiyono (2020) quantitative research methods can be interpreted as research methods based on the philosophy of positivism, used to research on certain populations or samples, data collection using research instruments, data analysis is quantitative / statistical, with the aim of testing predetermined hypotheses. Quantitative research is research that in the process of carrying out its research uses a lot of numbers starting from data collection, interpretation, to the results or conclusions.

The type of research used by researchers in this study is experimental research, experimental research is research that can properly test hypotheses regarding causal relationships (cause and effect). According to Creswell (2023) Experimental research remains an important method for determining cause-and-effect relationships and the importance of clear design and strict control in experiments to ensure internal validity and reduce bias. Experimental research is research that seeks a causal relationship between the independent variable and the dependent variable, where the independent variable is controlled and controlled to be able to determine the effect caused on the dependent variable. The importance of effect size in experimental research in addition to being statistically significant, effect size helps researchers understand how much impact the independent variable has on the dependent variable (Paul, 2021). The experimental research method is used to look for the effect of certain treatments on others under controlled

conditions. In this study, researchers applied interactive multimedia wordwall to the experimental class which was useful for obtaining concrete data on the Effect of Interactive Multimedia Wordwall on Students' Vocabulary Learning Outcomes at SMA Negeri 1 Huruna.

The method used in this research is the Quasi-Experimental method. Quasi Experimental is a research design conducted without randomization, but involves placing participants into groups (Creswell 2022). Quasi-experimental research aims to find out between variables involving control groups and experimental groups. In this research design, a comparison is made of a certain treatment effect with a certain treatment with a different treatment, namely the experimental group and the control group. But before that, a try out test was given first without conducting an evaluation afterwards in a group outside the experimental group and control group. Try out tests are conducted to test and improve research instruments before being used in the main study (Creswell, 2023). This research design uses a pretest-posttest control group design. In this design there are two classes that are randomly selected, then the researcher continues by holding a pretest which is used to determine the initial ability of students. Creswell (2022) explains that pretests are used to measure the initial condition or baseline of the dependent variable before intervention or treatment. This allows researchers to establish a similar starting point in both classes/groups. Then the experimental group is given special treatment, namely the application of wordwall interactive media while the control group is not given special treatment (conventional learning). The experimental group received the treatment to be tested, while the control group did not or received different treatment (Gazzaniga & Ivry, 2021). Then both experimental and control groups were given a post-test. David (2022) suggests that the post-test is used to measure changes in the dependent variable after treatment. This allows researchers to evaluate the impact of the treatment by comparing pre-test and post-test results.

R	O	X_1	O
R	O	X_2	O

Description:

Group	Pretest	Treatment	Posttest
Experiment	Measured before treatment (initial test) O	Receiving treatment (with method) X_1	Diukur setelah perlakuan (tes akhir) O
Control	Measured before treatment (initial test) O	Did not receive treatment X_2	Measured after treatment (final test) O

B. Variables of the Research

Research variables are things that become the main benchmark in research so that it makes it easier for researchers to collect data (Sugiyono, 2017). Research variables are basically anything in the form of anything that is determined by the researcher to study, so that information about it is obtained, then conclusions are drawn. Creswell (2023) categorizes variables into two main categories, namely independent variables and dependent variables. This study contains two variables, namely:

1) Independent Variable (X): Free variables or commonly referred to as independent variables are variables that are not influenced by anything. This variable is a variable that affects other variables. The independent variable in this study is the influence of Wordwall Interactive Multimedia.
2) Dependent Variable (Y): The dependent variable or dependent variable is the variable that affects and is affected in a study. Therefore, the dependent variable in this study is the learning outcomes of students.

C. Population and Sample

a. Population

The Population is the group of individuals having one characteristic that distinguishes them from other groups (Creswell in Yanti, et all, 2020). Population is a generalization area consisting of objects or subjects that have certain qualities and characteristics set by researchers to study and then draw conclusions (Sugiyono, 2020). The population in this study were all grade X students at SMA Negeri 1 Huruna.

b. Sample

The sample is part of the number and characteristics of the population. The sample according to Sugiyono (2020) is part of the number and characteristics of the population. Meanwhile, sample size is a step to determine the size of the sample taken in carrying out a study. If the population is large, and the researcher is unlikely to examine everything in the population, then the researcher can use a sample taken from that population. For that, the sample taken from the population must be truly representative. Creswell (2023) explains that a sample is a subset of the population that is used to make inferences about the population.

The technique of sampling used Cluster Random Sampling. This sampling method function where the population is divided into groups or 'clusters', and then a number of clusters are randomly selected to be sampled. Fink (2020) explains cluster sampling as a technique where the population is divided into randomly selected clusters and then data is collected from the selected clusters. The researcher did not take samples from individual population members but in a randomized form. The reason is because if sampling individually it is feared that the situation of the sample group will be unnatural. The researcher has selected classes namely class X-1 as many as 30 students and X-2 as many as 30 students as experimental classes with a total number of 60 students at SMA Negeri 1 Huruna.

D. Technique of Analyzing the Data

1. The Testing of Instruments

a. Validity

According to Creswell (2022) validity is the degree to which a research instrument measures what it is supposed to measure. Validity is a key element to ensure that research results are reliable and data interpretation is accurate. In addition Setiabudi et al., (2020) state validity in general refers to the appropriateness of a given test on any of its component parts as a measure of what it is intended to measure. To calculate item validity, we usually use the Pearson product moment correlation between the item score and the total test score. Here is the formula form:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

Description :

r_{xy} : The coefficient correlation

N : The number of sample

X : Score of itemss

Y : The total score

b. Reliability

Reliability is an important element in evaluating the quality of research instruments. Reliable instruments provide consistent and reliable results, which increase confidence in the data collected. Gay (2021) explains that reliability is a measure of the extent to which an instrument produces consistent results under similar conditions. Gay emphasizes that to ensure reliability, it is important to test the instrument under various conditions and by various raters if possible.

Creswell (2023) explains that reliability refers to the consistency and reliability of measurement instruments. Creswell identifies several techniques for measuring reliability, including test-retest reliability, internal consistency, and inter-rater reliability. According to Gay (2021) test-retest reliability is used to assess the consistency of an instrument's results over time. Gay said the correlation coefficient between the scores of the two tests shows the level of reliability. A high correlation coefficient indicates that the instrument is reliable. Test-retest reliability is usually measured using the correlation coefficient between scores from two tests taken at different times. This correlation gives an indication of the extent to which test results are stable over time.

The following is the formula for calculating the reliability correlation coefficient according to Gay:

$$r = \frac{k}{k-1}\left(1 - \frac{\sum \sigma^2}{\sigma_t^2}\right)$$

Description :

r : Reliability coefficient

k : Number of items in the test

$\sum\sigma^2$: Variance of the score of each item

$\sigma\frac{2}{t}$: Number of sample members.

Test-retest reliability is important to ensure that measurement instruments produce consistent and reliable results over time which is essential for the validity and trustworthiness of the data collected.

2. Data Analysis

a. Students' Ability on Vocabulary Learning

To get the score of students' vocabulary knowledge, Li & Zhang (2022) categorized several assessments of students' vocabulary skills. One of them is the formula for assessing students' vocabulary skills based on digital applications. As follows:

$$Score = \frac{Obtained\ score}{Maximum\ score} \times 100$$

Li, & Zhang, (2022) describe how digital apps and platforms can be used to assess vocabulary and provide effective feedback to students.

b. Mean Score

The mean is a representative of the data set. where to find the mean can be done by adding up all data values. then divided by the amount of data. According to Barrow (2020), mean is a statistical measure that represents the middle value of a data set, where the sum of all values in the data set is divided by the number of elements in the data set. In addition, Lerner (2022) defines mean as an important measure of central tendency in statistics, which is used to summarize data and provide an overview of the values in a data set, and mean is often used in social research to measure and compare averages between groups. The formula used is as follows:

$$\boxed{\overline{x} = \frac{\Sigma x}{n}}$$

Description :

$\overline{X}$: The Mean

$\sum X$: The sum of all scores

n : The sum of data

c. Varience

Variance is a statistical measure that describes how far each value in a data set deviates from the mean. Variance provides a quantitative picture of the dispersion or spread of data (David, 2020). Variance provides information about how far the data is spread out as a whole. Variance calculates the average of the squared deviations of each data value from the mean and is used as the basis for calculating standard deviation which is

the square root of variation. Here is the variance formula that can be used for pretests and post tests according to Gay (2020):

Description: $$S^2 = \frac{\sum(X_i - \bar{X})^2}{n-1}$$

S^2 = Variance

X_i = The score of item

$\bar{X}$ = The mean of data

n = The number of the sample

d. Standard Deviation

Standard deviation is one of the most useful statistical tools for understanding variation in data (Silver, 2022). Silver emphasizes the importance of understanding standard deviation in research. Standard deviation is the square root value of the variance and shows the standard deviation of the data from its mean value. Standard deviation is a statistical measure that describes how spread out from the mean data is in a data set, it measures the variability or diversity in the data.

Standard deviation helps in understanding the extent to which data varies from its mean value. Standard deviation is a measure that describes how dispersed the data values in a dataset are from their mean value, indicating variability or consistency in the data (Gay, 2020). To calculate the deviation of the mean of the data pretest and posttest the researcher use the formula as follows:

$$S = \sqrt{\frac{\sum(X_i - \bar{X})^2}{n-1}}$$

Description:

S = Standar deviation
X = The score of item
X^* = Standar deviasi dari perbedaan skor
N = The number of the data

e. The Normality of Data

Data normality is a basic assumption in many statistical methods that allow valid inferential analysis. Data is said to be normal if the distribution of data approximates the shape of a normal distribution (David, 2020). In addition, Howell (2020) emphasizes the importance of testing the normality of experimental data to ensure the validity of statistical analysis results. Normality test is a test carried out with the aim of assessing the distribution of data in a group of data or variables, whether the distribution of the data is normally distributed or not. The normality of experimental data refers to the extent to which the experimental data follows a normal distribution.

$$Z_i = \frac{X_i - \bar{X}}{S}$$

Description:

Z_i = Skor untuk data
X_i = Nilai data
$\bar{X}$ = Rata-rata dari seluruh data dalam sampel
S = Standar deviasi dari sampel

f. Homogeneity of the sample

According to Pallant (2020) it is important to check the homogeneity of the sample to avoid bias in the experimental results. A homogeneity test is a statistical procedure used to determine whether the variances of two or more samples are considered equal or homogeneous. That is, the homogeneity test is used to test whether the samples have similar variations or not. Homogeneity tests are very important in statistical analysis, especially in difference analysis or hypothesis testing, such as the t-test or analysis of variance (ANOVA). In experiments, ensuring sample homogeneity is important for the validity and reliability of the results.

The main purpose of the homogeneity test is to ensure that differences in measurement results between two or more samples are not caused by significant variation within those samples. In other words, if the variance among the samples is too large, the observed differences between the samples may not reflect the true differences in the population represented by the samples. The homogeneity test is conducted to determine whether the two populations of variables X and Y have the same data distribution. As a basis for making homogeneity test decisions are:

1) If the possible sig value. <0.05 then the variance of two or more population groups or data samples is not homogeneous.
2) If the possible sig value. > 0.05 then the variance of two or more population groups or data samples is homogeneous.

Calculation of the homogeneity test manually according to (Sugiyono, 2020), if the data is normal, the analysis of variance requires testing the homogeneity of variance using the F test.

$$F = \frac{S_{\text{largest data variance}}}{S_{\text{smallest data variance}}}$$

g. The Testing of Hypothesis

Testing hypothesis in experiments is the process of determining whether the results obtained from experimental data support or reject the research hypothesis. Hill (2022) says how important the approach is in testing hypotheses and hypotheses must be tested by considering statistical power to avoid errors. In addition, according to Field, (2021) explains that hypothesis testing in experiments involves two main steps, namely formulating null and alternative hypotheses and selecting appropriate statistical tests. Field recommends the t test, ANOVA or non-parametric tests depending on the type of data and assumptions met. Steps in experimental hypothesis testing:

1) Null Hypothesis (Ho): states that there is no effect (there is no significant difference between the control group and the treatment group)
2) Alternative Hypothesis (H_1 / Ha): states that there is an effect or difference (there is a significant difference between the control group and the treatment group)
3) Selection of statistical tests based on the type of data and experimental design.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n} + \frac{s_2^2}{n}}}$$

Description:

T	=	Number of groups
$\overline{X}_1$	=	The mean of experimental group
$\overline{X}_2$	=	The mean of control group
n_1	=	Total of experimental group
n_1	=	Total of control group
S_1^2	=	The varians of experimental group
S_2^2	=	The varians of control group

CHAPTER IV
RESEARCH FINDINGS AND DISCUSSION

A. Research Findings

1. The Setting of the Research

This research was conducted at SMA Negeri 1 Huruna. The location of the research in Hilifaawu Village, Kecamatan Huruna, Kabupaten Nias Selatan, Provinsi Sumatera Utara.

2. Analyzing the Instrument Test

a. Validity

Based on the kind of data and research instrument the researcher prepared the instruments of collecting the data that was the test to assess student ability in vocabulary outcomes. The researcher has conducted a try out test at different schools at SMA Negeri 2 Huruna, before carrying out research at SMA Negeri 1 Huruna. Based on the results of processing the logical validation sheet obtained from the assessment of multiple choice test instrument expert validators and the media used, it is concluded that all multiple choice test items and learning media can be used or accepted as valid.

b. Results of the Research Intrument Trial

The test instrument was tested at SMA Negeri 2 Huruna which is located in Sifaoro'asi Huruna village, Kecamatan Huruna, Kabupaten Nias Selatan. The try-out test was given to class X with 30 students.

1) The Validity Test

Test the validity of the learning outcomes test that has been tested, carried out by calculating using IBM SPSS 22 where the calculations obtained are as follows:

To determineif an instrument is valid, the method used is to compare the value of r count and r table, with a significant level of 5%. If r count> r table then the instrument is valid.

Test Item	R Count	R Table	Criteria
1	0,693	0,349	Valid
2	0,702	0,349	Valid
3	0,608	0,349	Valid
4	0,666	0,349	Valid
5	0,488	0,349	Valid
6	0,637	0,349	Valid
7	0,488	0,349	Valid
8	0,359	0,349	Valid
9	0,557	0,349	Valid
10	0,496	0,349	Valid
11	0,791	0,349	Valid
12	0,482	0,349	Valid
13	0,471	0,349	Valid
14	0,532	0,349	Valid
15	0,696	0,349	Valid
16	0,415	0,349	Valid
17	0,579	0,349	Valid
18	0,477	0,349	Valid
19	0,549	0,349	Valid
20	0,628	0,349	Valid
21	0,362	0,349	Valid

22	0,477	0,349	Valid
23	0,402	0,349	Valid
24	0,489	0,349	Valid
25	0,490	0,349	Valid
26	0,425	0,349	Valid
27	0,402	0,349	Valid
28	0,350	0,349	Valid
29	0,609	0,349	Valid
30	0,416	0,349	Valid

2) Reliability Test

After the test was valid the researcher examined the reliability of the test by using cronbach's alpha formula. The reliability test is carried out to determine the level of fixity or trust in the instrument so that it can be used anytime and anywhere. The calculations used by researchers in the reliability test are using SPSS as follows:

Reliability Statistics	
Cronbach's Alpha	N of Items
912	30

Based on data calculations using the results of IBM SPSS 22 processing by researchers, the researchers obtained an overall reliability value of Cronbach's alpha of 0.912, which the researchers then compared with the reliability index criteria, and the researchers found the reliability level criteria to be high. So, it can be concluded that the test was **Reliable.**

3. Data Analysis

a. Descriptive Analysis

Descriptive analysis is a statistical method used to summarize and describe the main features of a dataset or the basic characteristics of a data set. Descriptive analysis is only to show patterns or trends that exist in the data. Using descriptive statistics, such as mean (average), median (middle value), mode (most frequently occurring value), and standard deviation (a measure of data variability), descriptive analysis provides a clear and concise overview of the distribution and relationships between variables in a study. Descriptive analysis is the first step in data analysis, which helps researchers and analysts to understand and summarize data before conducting further analysis that may be more complex. Thus, descriptive analysis has a significant role in presenting data effectively, facilitating interpretation, and supporting data-based decision-making.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
Pre-test Experiment	30	10	73	33.90	16.728
Post-test Eksperimen	30	17	97	75.57	17.516
Pre-test Control	30	7	83	33.53	16.860
Post-test Control	30	30	97	75.83	17.918
Valid N (listwise)	30				

b. Mean Score

The function of the mean is to indicate the average value o a set data by summing all the data values and dividing by the total number of data

points. The mean is used to provide an overview of the central tendency of the data. The average pre-test score in the control group was 33.53, categorized as an adeuate level. In comparison, the average post0test score for the control group was 75.83, which is also consideres adequate.

For the experimental group, the average pre-test score was 33.0, classiied as an adeuate level, while the average post-test score was 75.57, also deemed adeqquate.

Group	**N**	**Pre-test**	**Post-test**
Control Group	30	33.53	75.83
Eksperimental Group	30	33.90	75.57

c. Standard Deviation

Standard deviation is statistycal velue used to determine how spreads out the data in a sample are, and how close individual data points are to the mean or average velue of the sample. The standard deviation of control group was 17.918. While the standard deviation of experimental group was 17.516.

Group	**N**	Standard Deviation
Control Group	30	17.918
Eksperimental Group	30	17.516

d. Variance

Variance serves to indicate how much the data deviates from the average value. The variance of control group was 321.040. While, the varience of experimental group was 306.806.

Group	**N**	Variance
Control Group	30	321.040
Eksperimental Group	30	306.806

4. The Normality of the Data

Normality test is a test to measure whether our data has a normal distribution or not. If the distribution (spread) of the data is normal, then the hypothesis test formula that will be used is a type of test that is included in parametric statistics. And if it is not normally distributed, then use non-parametric statistics. Before looking at the Table of Normality and making a decision, first determine the hypothesis as follows:

Hypothesis:

H0 = Sample data comes from a normal distribution

H1 = Sample data comes from non-normal distribution

Significance level: 0,05 (5%)

Conducting the normality test with IBM SPSS 22, the following data output was obtained:

Tests of Normality					
	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk
		Statistic	Df	Sig.	Statistic
Students' Learning Outcomes	Pre-Test Experiment	.192	30	.006	.895
	Post-Test Experiment	.142	30	.126	.898
	Pre-Test Control	.179	30	.015	.926
	Pos-Test Control	.226	30	.100	.853

From the test of normality table, it is known that the sig value of the Experiment Post-Test variable is = 0.126> 0.05 and the sig value of the Control Post-Test variable = 0.100> 0.05. So the decision in this normality test is H0 accepted and H1 rejected. Thus the data in this study are normally distributed.

5. Paired Sample t Test

The independent sample t test is used to determine whether there is a difference in the means of two unpaired samples.

Paired Samples Test				
	Paired Differences			
	95% Confidence Interval of the Difference			
	Upper	t	df	Sig. (2-tailed)

Pair 1	Pre-test Experiment - Post test Experiment	-34.954	-12.696	29	.000
Pair 2	Pre-test Control – Post-test Control	-34.936	-11.747	29	.000

1) Based on the pair 1 auput above, the sig value is obtained. (2-tailed) of 0.000 <0.05, it can be concluded that there is a difference in the average student learning for the experimental class pre-test with the experimental class post-test.
2) Based on the pair 2 auput above, the sig value is obtained. (2-tailed) value of 0.000 <0.05, it can be concluded that there is a difference in the average student learning for the control class pre-test and control class post-test.

6. Homogeneity Test

Homogeneity test is a test of whether the variances of two or more distributions are equal. The homogeneity test that will be discussed in this paper is the Variance Homogeneity Test and the Bartlett Test. The homogeneity test is carried out to determine whether the data in variables X and Y are homogeneous or not.

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Students' Learning Outcomes	Based on Mean	.056	1	58	.814
	Based on Median	.007	1	58	.935
	Based on Median and with adjusted df	.007	1	57.222	.935
	Based on trimmed mean	.009	1	58	.927

Based on the ouput above, it is known that the significance value (Sig) Based on mean is 0.927> 0.05, so it can be concluded that the variance of the experimental class post-test data and the control class post-test data is the same or Homogen.

7. The Testing Hypothesis

Hypothesis testing is carried out to determine the truth of the temporary conjecture that has been given by the researcher, so to facilitate hypothesis testing researchers use IBM SPSS 22 to calculate the following:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.450	12.494		.116	.908
	After	.429	.161	.450	2.664	.013

a. Dependent Variable: Before

Based on the results of the above calculations using SPSS by researchers, the t value is 2.664, the confidence level of 0.05 t table is 1.669, with the assumption that if t count> t table, then Ho will be rejected and Ha accepted, if t count < t table, then Ha will be rejected and Ho accepted. By comparing the values obtained, 2.664> 1.669, then Ho is rejected and Ha is accepted. So it can be concluded that there is a positive and significant effect of Wordwal Interactive Multimedia on Vocabulary Learning Outcomes of Students of SMA Negeri 1 Huruna.

B. Discussion of the Research Findings

1. The Common Response of the Research Findings

The formulation of the research is “There is a significant Efect of Interactive Multimedia Wordwall on Vocabulary Learning Outcomes at SMA Negeri 1 Huruna”.

Based on the result of examining hypothesis, it proves that there is a significant effect of Interactive Multimedia Wordwall on Vocabulary Learning Outcomes. Interactive multimedia wordwall helps students to

identify what they know about the words and the vocabulary. So, all the vocabulary students know from the material by using wordwall, they can comprehend the vocabulary by answering the test provided in the application based on the material presented.

2. The Analysis of Interpretation of the Research Findings

In conducting this research, the researcher implemented interactive multimedia wordwall. Before applying this strategy, a pre-test was administered to both groups. Based on the analysis of students, learning outcomes, the results indicated that both the control and experimental groups showed adequate perormance. After calculating the scores, the mean pre-test score for the control group was 33.53, classified as an adequate level. While experimental group's mean score was 33.90, also classified as an adequate level. Reflecting on the pre-test results, the researcher identified several underlying issues related to students' vocabuary in reading. Following the pre-test, the researcher divided the groups and taught them using diferent strategies. The experimental group was taught using wordwall, while the control group received instruction through conventional teaching methods. After applying these methods, the researcher administered a post-test to both groups to determine whether this strategy had a significant impact on students' learning outcomes.

Based on the analysis and interpretation of the research findings, all three identiffied problems in the study have been addressed. First Students are unable to absorb and identify the meaning of the vocabulary presented. Second, Students are not able to show a high level of involvement and motivation in learning and understanding the vocabulary material provided. Last, Students do not have good and correct vocabulary reading skills in English. To determine the impact of the problem-solving approach mentioned above, the researcher utilized interactive multimedia wordwall. Previously, the reseacher invites students to discuss, then gived a multiple choice test to students as the first reference to find out students' abilities and how much students master vocabulary.

Furtermore, the result of the strategy implementation were evident when the researcher administered the post-test in the experimental group, compared to the control group, which used conventional methods. Based on data analysis, the control group mean post-test score was 75.83, which was cllassified as a suffivient level. Meanwhile, the experimental group's mean post0test score was 75.57, classiied as a good level. In conclusion, interactive multimedia wordwall helps students improve they vocabulary mastery.

CHAPTER V
CONCLUSIONS AND SUGGESTION

A. Conclusion

The conclusions of this research are based on prior data collection and calculations, as detailed below :

1. The computed mean test scores show that the control group average pre-test score was 33.53, while their average post-test score increased to 75.83.
2. The students' mean score of pre-test in experimental group was 33.90, while students' mean score of post-test in experimental group was 75,67.
3. Based on the result of examining the hypothesis, it got the t value is 2.664, the confidence level of 0.05 t table is 1.669, with the assumption that if t count> t table, then Ho will be rejected and Ha accepted, if t count < t table, then Ha will be rejected and Ho accepted. By comparing the values obtained, 2.664> 1.669, then Ho is rejected and Ha is accepted. It can be concluded that there is a significant effect of interactive multimedia wordwall on students' vocabulary learning outcomes at SMA Negeri 1 Huruna.
4. Interactive multimedia wordwall has a significant effect to the student' vocabulary learning outcomes rather than the students who are not taught by using interactive multimedia wordwall.

B. Suggestion

To achieve success in teaching vocabulary, the researcher offers the following suggestions:

1. The researcher recommends that English teachers of SMA Negeri 1 Huruna use the interactive multimedia wordwall in teaching vocabulary because can make students' easily understand the material.
2. Researcher can use this knowledge as a reference and motivation for conducting future studies.
3. The researcher hopes for the English theacher and the students in SMA Negeri 1 Huruna to use interactive multimedia wordwall in teaching learning process.

THE EFFECT OF INTERACTIVE MULTIMEDIA WORDWALL ON STUDENTS' VOCABULARY LEARNING OUTCOMES AT SMA NEGERI 1 HURUNA

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