

THESIS

**THE EFFECTIVENESS OF QUIZLET-BASED DIGITAL
FLASHCARDS IN EFL LEARNERS' VOCABULARY RETENTION**

By:

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ENGLISH EDUCATION DEPARTMENT

FACULTY OF TARBIYAH AND TEACHER TRAINING

UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM

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APPROVAL SHEET
THE EFFECTIVENESS OF QUIZLET-BASED DIGITAL FLASHCARDS
IN EFL LEARNERS' VOCABULARY RETENTION

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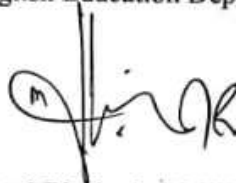


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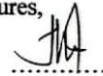
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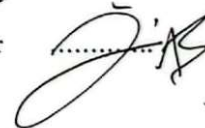
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Appendix : VII Appendices

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DEDICATION

With gratitude, I dedicate this thesis to Allah SWT for all the grace, blessings, guidance, and strength He has bestowed upon me, enabling me to complete this research. Blessings and peace be upon the Prophet Muhammad, peace be upon him, who has been a role model in my pursuit of knowledge and life.

I dedicate this thesis to my beloved parents and family for their unwavering prayers, love, support, sacrifice, and motivation throughout every step of my life and educational journey.

I express my deepest gratitude and appreciation to my advisor, Mr. Dian Arsitades Wiranegara, M.Pd., for his guidance, patience, direction, and support throughout the process of writing this thesis.

I also dedicate this work to my friends and partner, who have always provided encouragement, support, and companionship throughout this journey.

Finally, I dedicate this achievement to myself, who has strived, persevered, and persevered until I was able to complete this thesis.

MOTTO

"Do your best and let Allah do the rest."

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All praises belong to Allah SWT, whose grace made every difficult page possible. Peace and blessings upon the Prophet Muhammad SAW, whose life remains a lamp in every season of uncertainty.

This thesis stands not only on arguments and data, but on the kindness of people who believed before there was anything to believe in. To each of them, the author is sincerely grateful.

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This thesis is imperfect, as most honest work is. The author welcomes all criticism and hopes, above all, that something here proves useful to someone.

LATIN ARABIC TRANSLITERATION GUIDANCE

Based on the collective decision of the Minister of Religious Affairs of the Republic of Indonesia and the Minister of Education and Culture of the Republic of Indonesia Number 158 of 1987 and Number 0543b/U/1987, it has been decided that the Arabic-Latin transliteration used in this thesis are as follows:

A. Words

ا	= a	ز	= z	ق	= q
ب	= b	س	= s	ك	= k
ت	= t	ش	= sy	ل	= l
ث	= ts	ص	= sh	م	= m
ج	= j	ض	= dl	ن	= n
ح	= h	ط	= th	و	= w
خ	= kh	ظ	= zh	ه	= h
د	= d	ع	= 'a	ء	= ,
ذ	= dz	غ	= gh	ي	= y
ر	= r	ف	= f		

B. Long Vocal

Vocal (a) panjang = â

Vocal (i) panjang = î

Vocal (u) panjang = û

C. Diphthong Vocal

أَوْ = aw

أَيَّ = ay

أُوْ = Ū

إِيَّ = Î

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ABSTRACT

Arofah, Firda Nur Zakiyah 2026. The Effectiveness of Quizlet-Based Digital Flashcards in EFL Learners' Vocabulary Retention. Thesis, English Education Department. Faculty of Education and Teacher Training, Maulana Malik Ibrahim State Islamic University of Malang. Supervisor: Dian Arsitades Wiranegara, M.Pd.

Keywords: digital flashcards, Quizlet, vocabulary mastery, vocabulary retention, EFL students

This study aims to determine the effectiveness of using Quizlet-based digital flashcards on vocabulary mastery and retention of tenth-grade EFL students at the senior high school/vocational high school level. The study used a quasi-experimental design with two groups: an experimental group (X DPIB) that received treatment using Quizlet and a control group (X TKJ) that used conventional methods, with a total of 60 students. Data collection was conducted through three stages of testing, namely pre-test, post-test, and delayed post-test which was conducted one week after the post-test to measure the durability of vocabulary retention. Data analysis used Independent Samples T-Test and Paired Samples T-Test with the help of SPSS, accompanied by Cohen's d effect size calculation. The results showed that the experimental group obtained an average post-test of 83.83, significantly higher than the control group (71.67), with a significance value of $p < 0.001$ and Cohen's $d = 1.577$ (very large), proving that Quizlet is effective in improving short-term vocabulary mastery. In the delayed post-test, the experimental group also excelled with an average of 79.67 compared to 69.83 in the control group ($p < 0.001$, Cohen's $d = 1.300$), indicating that Quizlet significantly supports long-term vocabulary retention through the mechanisms of spaced repetition, retrieval practice, multimodal input, and gamification. In conclusion, the use of Quizlet-based digital flashcards has been proven to be effective both statistically and practically in improving EFL students' vocabulary mastery and retention at the high school/vocational school level.

ABSTRAK

Arofah, Firda Nur Zakiyah 2026. Efektivitas Flashcard Digital Berbasis Quizlet dalam Mempertahankan Kosakata pada Pembelajar Bahasa Inggris sebagai Bahasa Asing. Skripsi, Program Studi Tadris Bahasa Inggris. Fakultas Ilmu Tarbiyah dan Keguruan. Universitas Islam Negeri Maulana Malik Ibrahim Malang. Dosen Pembimbing: Dian Arsitades Wiranegara, M.Pd.

Kata Kunci: digital flashcard, Quizlet, penguasaan kosakata, retensi kosakata, siswa EFL

Penelitian ini bertujuan untuk mengetahui efektivitas penggunaan digital flashcard berbasis Quizlet terhadap penguasaan dan retensi kosakata siswa EFL kelas X di tingkat SMA/SMK. Penelitian menggunakan desain quasi-experimental dengan dua kelompok, yaitu kelompok eksperimen (X DPIB) yang mendapat perlakuan menggunakan Quizlet dan kelompok kontrol (X TKJ) yang menggunakan metode konvensional, dengan jumlah total 60 siswa. Pengumpulan data dilakukan melalui tiga tahap tes, yaitu pre-test, post-test, dan delayed post-test yang dilaksanakan satu minggu setelah post-test untuk mengukur daya tahan retensi kosakata. Analisis data menggunakan uji Independent Samples T-Test dan Paired Samples T-Test dengan bantuan SPSS, disertai penghitungan effect size Cohen's d. Hasil penelitian menunjukkan bahwa kelompok eksperimen memperoleh rata-rata post-test sebesar 83,83, lebih tinggi secara signifikan dibanding kelompok kontrol (71,67), dengan nilai signifikansi $p < 0,001$ dan Cohen's $d = 1,577$ (sangat besar), membuktikan bahwa Quizlet efektif meningkatkan penguasaan kosakata jangka pendek. Pada delayed post-test, kelompok eksperimen juga unggul dengan rata-rata 79,67 berbanding 69,83 pada kelompok kontrol ($p < 0,001$, Cohen's $d = 1,300$), menunjukkan bahwa Quizlet secara signifikan mendukung retensi kosakata jangka panjang melalui mekanisme spaced repetition, retrieval practice, input multimodal, dan gamifikasi. Kesimpulannya, penggunaan digital flashcard berbasis Quizlet terbukti efektif secara statistik maupun praktis dalam meningkatkan penguasaan dan retensi kosakata siswa EFL di tingkat SMA/SMK.

الملخص

عرفة، فيردا نور زاكية ٢٠٢٦. فعالية البطاقات التعليمية الرقمية القائمة على كويزلت في تعزيز استيعاب المفردات لدى متعلمي اللغة الإنجليزية كلغة أجنبية. البحث العلمي، قسم تدريس اللغة الإنجليزية كلية علوم التربية والتعليم، جامعة مولانا مالك إبراهيم الإسلامية الحكومية مالانج. المشرف: ديان أرسيتاديس ويرانغار، الماجستير.

الكلمات المفتاحية: البطاقات التعليمية الرقمية، كويزلت، استيعاب المفردات، احتفاظ المفردات، متعلمو اللغة الإنجليزية كلغة أجنبية

يهدف هذا البحث إلى معرفة مدى فعالية استخدام البطاقات التعليمية الرقمية القائمة على كويزلت في تحسين استيعاب المفردات واحتفاظها لدى طلاب الصف العاشر من متعلمي اللغة الإنجليزية كلغة أجنبية في المرحلة الثانوية. استخدم البحث تصميم شبه تجريبي مع مجموعتين، هما المجموعة التجريبية التي تلقت التعلم باستخدام كويزلت والمجموعة الضابطة التي استخدمت الطريقة التقليدية، بإجمالي ستين طالبًا. تم جمع البيانات عبر ثلاث مراحل اختبارية، وهي الاختبار القبلي والاختبار البعدي والاختبار البعدي المؤجل الذي أجري بعد أسبوع من الاختبار البعدي لقياس مدى احتفاظ الطلاب بالمفردات. تم تحليل البيانات باستخدام اختبار تي للعينات المستقلة واختبار تي للعينات المزدوجة بمساعدة برنامج إس بي إس إس، مع حساب حجم الأثر وفق معيار دي كوهين. أظهرت النتائج أن المجموعة التجريبية حصلت على متوسط درجات في الاختبار البعدي بلغ ثلاثة وثمانين فاصل ثلاثة وثمانين، وهو أعلى بشكل ملحوظ من المجموعة الضابطة التي بلغ متوسطها واحد وسبعين فاصل سبعة وستين، بقيمة دلالة أقل من صفر فاصل صفر واحد وحجم أثر دي كوهين يساوي واحد فاصل خمسمائة وسبعة وسبعين وهو كبير جدًا، مما يثبت فعالية كويزلت في تحسين استيعاب المفردات على المدى القصير. وفي الاختبار البعدي المؤجل، تفوقت المجموعة التجريبية أيضًا بمتوسط تسعة وسبعين فاصل سبعة وستين مقارنةً بتسعة وستين فاصل ثلاثة وثمانين للمجموعة الضابطة بقيمة دلالة أقل من صفر فاصل صفر واحد وحجم أثر دي كوهين يساوي واحد فاصل ثلاثمائة، مما يدل على أن كويزلت يدعم بشكل ملحوظ احتفاظ المفردات على المدى الطويل من خلال آليات التكرار المتباعد والاسترجاع التدريبي والمدخلات متعددة الوسائط والتلعيب. وخلص البحث إلى أن استخدام البطاقات التعليمية الرقمية القائمة على كويزلت أثبتت فعاليتها إحصائيًا وعمليًا في تحسين استيعاب المفردات واحتفاظها لدى متعلمي اللغة الإنجليزية كلغة أجنبية في المرحلة الثانوية.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

One of the most important aspects in learning English is expanding vocabulary. Vocabulary mastery has significantly impacted the understanding, application, and communication of concepts. Students will have difficulties in speaking, writing, listening, and reading if they don't have a sufficient vocabulary. Because every language skill relies on the ability to understand the meaning and context of words, vocabulary is a key pillar of all four skills (Siswandi et al., 2024). Therefore, improving vocabulary mastery is important for developing the communicative competence of EFL (English as a Foreign Language) students, in addition to being an academic requirement.

Vocabulary mastery itself can be understood as the learners' ability to recognize, comprehend, and appropriately use a sufficient number of words in real communication, covering not only the meaning of a word but also its form, function, and usage in context. Mastery of vocabulary is not limited to the number of words memorized, but also includes the learner's capacity to use those words accurately in various media and learning activities. (Fakhruddin et al., 2021) explain that vocabulary mastery can be enhanced through interactive and engaging media, since such media allow learners to encounter words repeatedly in meaningful contexts, thereby strengthening their understanding and long-term retention of new vocabulary.

Given this importance, the decision to carry out this research at the senior high school level, specifically SMK, is not merely contextual but also has a clear underlying rationale. Conducting this study at SMK (Sekolah Menengah Kejuruan/Vocational High School) is relevant because English instruction at this level is directed by an English for Specific Purposes (ESP) orientation, in which vocabulary mastery is not only meant for general communication but also to support students' readiness for their specific vocational fields. (Nugraha & Srisudarso, 2023) argue that the ESP approach applied in the SMK curriculum requires students to master vocabulary that is closely related to their vocational competencies, making effective and engaging vocabulary learning media particularly important in this educational setting.

However, the reality on the field shows that many students still have difficulty memorizing and retaining new vocabulary. Students are often only able to remember vocabulary in short term and are unable to maintain it in the long term. Dewi & Rahma, (2022) emphasize that learning vocabulary is not just about identifying words, but also involves strategies that help store them in long-term memory. Traditional methods such as memorization are often less effective to create meaningful connections, so information is easily lost from students' memories. Efforts to improve vocabulary mastery must be done maximally through effective learning strategies, including the use of interactive digital media such as Quizlet. This is in line with the words of Allah SWT:

لَا لَوْ كَانَ الْبَحْرُ مَدَادًا لَكَلِمَتِ رَبِّي لَنَفَذَ الْبَحْرُ قَبْلَ أَنْ تَنْفَذَ لِكَلِمَتِ رَبِّي وَلَوْ جُنُودًا بِمِثْلِهِ مَدَدًا ١٠٩

"Say: 'Even if the sea were ink for the words of my Lord, the sea would surely be exhausted before the words of my Lord are exhausted, even if We were to add more like it.'" (QS. Al-Kahf [18]: 109), which stresses the point that knowledge is vast with Allah, and we must always strive to seek as much knowledge as possible.

One reason for low vocabulary retention is the lack of engaging and interactive learning media. The traditional methods of teaching, which place too much emphasis on books and written assignments, may cause the student to lose motivation in the learning process. For a student of the digital age, it is important to use an interesting visual-based method of learning (Paldy et al., 2025)

The development of digital technology has led to the creation of various innovations in the world of education. One of the innovations is the use of digital flashcards. The flashcards are designed to be more interactive and visual to enhance the memory of the students. Deswita & Mubarak, (2025) showed the effectiveness of using flashcards to enhance the vocabulary of elementary school students through the creation of more interactive and engaging presentations.

Due to the advancement of technology, the flashcard learning media has transformed to digital media such as the Quizlet application. The application is developed to enhance the learning of vocabulary among students through various interactive modes such as the Learn mode, Flashcards mode, Spell mode, Test mode, and the Match mode. Riski & Wahyuni, (2024) showed the benefits of using the application to enhance

the motivation of the students. The application is more interactive and flexible, allowing the students to be more motivated to continue learning. The application also has the ability to track the progress of the student and the periodic repetition of the information to enhance memory.

Evidence indicates that Quizlet is an effective tool in improving vocabulary learning results. Sudrajat & Pratama, (2022) concluded that Quizlet can be used to improve vocabulary mastery of junior high school students in a flexible and enjoyable manner. It indicates that interactive digital media, such as Quizlet, can create a more interesting learning experience compared to traditional learning methods, which encourage students to be actively involved in the learning process.

Moreover, Zakaria et al., (2022) have also confirmed the effectiveness of the usage of the game mode in Quizlet in improving the vocabulary mastery of students in an enjoyable manner. Similarly, (Siswandi et al., 2024) found that using Quizlet as a learning medium significantly increased students' interest and motivation, encouraging them to be actively engaged in the learning process. It is therefore evident that the usage of Quizlet not only helps in effective vocabulary mastery but also motivates the students.

However, it is evident from the literature review that some gaps are remaining, which need to be filled. Riski & Wahyuni, (2024) did a systematic literature review, thus, there were no findings. The discussion was general, and there was no specific emphasis on the use of Quizlet for EFL learners or the retention of the words for a long period of time. This

study provides novelty as it involves a direct experiment and the measurement of vocabulary retention through a delayed post-test, which was not discussed in the literature review.

Damayanti et al., (2025) investigated the impact of Quizlet on the vocabulary mastery of junior high school students, hence differing in context and student characteristics at the senior high school level. Moreover, the study only focused on the short-term vocabulary mastery without any concern for vocabulary retention over a long period. The novelty of this study is in the application of Quizlet, not only for enhancing post-test scores but also for vocabulary retention.

Siswandi et al., (2024) emphasized the effect of Quizlet usage on the learning interest and motivation of junior high school students, not on the quantitative results of vocabulary learning. The current study offers a new paradigm by evaluating the effect of Quizlet usage on the vocabulary retention of EFL learners, focusing not only on the affective domain but also on the cognitive domain. Putri, Aufa et al., (2023) employed traditional flashcards for vocabulary learning with elementary school students, meaning that the study does not represent the effectiveness of digital-based media for senior secondary students. The current study develops the idea of traditional flashcards to digital Quizlet flashcards for vocabulary retention improvement.

In terms of research urgency, this study has significant strategic value, both theoretically and practically. Theoretically, this research enriches studies in the field of Technology-Enhanced Language Learning

(TELL) with a new perspective on the relationship between digital interactivity and vocabulary retention. Practically, this research provides a solution to a classic problem in English learning in Indonesia, namely students' weak ability to retain vocabulary sustainably. Quizlet proposes a game-based, multisensory approach that increases student motivation and engagement. Furthermore, this research can serve as a reference for educators in selecting digital learning media that is appropriate for the needs of the modern generation.

Therefore, it can be explained that this research not only replicates previous studies but also seeks to make deeper contributions, both empirically and theoretically, to technology-based vocabulary learning. The purpose of this study is to investigate the effect of using Quizlet-based digital flashcards on vocabulary mastery and retention among tenth-grade EFL students at SMK Nasional Malang.

1.2 Research Question

1. Does the use of Quizlet-Based Digital Flashcards significantly improve EFL students' vocabulary mastery at the tenth grade of senior high school?
2. Does the use of Quizlet-Based Digital Flashcards significantly enhance EFL students' vocabulary retention at the tenth grade of senior high school?

1.3 Research Objective

1. To determine whether Quizlet-Based Digital Flashcards significantly improve EFL students' vocabulary mastery at the tenth grade of senior

high school.

2. To determine whether Quizlet-Based Digital Flashcards significantly enhance EFL students' vocabulary retention at the tenth grade of senior high school.

1.4 Significance of Study

This study is expected to provide meaningful contributions to various stakeholders in the field of English language education. For students, the integration of Quizlet-based digital flashcards into vocabulary learning is anticipated to enhance both their engagement and their long-term retention of new vocabulary, thereby supporting more effective language acquisition. For teachers, this study offers an evidence-based instructional approach that leverages technology to make vocabulary instruction more interactive and efficient, addressing the needs of digitally-oriented learners. For researchers, this study contributes to the growing body of literature on Technology-Enhanced Language Learning (TELL) by providing empirical evidence on the relationship between digital flashcard use and vocabulary retention among EFL students at the senior high school level.

1.5 Scope and Limitations of Study

This study focuses on the effect of using digital flashcards through the Quizlet app on students' vocabulary retention. The students in this study are tenth-grade students. The vocabulary material that the students learn is based on the English language learning syllabus. This study does not address other linguistic aspects such as grammar and pronunciation. It only looks at how the Quizlet app affects the retention of tenth-grade

students.

1.6 Definition of Key Terms

1. Vocabulary Retention

Vocabulary retention is the ability to store, maintain and recall vocabulary that has been previously learnt over time, especially in long-term memory. It is not just about remembering or knowing new words for a short period of time, but about the sustained ability to recall and use them meaningfully in different language contexts. In the context of this study, vocabulary retention is measured through a delayed post-test administered to EFL students after a period of learning, in order to assess how well students are able to maintain the vocabulary they have acquired throughout the learning process.

2. Quizlet-Based Digital Flashcard

Quizlet-based digital flashcard is a technology-enhanced learning media in the form of an interactive digital application that presents vocabulary items through various study modes, including Learn mode, Flashcards mode, Spell mode, Test mode, and Match mode. As a digital evolution of traditional paper-based flashcards, Quizlet offers a multisensory and game-based approach to vocabulary learning that is both visual and engaging. The application is also equipped with a progress tracking feature and periodic repetition system designed to strengthen memory consolidation. In the context of this study, Quizlet-based digital flashcards serve as the primary instructional media used in the experimental treatment, with the aim of enhancing vocabulary

retention among senior high school EFL students in Indonesia.

3. EFL Students

EFL (English as a Foreign Language) students refer to learners who study English in a context where English is not the primary language of communication in daily life. In this setting, English is learned mainly in a formal classroom environment and is not widely used outside of school. As a result, EFL students have limited exposure to the target language compared to ESL (English as a Second Language) learners, making vocabulary acquisition and retention particularly challenging. In the context of this study, EFL students refer specifically to senior high school students in Indonesia who are learning English as a compulsory subject and whose native language is Indonesian.

CHAPTER II

LITERATURE REVIEW

2.1 Vocabulary

Vocabulary forms an important part of language learning, especially in relation to learning English as a Foreign Language (EFL). The importance of having a good knowledge base of vocabulary is that it allows students to be able to understand, communicate, and express themselves through the four language skills. Without proper knowledge of vocabulary, students will face great challenges because all language skills depend on vocabulary.

2.1.1 Definition of Vocabulary

Vocabulary is considered one of the fundamental foundations of L2/EFL acquisition, referring not merely to a list of words known and understood by a person, but also encompassing aspects such as meaning, function, semantic complexity, and inter-word relationships. According to Oktaviani & Isdaryanti, (2023) mastering vocabulary has a very important function in the learning process because it enables students to comprehend concepts based on the relationship between text and image representation in learning media.

In fact, this view is supported by the findings of Damayanti et al., (2025), which argued that mastering vocabulary has a direct relationship to the effectiveness of the communication done by the students, especially for English as a foreign language. This is

because vocabulary was found to be one of the factors which often hinder the active participation of the students in class, thus influencing the self-confidence of the students as well as their ability to comprehend and express meaning.

From the cognitive psychology point of view, vocabulary is also considered an aspect of the long-term memory system. Aufa et al., (2023) argue that successful vocabulary learning includes not only recognizing words but also developing memory using repetition and association. It is therefore important to understand that vocabulary learning is not simply memorization but rather developing interconnected networks of meanings in the minds of students.

2.1.2 Types of Vocabulary

In language acquisition research, vocabulary is categorized into two types, receptive vocabulary and productive vocabulary. This categorization is vital to understand the manner through which the students acquire and store vocabulary items.

1. Receptive Vocabulary

Vocabulary that students can recognize and comprehend but are not necessarily able to use in active communication can be defined as receptive vocabulary. Yuliantari et al., (2021) stated that receptive vocabulary is the primary stage in the acquisition of vocabulary for students, as they are more often exposed to the written form of words and other digital media.

But the problem with EFL learners is that they can understand the meaning of words but they cannot use the words in an appropriate manner.

This kind of situation arises due to the fact that the learners are not given many opportunities to use the words which they learn in their practical lives. Receptive vocabulary which is not followed by productive vocabulary may not stay long in the mind of the learners.

2. Productive Vocabulary

The productive vocabulary is made up of words that the learners are able to use in their language production process. Deswita & Mubarak, (2025) emphasize that mastering productive vocabulary requires an exhaustive understanding, including the meaning, grammatical form, and context of the words' use. Actively used vocabulary tends to be more strongly stored in memory because it involves more complex cognitive processes.

It seems that using the vocabulary in practice in the language production tasks, like having a conversation and/or writing, can contribute to learning vocabulary, as it helps to establish the connection between the word itself and its meaning. To be able to learn vocabulary, one needs not only to recognize it but also to use it.

2.1.3 The Concept of Vocabulary Mastery

Vocabulary mastery refers to a learner's fundamental ability to understand, recall, and use words accurately and appropriately in communication, encompassing two primary aspects: the receptive aspect, which relates to the recognition and comprehension of word meanings during listening or reading, and the productive aspect, which involves the correct use of words in speaking and writing. In today's digital era, mastering these aspects can be accelerated through innovative classroom strategies. Wahid & Putra, (2023) found that utilizing interactive platforms effectively boosts active student engagement while strengthening vocabulary mastery within the Indonesian EFL context.

Beyond merely knowing dictionary definitions, comprehensive vocabulary mastery also entails familiarity with pronunciation, spelling, grammatical behavior, collocations, and appropriate usage contexts. Grasping these mechanical elements ensures that students not only understand word meanings but are also capable of producing words independently. Vivianti et al., (2023), implementing word games significantly impacts students' vocabulary mastery by directly honing their focus on accurate spelling and pronunciation.

Similarly, vocabulary mastery can be fostered through affective and auditory approaches Rohmah & Indah, (2021) explain that the use of pedagogically modified English songs helps students recognize word structures, intonation, and meanings more naturally,

allowing them to internalize new vocabulary through repeated exposure rather than rote memorization.

In experimental research contexts, vocabulary mastery is typically measured through student performance on a post-test administered immediately after the intervention, reflecting short-term ability to recall and apply newly acquired vocabulary. Sardi, (2022) notes that robust vocabulary mastery can be built through strategies that emphasize deep internalization of meaning, ensuring that post-test performance reflects a solid foundation rather than surface-level memorization.

Experts further emphasize that vocabulary mastery occurs in stages, ranging from passive recognition to the active, contextual, and communicative use of words. This progression highlights the importance of distinguishing between short-term mastery and long-term retention, as a comprehensive picture of learning outcomes can only be obtained by measuring both through immediate post-tests and delayed post-tests. In this regard, Riskina et al., (2023) explored how integrating vocabulary learning with speaking practice in a corpus-based classroom encourages students to move beyond memorizing isolated words, enabling them instead to use vocabulary actively in real-world communication.

2.1.4 The Concept of Vocabulary Retention

Vocabulary retention refers to a learner's capacity to remember acquired vocabulary over time and apply it in context,

distinguishing itself from mere memorization in that it emphasizes the persistence of vocabulary in long-term memory rather than temporary recall. It is equally important to distinguish retention from acquisition: while acquisition emphasizes the initial learning process, retention indicates the resilience of vocabulary knowledge in memory over time. Baharuddin et al., (2022) explain that vocabulary development requires not only exposure to new words but also strategies that enable learners to retain and reuse them effectively.

One foundational theory explaining memory retention is Hermann Ebbinghaus's Forgetting Curve, which states that newly learned information tends to fade quickly if not reinforced through repetition. Gantari (2024) notes that vocabulary is often rapidly forgotten if learners are not given opportunities to revise what they have learned, while Sujarwati et al., (2025) add that repeated exposure and interactive learning activities play a significant role in improving vocabulary retention over time.

To counteract this natural forgetting process, deep processing has been identified as a key factor in strengthening memory traces and making vocabulary easier to recall. Activities such as building sentences, associating words with images, or completing interactive quizzes encourage more active cognitive engagement than rote memorization, resulting in richer mental representations that are more likely to be stored in long-term

memory (Baharuddin et al., 2022). Closely related to this is the principle of spaced repetition, a proven method of improving retention by reviewing vocabulary at increasing intervals rather than in a single study session. Gantari, (2024) found that vocabulary retention is significantly enhanced when students are exposed to vocabulary multiple times across several learning opportunities, a principle now embedded in digital flashcard applications that automatically adjust repetition frequency based on learner performance.

Another effective strategy is retrieval practice, in which information is recalled from memory without direct reference to the source material, thereby actively reinforcing the neural connections associated with stored information. This approach is explained through the testing effect, which holds that repeated testing strengthens long-term memory more effectively than relearning the same material. Ordena & Susanti, (2025) reported that memory-based activities such as quizzes and word matching improve vocabulary retention precisely because they involve this form of active cognitive engagement.

Given these principles, the delayed post-test is widely used in vocabulary retention studies to assess how much vocabulary students retain after a certain period, as opposed to an immediate post-test which only measures mastery right after learning. Zhang et al., (2025) emphasized that delayed testing is crucial for

evaluating the effectiveness of vocabulary learning interventions, as it reveals how much information genuinely remains in students' memory. For this reason, the delayed post-test in the present study is administered one week after the immediate post-test.

2.2 Quizlet-Based Digital Flashcards

2.2.1 Definition of Digital Flashcards

Digital flashcards are a learning tool that employs information technology to present content in a digital card format, evolving from the traditional concept of physical flashcards that display words or images on one side and answers on the other. Unlike their physical counterparts, digital flashcards can be accessed on electronic devices such as computers, tablets, and smartphones, providing students with high flexibility in their learning process without being limited by time or place (Sudrajat & Pratama, 2022)

One of the key mechanisms through which digital flashcards facilitate vocabulary learning is by presenting information in concise, manageable units, a technique known as chunking, which reduces cognitive overload and allows learners to focus on one piece of information at a time. Oktaviani & Isdaryanti (2023) further highlight that the visual and interactive nature of digital flashcards makes the acquisition of new vocabulary more accessible and engaging, while Anisa, (2024) affirmed that the incorporation of multimedia elements such as images, audio, and

animations supports diverse learning pathways, promotes consistent motivation, and makes digital flashcards a more stimulating alternative to conventional paper-based methods.

2.2.2 Quizlet as a Digital Flashcard Platform

Quizlet is one of the most widely used digital learning platforms in language education, particularly for vocabulary learning. Founded in 2005 by Andrew Sutherland, it has since grown into one of the most popular online learning tools worldwide. Riski & Wahyuni, (2024) affirmed that Quizlet is highly effective in supporting vocabulary learning across educational levels, from secondary school to university, owing to its structured repetition system and interactive learning modes.

As a platform, Quizlet allows teachers to create sets of learning materials that can be shared directly with students via a link or class code and accessed on any internet-connected device. Anisa, (2024) noted that this accessibility makes Quizlet equally suitable for independent and classroom-based learning, including study sessions outside of school hours.

Beyond individual practice, Quizlet also provides collaboration features that enable interactive and competitive learning experiences. Siswandi et al., (2024) found that these game-based modes significantly increased students' interest and motivation to learn by offering a fun and challenging learning environment.

2.2.3 Learning Features in Quizlet

Quizlet incorporates five modes of learning, which are primarily directed towards reinforcing the learning and retention of vocabulary in students. Each mode performs a different but complementary function. Zakaria et al., (2022) state that the different learning modes in Quizlet enable students to understand vocabulary through various pathways that range from recognizing word forms to using them in complex contexts.

One of the most vital features that Quizlet provides is Flashcards Mode, students can learn vocabulary through digital flashcards. Text and image forms of vocabulary will be provided, enabling students to know the relation of words to their meanings. Oktaviani & Isdaryanti, (2023) explain that through e-flashcards based on visuals, it would be easier for students to grasp what is being taught because information was summarized and able to be quickly comprehended.

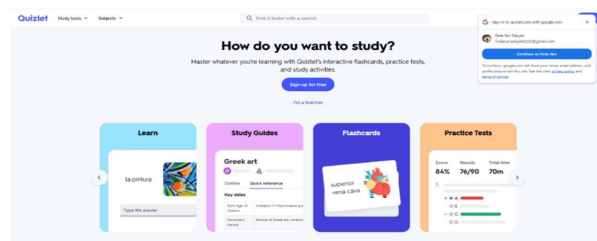


Image 2. 1 Display of Quizlet App

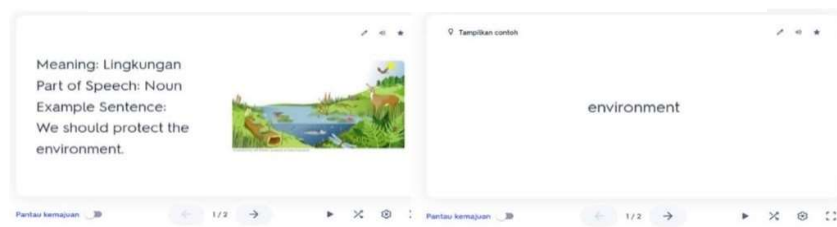


Image 2. 2 Example of a digital flashcard on Quizlet

Besides the Flashcards mode, the Quizlet program also facilitates the use of the Learn mode. This mode helps students learn their words systematically. According to Damayanti et al., (2025) the program ensures that the students learn their words effectively because it repeatedly asks students about the words they do not understand. Through their response, the app adjusts the difficulty level of the word.

Learn Mode promotes the learning process by encouraging the student to learn through answering the quiz that is provided by the app. This will help improve the association between word form and its meaning. Siswandi et al., (2024) proved that active learning through practice, which is provided by Quizlet, positively contributes to increasing student motivation and interest in learning.

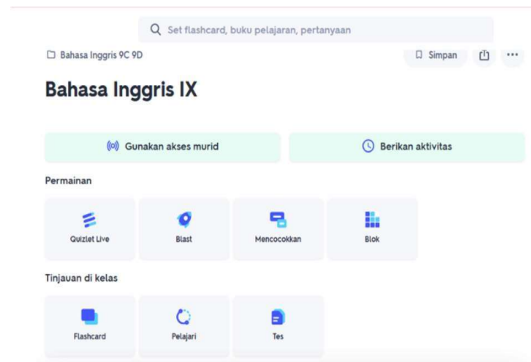


Image 2. 3 Learn Mode View on Quizlet

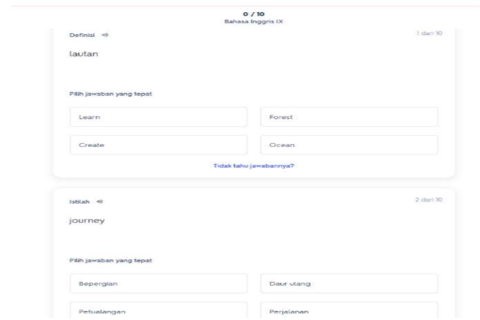


Image 2. 4 Example vocabulary exercises in Learn Mode

Another learning mode in Quizlet is Write Mode, where students are supposed to write vocabulary based on some given prompts. This mode helps students improve their capacity for remembering the spelling and form of words. Zakaria et al., (2022) argued that writing vocabulary helps improve long-term memory as it engages students' minds through a more complex cognitive process.

This is also where, through Write Mode, learners not only identify words, but also produce them. This ties into what is called productive vocabulary, which stresses its physical use in learning a language.

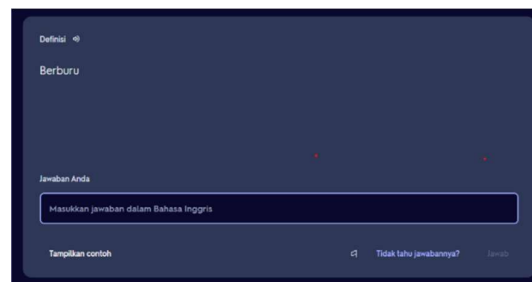


Image 2. 5 Write Mode View on Quizlet

Quizlet also provides the Test Mode evaluation feature that allows students to measure their mastery of vocabulary. This mode presents various question types, including multiple-choice,

true-false, and short answer questions. As Siswandi et al., (2024) explained, the different modes are also equipped with various questions, such as multiple- choice questions, as well as true and short questions.

With evaluations being conducted through Test Mode, immediate feedback is provided to the students. This is proving to be a vital factor for raising learning awareness and for encouraging the students to review the areas that have not been fully understood.

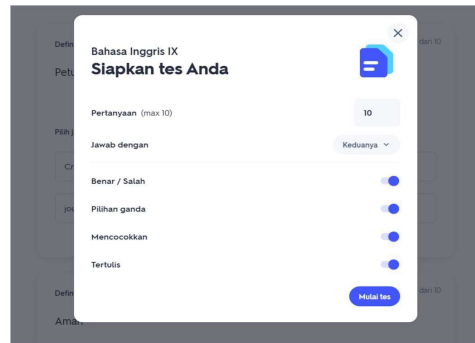


Image 2. 7 Test Mode View on Quizlet

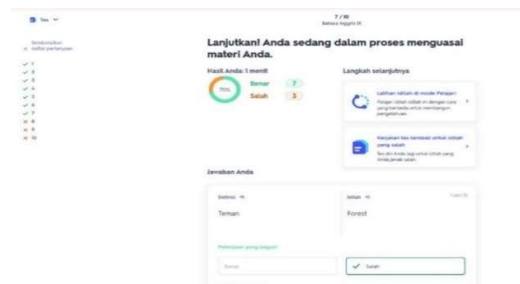


Image 2. 6 Example of vocabulary evaluation results

Besides learning modes for individuals, the application also has the feature of Quizlet Live, which helps students learn through collaborative learning, through games in groups. It is generally designed to increase interaction and further cooperation among students. Zakaria et al., (2022) established

that Quizlet Live employed in vocabulary learning increased the engagement of students and created an active environment of learning.

Quizlet Live is one way to help students discuss and work together on an assignment. This has the added benefits of practicing vocabulary mastery while concurrently developing the students' social skills regarding language learning.

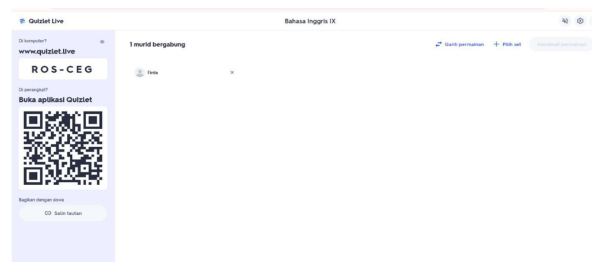


Image 2. 8 Quizlet Live View

Overall, it may be noted that Quizlet, as an electronic teaching tool, presents several features that are conducive for learning vocabulary, it was noted by Damayanti et al., (2025) that efficient use of the Quizlet application could enhance students' learning of vocabulary, as it integrates repetition, interactivity, and assessment in one place. Therefore, it may be noted that Quizlet assists as not just an educational technological tool but also as an educational pedagogical tool to enrich students' vocabulary in learning the English foreign language.

2.2.4 Steps for Using Quizlet in Learning

Implementing Quizlet in vocabulary learning in the classroom requires structured preparation to be effective. The following are the steps for using Quizlet applied in this study:

The first step is teacher preparation. Before the lesson begins, the teacher creates a Quizlet account and compiles a set of flashcards containing the vocabulary to be learned in that session. The vocabulary is taken from the 10th grade English textbook currently being used in the lesson. Each card in the flashcard set contains an English word along with a translation, definition, and/or supporting image.

The second step is delivering the main material. In the early part of the class, the teacher presents the core content depending on the subject matter of the book. This process happens in the normal manner of teaching and learning where the teacher explains the text and meanings of the words in the material.

The third step is the Quizlet session. After the presentation is complete, students access Quizlet using their respective devices. This session lasts approximately 15–20 minutes. At this stage, students start with Flashcards mode to learn and remember new vocabulary, then continue with Learn or Match mode to strengthen understanding, and end with Test mode as an independent evaluation of vocabulary mastery at that meeting.

The fourth step is implementing Quizlet Live. Every two sessions the teacher does a Quizlet Live session at the end. Students are randomly assigned to groups and collaborate as teams to answer Quizlet Live vocabulary questions. This activity is designed to enhance student engagement and create a competitive yet

collaborative learning atmosphere.

The fifth step involves independent vocabulary review outside of class. When the class is over students can look at the flashcard sets made by the teacher at any time and, in any place using the Quizlet app on their phone or computer. This feature enables students to independently review vocabulary outside of class hours, which supports the process of long-term memory consolidation through distributed practice.

2.2.5 Strengths and Weaknesses of Quizlet

Quizlet offers several notable strengths as a vocabulary learning tool. First, it is freely accessible across a wide range of devices and platforms, making it available to students from diverse socioeconomic backgrounds. Second, its user interface is straightforward, enabling both teachers and students to navigate the platform without requiring advanced technical knowledge (Anisa, 2024). Third, Quizlet provides immediate feedback on student responses, allowing learners to identify and correct errors independently. Fourth, the Quizlet Live feature promotes collaborative and socially interactive learning, which Siswandi et al., (2024) found to significantly enhance student motivation and engagement.

Nevertheless, Quizlet also has certain limitations. The platform requires a stable internet connection, which may disadvantage students in areas with limited connectivity.

Additionally, some advanced features are only available under a paid subscription. A further concern is the risk of surface-level memorization, where students may learn to associate word forms without developing a deeper understanding of meaning or usage. For this reason, Riski & Wahyuni, (2024) recommend that Quizlet be used in conjunction with complementary instructional methods to ensure comprehensive vocabulary acquisition.

2.2.6 Selection of Vocabulary Materials in the Research

The vocabulary and language data used in this study were sourced from English for Nusantara, the official 10th-grade English textbook published by the Ministry of Education and Culture, selected on the basis that it serves as an official national curriculum reference relevant to students' expected competencies. (Harmades, 2025) emphasized the importance of aligning Quizlet flashcard material with classroom teaching content, as this contextual connection has been proven to strengthen vocabulary retention more significantly.

The vocabulary included in each Quizlet flashcard set is selected based on the material students are studying in that session, covering key vocabulary from the text or topic discussed. After the main material is delivered, students use Quizlet for 15–20 minutes to practice the vocabulary they have just learned. Sudrajat & Pratama, (2022) stated that integrating Quizlet as post-presentation vocabulary practice improves comprehension and retention, as

immediate repetition after initial exposure is an effective strategy for building long-term memory.

In addition to regular practice using Flashcards and Test modes, Quizlet Live is used periodically every two sessions to increase student engagement and encourage collaborative learning. Zakaria et al., (2022) found that the regular implementation of Quizlet Live significantly impacts vocabulary mastery, as its collaborative nature creates positive pressure that motivates students to study more actively.

Beyond classroom sessions, one of the key advantages of Quizlet in this study is its accessibility outside of class hours, allowing students to review vocabulary independently without limitations of time and place. Damayanti et al., (2025) emphasized that this independent access is one of the contributing factors to improved vocabulary mastery, as it enables a continuous process of repetition essential for building strong retention.

2.3 English as a Foreign Language (EFL) Students

2.3.1 Characteristics of EFL Students

English as a Foreign Language (EFL) refers to the process of learning English by individuals who reside in a country where English is not used as a dominant mode of daily communication. One defining characteristic of EFL learners is that they operate in a non-English-speaking environment, which results in limited exposure to English outside of formal educational settings. Unlike immersion

learners, EFL students are primarily exposed to English in classroom settings rather than through natural, authentic interaction. As a consequence, many EFL students in Indonesia tend to view English merely as a compulsory academic subject rather than a practical communication tool (Mardiyanti et al., 2026).

Cognitively, there are several factors that have considerable effects on the EFL learner, such as L1 influence when the learner's mother tongue interferes with the English language use. It is an essential characteristic for any language learner since one needs to cope with the gap between their mother tongue and the English language (Atmowardoyo et al., 2023). Moreover, personality has a significant effect on the learner's cognitive characteristics since conscientiousness and openness are highly correlated with memory use and compensation (Kakamad et al., 2024).

Affectively, EFL students commonly experience language anxiety, a psychological state characterized by fear of making mistakes that creates a barrier preventing learners from communicating confidently. Research has shown a strong correlation between students' emotional states and academic performance, as students who feel happy and enthusiastic tend to outperform those who experience anxiety and boredom. Negative emotional states such as anxiety and boredom have been associated with poor academic performance (Aulia & Saraswati, 2025).

Finally, different types of learning styles and motivations are

also characteristic of the EFL class. Learners have different approaches to English depending on their motivations, either personal or related to rewards from using the language, such as getting jobs. It is important to understand all these differences because students' attitudes and their ways of studying mentally are responsible for future success in reading, writing, and speaking (Aydoğan & Özel, 2022).

2.3.2 EFL Students in High School

Indonesian senior high school students usually belong to their late or mid-teens years, which is when they are able to develop more sophisticated cognitive skills and self-identity. At this age, learning English is often motivated by their personal interest and "external utility" such as the need for better employment prospects or passing the test for national examination (Astuti et al., 2022). As for their emotions, they are largely affected by their social environment, hence their proficiency and ability to use the language are largely dependent on how they are viewed by their peers and instructors (Hafiz et al., 2025).

The learning setting in Indonesia is both supportive and difficult for the learners. Even though the majority of the students think that their teachers provide good guidance and that there is enough infrastructure at the schools, there is limited authentic exposure to English outside the classroom. A major hurdle in this environment is the fear of being judged. (Hafiz et al., 2025) found

that many students feel shy or anxious about speaking English because they worry about making mistakes in front of their classmates.

Mahmud et al., (2025) argued that digital technology had revolutionized the interaction of this generation with the English language such that digital literacy became one of the main components of their learning. Teachers commonly utilize digital technologies such as YouTube, Canva, and Kahoot to create more interactive lessons. While technological innovation presents learners with opportunities for creative learning, the reality is that many students lack sufficient access to these technological advancements because most of them come from poorly funded schools or are in rural areas.

Beyond its role in general EFL learning, vocabulary instruction also needs to be examined within the specific context in which it is taught. Theoretically, conducting this study at Vocational High School (SMK) is relevant because English instruction at this level is directed by an English for Specific Purposes (ESP) orientation, in which vocabulary mastery is not only meant for general communication but also to support students' readiness for their specific vocational fields. Nugraha & Srisudarso, (2023) argue that the ESP approach applied in the SMK curriculum requires students to master vocabulary that is closely related to their vocational competencies, making effective and

engaging vocabulary learning media particularly important in this educational setting.

In addition, English competence among SMK students is theoretically positioned as a key supporting factor in preparing graduates who are ready to enter the workforce, since strong vocabulary mastery underlies their ability to communicate in professional and technical contexts. Setyowati et al., (2023) emphasize that improving the English competence of SMK graduate candidates, including through structured vocabulary-focused preparation, is essential to support programs initiated by the Directorate of Vocational High Schools aimed at producing work-ready and globally competitive graduates. This theoretical foundation strengthens the rationale for conducting vocabulary-related research within the SMK context.

2.3.3 Challenges for EFL Students in Vocabulary Retention

The first major challenge that EFL learners have in learning vocabulary is the impact of "L1 interference," whereby there are conflicts between the rules and meanings of their native languages with those of English (Baharudin et al., 2024). The challenge is compounded because the EFL students do not have exposure to the English language in their day-to-day activities since they hardly get an opportunity to use it outside the classroom settings (Ikhsan, 2025). Another factor contributing to the challenge of learning vocabulary is the poor memorization habits that most learners have.

However, the lack of motivation and the type of teaching method used in the classroom also serve as important determinants in vocabulary acquisition. Lack of motivation leads to a situation where the students become passive learners. This, in turn, affects their ability to acquire vocabulary (Ikhsan, 2025).

Additionally, passive teaching techniques that simply involve the students listening to the lessons without their participation lead to problems with vocabulary acquisition since these activities fail to stimulate the students (Napa et al., 2025). To overcome this obstacle, researchers recommend a shift from passive to active learning approaches, such as the use of interactive digital platforms that engage students through retrieval practice and gamification.

2.3.4 EFL Students' Needs for Vocabulary Retention

To move beyond simple memorization, EFL students require a learning approach that emphasizes repetition, contextual learning, and active engagement. Kondo & Triasta, (2024) indicates that students often struggle when they only learn words in isolation, instead, they need to see how words function within meaningful sentences to truly understand their usage.

Additionally, multimodal input, such as combining text with visuals or audio, is essential for helping students categorize and store new information more effectively (Alifah & Wijirahayu, 2025). By actively participating in the learning process through

these diverse methods, students can bridge the gap between knowing a word and being able to use it fluently.

Moreover, motivating media is essential to aid memory techniques such as retrieval practice and spaced repetition. Traditionally, rote learning has been viewed as a very dull activity, thus resulting in poor memory retention. As such, they require media tools that make studying fun (Tuzzahro et al., 2025). Games played by students on digital platforms where they have to recall information at increasingly longer intervals will aid in strengthening their memories, preventing them from forgetting what was taught in class very quickly.

Such particular requirements make a good reason for the use of Quizlet-based instruction in the EFL class. First, Quizlet meets the necessity for "activation strategies," since the students can repeat their practice and self-testing through the digital medium (Alifah & Wijirahayu, 2025). Since there is the use of flashcards, games and quizzes within the platform, this provides the multimodal input and retrieval practices required by the students in order to transfer vocabulary from short-term to long-term memory.

2.4 Relevant Previous Research

Previous research on the use of Quizlet, flashcards, and other digital media for vocabulary acquisition provides significant insights but leaves several gaps which the current study aims to fill.

Riski & Wahyuni, (2024) employed the systematic literature review method in analyzing the use of Quizlet as a tool for vocabulary learning. Their study reveals the immense potential of Quizlet in developing vocabulary ability through its interactive nature and flexibility. However, the research is not based on practical empirical findings since it is purely derived from a literature review. In addition, it does not intend to measure the long-term retention of vocabulary acquisition. Therefore, there are gaps in research that can be filled concerning the effect of Quizlet on vocabulary retention specifically.

Damayanti et al., (2025) conducted a study about the effect of using Quizlet on the vocabulary mastery of students. It has been found from the results that there is a significant effect of Quizlet on students' vocabulary mastery as determined through the post test. Nevertheless, the study considers short term learning outcomes, but not the long-term vocabulary retention of students after using Quizlet.

Siswandi et al., (2024) carried out research aimed at assessing the effect of Quizlet on the level of learning interest and motivation of the students. According to the study, the usage of the application is able to boost the engagement and motivation of the students in the process of learning. However, the research is unable to measure the level of vocabulary mastery in quantitative terms and the issue of vocabulary retention is not the subject of the study.

Aufa et al., (2023) explore the application of flashcards as an aid in acquiring English vocabulary knowledge and the possible benefits of using

flashcards in improving vocabulary knowledge acquisition. Nevertheless, the media applied are traditional printed flashcards and not electronic media. Also, there is no effort made to evaluate the long-term memory of the vocabulary acquired using flashcards as a medium of learning.

From the analysis of these four studies presented above, it can be observed that although there is plenty of research on Quizlet and flashcards for vocabulary acquisition, there is still insufficient empirical research conducted on vocabulary retention using Quizlet-based digital flashcards. In view of this gap, the present research tries to fill this gap through the adoption of a quasi-experiment that measures vocabulary retention in the short run and the long run among EFL learners in senior high schools.

CHAPTER III

RESEARCH METHODOLOGY

This chapter systematically and structurally describes the research methodology applied by the researcher in the study. Chapter III tries to give a brief outline of the research procedures in order to make the study understandable, testable, and replicable by other researchers. Based on the definition given by Creswell, (2014), it is clear that the research methodology is the main framework which explains the process through which the data is analyzed and interpreted to formulate the study's research problem formulation.

3.1 Research Design

This study employed a quantitative method of research utilizing the quasi- experimental design. Quantitative approaches were employed because the study focuses mostly on the measurement of numerical data to prove the research hypothesis and determine the effect of treatment on the specific variables used for the study. Creswell, (2014) found that quantitative research is prepared to investigate the relationship between certain variables utilizing statistical methods so that the research findings can be concluded objectively.

This quasi-experimental method was implemented due to the inability of the researcher to fully randomize the research subjects. In formal education, the classes are predetermined by the school, and as such, the researcher will have to use existing classes only. According to Sugiyono, (2017) quasi-experiments are employed where

randomization is not possible for the researchers but might still want to determine the effect of a treatment.

The research design that was utilized in this study is known as the Non-Equivalent Control Group Design. In this design, there is a group called the experimental group and another one known as the control group. The two groups undergo pre-tests, post-tests, and delayed post-tests. But only the experimental group underwent the intervention.

Group	Pre-test	Treatment	Post-test	Delayed post-test
Experimental	O1	X	O2	O3
Control	O1	–	O2	O3

Table 3. 1 Research Design

3.2 Research Location and Time

3.2.1 Research Location

This study was conducted in SMK Nasional Malang High School. This school is selected with consideration of the accessibility of the setting for the researcher and the parameters of the students' characteristics related to the focus of the study, which is English vocabulary retention ability. The choice of an appropriate setting or location of the study is very significant to ensure the correspondence of the study results with the problem (Arikunto, 2013).

3.2.2 Research Time

The data collection was carried out during the even semester of the academic year 2025/2026. The whole process of

the research, from the pre-test to the delayed post-test, took approximately eight meetings. This time spectrum was selected in order to facilitate the exact measurement of the retention ability of the students for certain words after the set time interval.

3.3 Population and Sample

3.3.1 Population

The population for this study was all tenth-grade students at SMK Nasional Malang. They were from two classes. Identifying the population was an essential step to begin with because without the population, it would not be possible to select the sample for the study (Arikunto, 2013).

3.3.2 Sample

The sample determination process in the present study adopted the purposive sampling technique. According to, Sugiyono, (2017), purposive sampling refers to a method of sampling where certain criteria that are relevant to the purpose of the research are taken into account. In the current study, two classes were chosen based on recommendations of English teachers since the two had similar potentialities and were taught by the same teacher.

One of the tenth-grade classes was designated as the experimental group, while the other was designated as the control group. This was done to minimize the influence of

external variables and to facilitate the identification of potential differences in the research outcomes.

3.4 Research Variables

This research had two primary variables, an independent and a dependent. The independent variable (X) was the use of digital flashcards by the use of Quizlet application. On the other hand, the dependent variable (Y) was the students' vocabulary mastery and vocabulary retention. As pointed out by Fraenkel et al., (2012), the importance of a clear understanding of the variables in experimental studies becomes crucial in order to analyze cause-effect relationships accurately.

3.5 Data Collection Techniques

The methods that were used to collect the data in this study included tests and treatments. The inclusion of different data collection methods is expected to enhance the process of collecting complete data and thus help in achieving the goals of the research. More complete data collection is supported by Arikunto, (2013), who explains that using more than one data collection technique can increase the accuracy and reliability of the research results.

3.5.1 Tests

Test would form the basis of the data collection method to measure students' vocabulary skills and vocabulary retention. The tests that were going to be carried out in this research would be written tests that would comprise 15 multiple-choice and fill

in the blank questions. Testing was done through three phases, the pre-test, post-test, and delayed post-test phases. Testing would be used to come up with the measures of initial proficiency, growth after the treatment and vocabulary memory after the period of time. According to Ary et al., (2010), an achievement test is used to measure the mastery and understanding of the material studied by the students.

a. Pre-test

The pre-test was conducted for both the experimental group and the control group before the treatment was implemented. The reason for doing the pre-test is to measure the students' vocabulary abilities and confirm that the two groups are on an equal level before the treatment.

The pre-test instrument consisted of a written test comprising 15 items in the form of multiple-choice and fill-in-the-blank questions. The test was designed accordingly, and the subject matter covered was related to various vocabulary indicators included in the learning material. The pre-test questions are listed on the Appendix I.

b. Post-test

The post-test was taken after the conclusion of all other learning processes. Its objective is to ascertain the impact of the electronic media of learning through Quizlet as compared to the conventional methods used in the control group.

The post-test consisted of 15 items with difficulty levels and vocabulary indicators equivalent to those of the pre-test, although different test items were used. The post-test was employed as a tool of comparison with regard to student learning outcomes between the experimental and control groups after the treatment was carried out. The post-test questions are listed on the Appendix I.

c. Delayed post-test

Delayed post-test was carried out on the students after a week of conducting the treatment. Delayed post-test was aimed at measuring how much the learners had remembered in a certain period of time and to what degree the acquired vocabulary has been retained in long-term memory. Delayed post-test consisted of 15 items with comparable level of difficulty and vocabulary indicators compared to the pre-test and post-test, though used different test items. The delayed post-test questions are listed on the Appendix I.

3.5.2 Treatment

The treatment was administered to the experimental class through digital flashcards using the Quizlet application for learning new vocabulary words. The treatment process took place through eight meetings. In each meeting, a different category of vocabulary was taught as per the learning material. As per Sugiyono, (2017), the process of treatment in

experimental research should be consistent so its outcomes can be measured from an objective point of view.

Details regarding the implementation of the treatment in the experimental and control classes are shown in Table 3.2 below.

Meeting	Experimental Class Activities (Quizlet)	Control Class Activities (Conventional)
1	Pre-test and introduction of Quizlet.	Pre-test and introduction of the material.
2	Interactive vocabulary practice using the Learn features on Quizlet.	Independent vocabulary memorization practice and note-taking in notebooks.
3	Interactive vocabulary practice using the Write features on Quizlet.	Independent vocabulary memorization practice and note-taking in notebooks.
4	Vocabulary gamification using the Match feature to strengthen students' understanding and memory.	Vocabulary matching exercises in the form of written worksheets.
5	Vocabulary gamification using the Match feature, focusing on a different vocabulary category from meeting 4.	Vocabulary matching exercises in the form of written worksheets, focusing on a different vocabulary category.
6	Post-test	Post-test
8	Delayed post-test	Delayed post-test

Table 3. 2 Session of the Research Treatment

Apart from the above-mentioned division of the meetings, the content of the vocabulary exercises was adjusted according to the type of words dealt with during the lessons,

which were verbs, nouns, adjectives, and adverbs. The details of the content of the work conducted during the lessons are shown in the appendix II.

3.6 Data Analysis Techniques

In this study, data analysis was done quantitatively, in line with the nature of the collected data, namely students' vocabulary test scores. According to Creswell, (2014) quantitative data analysis involves structuring the collected data, presenting it statistically, and using it to test the formulated hypotheses. The data analysis in this study was carried out through the following steps:

1. Descriptive Statistics

The first step involved applying descriptive statistics to identify the characteristics of the research data, including the mean, standard deviation, minimum, and maximum values of the pre-test, post-test, and delayed post-test results for both the experimental and control groups. Pallant, (2020) highlights descriptive statistics as a critical step in providing an initial overview of the distribution and trends of collected data. In experimental research, descriptive statistics help the researcher identify the general pattern of student learning outcomes before and after the intervention, describing the improvement or differences through summary statistics without making any statistical inference. As noted by Arikunto, (2013), if the normality assumption is not satisfied, the validity of subsequent statistical tests may be compromised.

2. Normality Test

After completing the descriptive statistics test, the next step was to conduct a normality test of the data. This test aimed to determine whether the research data were normally distributed, which is a prerequisite for parametric statistical analysis. Pallant, (2020) emphasizes that the normality test is an important step due to the effect that violating the normality assumption may have on statistical test results.

3. Homogeneity of Variance Test

In addition to the normality test, this study also employed a homogeneity of variance test to examine the similarity between the variances of the experimental and control groups. Homogeneity of variance indicates that the two groups have an equal level of data distribution. Sugiyono, (2017) states that testing for homogeneity is critical in quantitative research for the purpose of comparing data, ensuring that differences in research findings cannot be attributed to an uneven distribution of variance between groups.

4. Hypothesis Test

Once the data follows these requirements, a hypothesis test was carried out. This test seeks to determine the effect that the treatment has on the variables under investigation. This test is crucial in ascertaining whether the variance that exists between the experimental group and the control group is statistically significant. According to Fraenkel et al., (2012), hypothesis testing is a major stage in experimental research that seeks to test the effectiveness of a treatment.

5. Independent Samples T-Test

This study adopted an Independent Samples T-Test for conducting the hypothesis tests, since the study involved two different and independent groups. The Independent Samples T-Test was used to determine the significance of the differences in mean scores between the experimental group and the control group. According to Creswell (2014), the Independent Sample T-Test is suitable in quantitative studies where there is need to compare two independent groups.

6. Interpretation of Results

The final step of data analysis involved interpreting the results of the statistical tests based on the significance level. The decision to reject or fail to reject the null hypothesis was made according to the established criterion. Sugiyono (2017) stated that the interpretation of data analysis results should be conducted objectively and aligned with the research objectives to ensure that the conclusions drawn accurately reflect the findings of the study.

3.7 Conceptual Framework

In this study, the conceptual framework employed reflects the process of thought through which the logical connection between the independent and dependent variables is developed. This conceptual framework is derived from theory and earlier research findings. Therefore, this is an academic concept through which the research will be conducted. The independent variable used in this study is the use of Quizlet, while the dependent variable is vocabulary retention. The

connection between the two is based on cognitive processes involved in learning (Zakaria et al., 2022).

Conceptually, the effect of the use of Quizlet is seen as a predictor for the retention of student vocabulary based on the following key learning processes. First, providing opportunities for students to repeat learning vocabulary through various learning processes on Quizlet, including Flashcards, Learn, and Test. Second, providing opportunities for students to process information more efficiently through the various multimodal presentations used in learning words vocabulary on the application, including visuals and audio. Third, the learning process enhances a more meaningful learning process for students as an alternative learning activity (Siswandi et al., 2024).

This mechanism is aligned with cognitive learning theories, especially Dual Coding Theory (Paivio, 2013). Dual Coding Theory posits that when information is processed simultaneously through both verbal and visual channels, it is more effectively encoded and can be more easily retrieved from long-term memory. Therefore, the conceptual framework of this study suggests that the use of Quizlet as a digital learning medium has the potential to enhance students' long-term vocabulary retention through the activation of dual cognitive channels (Aufa et al., 2023).

The following shows a simple representation of the relationships between the variables through a diagram that illustrates conceptual relationships:

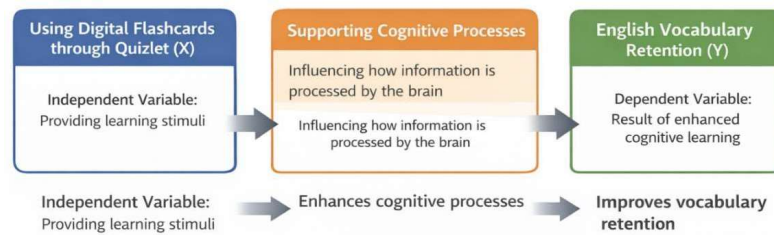


Image 3. 1 Conceptual Diagram of Quizlet and Vocabulary Retention

It can be said that this diagram illustrates that the independent variable, which is the usage of the site Quizlet, helps produce learning stimuli which, in turn, impacts the cognitive processes of the learner, thus affecting the dependent variable, which is vocabulary retention.

3.8 Research Hypothesis

The research hypothesis is developed from the basis of theory, conceptual framework, and previous studies. This study uses a quantitative approach and quasi-experiment design, and thus the hypothesis is comparative and inferential.

3.8.1 Null Hypothesis (H_0)

H_{01} : There is no significant effect of Quizlet-Based Digital Flashcards on students' vocabulary mastery.

H_{02} : There is no significant effect of Quizlet-Based Digital Flashcards on students' vocabulary retention.

The null hypothesis states that the use of Quizlet-Based Digital Flashcards does not significantly affect students' vocabulary mastery or vocabulary retention. In other words, students who learn vocabulary using Quizlet are not expected to achieve significantly different results from those who learn through conventional methods.

3.8.2 Alternative Hypothesis (H₁)

H₁: There is a significant effect of Quizlet-Based Digital Flashcards on students' vocabulary mastery.

H₂: There is a significant effect of Quizlet-Based Digital Flashcards on students' vocabulary retention.

The alternative hypothesis states that the use of Quizlet-Based Digital Flashcards significantly affects students' vocabulary mastery and vocabulary retention. This hypothesis is supported by theoretical and empirical evidence suggesting that Quizlet can:

- improve vocabulary recall,
- enhance students' ability to recognize and understand new vocabulary,
- promote long-term retention of vocabulary.

These hypotheses were tested using inferential statistical techniques appropriate for a quasi-experimental research design.

3.9 Instrument Validity and Reliability

The validity and reliability of the instrument were essential in this quantitative study, as they helped ensure that the research findings were accurate and suitable for statistical analysis. A valid instrument measures what it is intended to measure, while a reliable instrument produces consistent results when administered under similar conditions (Fraenkel et al., 2012).

3.9.1 Test Instrument Validity

The validity test was performed to verify whether the pretest, posttest, and delayed posttest could accurately assess students' vocabulary mastery and vocabulary retention. Test items were formulated according to the learning objectives, vocabulary materials, and lessons presented in the treatment sessions. Content validity was used to find out whether the instrument is appropriate by matching each test item with the learning objectives and learning materials (Arikunto, 2013).

As seen from the validity test results, the Corrected Item-Total Correlation value of all test items is higher than the r table value (0.361). Hence, all 15 test items have been considered valid and appropriate for measuring the vocabulary acquisition of the students.

3.9.2 Reliability of the Test Instrument

The reliability test was conducted to determine the consistency of the test instrument in measuring students' vocabulary mastery and vocabulary retention. The reliability of the instrument was assessed using Cronbach's Alpha Coefficient. According to Arikunto (2013), an instrument is deemed reliable if the value of Cronbach's Alpha is above 0.70. Reliability testing was done using SPSS software. If the value of Cronbach's Alpha satisfied the required criterion, then the instrument was said to be reliable and could be used in the research.

Based on the reliability analysis, the research instrument achieved a Cronbach's Alpha value of 0.940. This value exceeds the minimum threshold of 0.70. Therefore, the research instrument is considered reliable and has a very high level of internal consistency.

Based on the validity and reliability tests, it can be concluded that all items in the research instrument met the validity and reliability criteria, making it suitable for use in collecting research data on the effect of using Quizlet digital flashcards on students' vocabulary retention.

CHAPTER IV

RESEARCH FINDINGS AND DISCUSSION

4.1 Research Findings

Results of the research conducted in SMK Nasional Malang are described in this section. Data were gathered from two tenth grade classes, including tenth grade DPIB which served as the experimental group (n=30) where Quizlet-based digital flashcards were implemented and tenth grade TKJ as the control group (n=30) that followed the conventional method of learning. Data gathering was done through three stages, which included pre-test, post-test, and delayed post-test.

4.1.1 Data Analysis of Pre-Test

Pre-test was conducted prior to giving the intervention to both classes. The objective of the pre-test was to measure the initial knowledge of vocabulary of the students prior to using Quizlet-based flashcards in the teaching-learning process. Pre-test was done on April 6 in the case of the control class and April 8 in the case of the experimental class. There were 15 vocabulary questions in the pre-test from narrative text content.

Experimental group comprised 30 students and control group comprised 30 students. The 30 students in both groups were always available to participate in all tests of research: pretest, posttest, and delayed posttest. Thus, only data collected from these 30 students was included in research analysis.

Table 4. 1 Experimental Class's Pre-Test

No	Initial Name	Pre-Test Score
1	AES	70
2	AOP	65
3	AR	70
4	DM	80
5	FGS	65
6	FNF	65
7	FTP	80
8	FJRA	75
9	GA	60
10	HDO	70
11	IAR	60
12	IDR	60
13	JA	65
14	KBSA	70
15	MH	65
16	M	60
17	MNTD	55
18	MFRG	70
19	MW	55
20	NLAS	50
21	NDW	80
22	PE	65
23	RRRN	65
24	RMI	70
25	RND	60
26	SW	65
27	VAP	55
28	VGA	70
29	WBA	60
30	YAG	60
Total		1960
Mean		65.33

Table 4. 2 Control Class's Pre-Test

No	Initial Name	Pre-Test Score
1	MRR	75
2	MRAM	55
3	MRP	75
4	NTK	80

5	NAP	70
6	NAA	85
7	OVb	65
8	QTY	55
9	RNK	55
10	RRF	80
11	RNN	70
12	RA	65
13	RD	70
14	RRAS	60
15	RYAG	90
16	RF	65
17	RYA	65
18	RAP	70
19	RP	70
20	RSS	65
21	RFM	65
22	RA	70
23	SJP	85
24	THBM	80
25	TRA	80
26	UF	60
27	VAP	55
28	YJO	65
29	YPDP	65
30	YAD	75
Total		2085
Mean		69.5

After the data were collected, descriptive statistical analysis and a difference test were conducted to determine the initial conditions of the two groups. The results of the SPSS analysis are shown in Table 4.3 below.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
pretest	60	50	90	67.42	8.757

Table 4. 3 Descriptive Statistic of Pre-Test

Based on Table 4.3, the experimental group (X DPIB) obtained an average pre-test score of 65.33 with a standard deviation of 7.535, a minimum score of 50, and a maximum score of 80. The control group (X TKJ) obtained an average score of 69.50 with a standard deviation of 9.500, a minimum score of 55, and a maximum score of 90. The average difference between the groups was 4.17 points, with the control group slightly higher.

However, this difference needs to be statistically tested to determine whether it is significant or simply due to chance. The results of an independent samples t-test on the pre-test data showed a two-tailed significance value of 0.065, which is greater than $\alpha = 0.05$. This means that the average difference between the two groups at the pre-test stage was not statistically significant. Thus, both groups can be considered to have equivalent initial vocabulary skills and are worthy of comparing their results after treatment.

4.1.2 Data Analysis of Post-Test

A post-test was conducted after all treatments were administered to both groups. This test aimed to determine the improvement in students' vocabulary mastery after the learning process. The control class post-test was conducted on April 21, 2026, while the experimental class post-test was conducted on April 23, 2026. The experimental class received treatment using Quizlet-based digital flashcards for several meetings, while the control class learned using conventional methods.

Table 4. 4 Experimental Class's Post-Test

No	Initial Name	Post-Test Score
1	AES	75
2	AOP	80
3	AR	90
4	DM	85
5	FGS	80
6	FNF	85
7	FTP	90
8	FJRA	75
9	GA	85
10	HDO	80
11	IAR	80
12	IDR	90
13	JA	90
14	KBSA	90
15	MH	90
16	M	80
17	MNTD	85
18	MFRG	80
19	MW	85
20	NLAS	80
21	NDW	85
22	PE	85
23	RRRN	75
24	RMI	95
25	RND	75
26	SW	70
27	VAP	90
28	VGA	95
29	WBA	85
30	YAG	85
Total		2515
Mean		83.83

Table 4. 5 Control Class's Post-Test

No	Initial Name	Post-Test Score
1	MRR	65
2	MRAM	60
3	MRP	60
4	NTK	80

5	NAP	60
6	NAA	90
7	OVb	75
8	QTY	70
9	RNK	65
10	RRF	75
11	RNN	65
12	RA	70
13	RD	90
14	RRAS	70
15	RYAG	80
16	RF	65
17	RYA	70
18	RAP	85
19	RP	65
20	RSS	85
21	RFM	75
22	RA	65
23	SJP	75
24	THBM	80
25	TRA	75
26	UF	55
27	VAP	65
28	YJO	70
29	YPDP	70
30	YAD	75
Total		2150
Mean		71.67

The results of the post-test descriptive statistical analysis of the SPSS output are shown in Table 4.6 below.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
posttest	60	55	95	77.75	9.804

Table 4. 6 Descriptive Statistic of Post Test

Based on Table 4.6, the experimental group (X DPIB) achieved an average post-test score of 83.83 with a standard deviation of 6.254, a minimum score of 70, and a maximum score of

95. The control group (X TKJ) achieved an average score of 71.67 with a standard deviation of 8.938, a minimum score of 55, and a maximum score of 90. The average difference between the two groups was 12.17 points, significantly larger than the difference in the pre-test of only 4.17 points.

Compared to their respective pre-test scores, the experimental group experienced an average increase of 18.50 points (from 65.33 to 83.83), while the control group only increased by 2.17 points (from 69.50 to 71.67). This difference in improvement is striking and is an early indication that Quizlet has a significantly greater impact on vocabulary mastery than conventional learning.

What is also important about the experimental group is the standard deviation, which decreased from 7.535 (before taking the test) to 6.254 (after taking the test). In other words, there is no difference between the results received by the students of grade X DPIB, as Quizlet helped them equally.

4.1.3 Data Analysis of Delayed Post-Test

The delayed post-test was administered one week after the post-test (meeting 8). At the 7th meeting, there was no vocabulary review or Quizlet use for either group, so there was indeed a gap without repetition. The delayed post-test for the control group was administered on April 28, 2026, while the delayed post-test for the experimental group was administered on April 30, 2026. The purpose of this test was to measure vocabulary retention, namely

how well students still remembered the vocabulary they had learned after time had passed without structured repetition.

Table 4. 7 Experimental Class's Delayed Post-Test

No	Initial Name	Delayed Post-Test Score
1	AES	80
2	AOP	90
3	AR	70
4	DM	85
5	FGS	75
6	FNF	75
7	FTP	80
8	FJRA	70
9	GA	75
10	HDO	70
11	IAR	95
12	IDR	80
13	JA	75
14	KBSA	80
15	MH	80
16	M	80
17	MNTD	85
18	MFRG	85
19	MW	75
20	NLAS	75
21	NDW	80
22	PE	60
23	RRRN	70
24	RMI	90
25	RND	95
26	SW	80
27	VAP	85
28	VGA	80
29	WBA	90
30	YAG	80
Total		2390
Mean		79.67

Table 4. 8 Control Class's Delayed Post-Test

No	Initial Name	Delayed Post-Test Score
1	MRR	70
2	MRAM	65
3	MRP	70
4	NTK	80
5	NAP	70
6	NAA	70
7	OVb	55
8	QTY	75
9	RNK	75
10	RRF	85
11	RNN	65
12	RA	70
13	RD	70
14	RRAS	80
15	RYAG	65
16	RF	70
17	RYA	75
18	RAP	70
19	RP	65
20	RSS	70
21	RFM	75
22	RA	60
23	SJP	70
24	THBM	60
25	TRA	80
26	UF	55
27	VAP	65
28	YJO	70
29	YPDP	80
30	YAD	65
Total		2095
Mean		69.83

The results of the descriptive statistical analysis of the delayed post-test from the SPSS output are shown in Table 4.9 below.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
delayed	60	55	95	74.75	8.993

Table 4. 9 Descriptive Statistic of Delayed Post-Test

Based on Table 4.9, the experimental group maintained an average score of 79.67 with a standard deviation of 7.871, a minimum score of 60, and a maximum score of 95. The control group achieved an average score of 69.83 with a standard deviation of 7.250, a minimum score of 55, and a maximum score of 85.

Compared to the post-test, the experimental group experienced an average decrease of 4.16 points (from 83.83 to 79.67), while the control group decreased by 1.84 points (from 71.67 to 69.83). However, this loss is natural and can be accounted for through the phenomenon called Forgetting Curve (Ebbinghaus). The thing that should be noted is not how much the information has been forgotten, but when the process of forgetting has come to an end.

As shown in the tables above, although there was a minor decrease, the experimental group still achieved an average of 79.67, which was substantially higher than their pre-test score (65.33), indicating that the vocabulary acquired through Quizlet was successfully retained in long-term memory. In contrast, the control group's delayed post-test score (69.83) was nearly identical to their pre-test score (69.50), suggesting that vocabulary learned through conventional methods was largely forgotten within one week.

To clarify the pattern of score development across the three tests for both groups, Table 4.10 below presents a brief summary.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
pretest	60	50	90	67.42	8.757
posttest	60	55	95	77.75	9.804
delayed	60	55	95	74.75	8.993
Valid N (listwise)	60				

Table 4. 10 Mean Scores of the Sample Population in Three Successive Tests

Table 4.10 clearly shows that the experimental group experienced a significant jump in improvement from pre-test to post-test (+18.50 points) and maintained their high scores on the delayed post-test (+14.34 points above the pre-test). Meanwhile, the control group experienced only a very small increase (+2.17 points), and their delayed post-test scores almost returned to their baseline levels (+0.33 points). This pattern consistently demonstrates the superiority of Quizlet-based digital flashcards, both in improving short-term vocabulary acquisition and in maintaining vocabulary over the long term.

4.1.4 Assumption Testing

Before conducting the hypothesis testing, two assumption tests were first conducted: the normality test and the homogeneity test. These two tests aim to ensure that the data meets the requirements for using parametric statistics (in this case, the independent samples t-test). If these requirements are not met, the parametric test cannot be used and must be replaced with a non-parametric test.

a) Normality Testing

The normality test aims to determine whether the data from each group follows a normal distribution. A normal distribution is essential for reliable t-test results. The Shapiro-Wilk test is used because it is more appropriate for small to medium-sized samples ($n \leq 50$ per group) than the Kolmogorov-Smirnov test.

The basis for decision-making: if the significance value (Sig.) > 0.05 , then the data are normally distributed (H_0 is accepted). If Sig. < 0.05 , then the data are not normally distributed (H_0 is rejected).

The results of the normality test from SPSS output are shown in Table 4.11 below.

		Tests of Normality		
		Shapiro-Wilk		
	group	Statistic	df	Sig.
pretest	Experimental	.943	30	.110
	Control	.947	30	.144
posttest	Experimental	.941	30	.095
	Control	.954	30	.219
delayed	Experimental	.951	30	.181
	Control	.945	30	.127

a. Lilliefors Significance Correction

Table 4. 11 Shapiro-Wilk Normality Test Results

Based on Table 4.11, all Shapiro-Wilk significance values are greater than 0.05 for all variables and both groups. In detail:

(1) Pre-test: experimental group Sig. = .110, control group Sig. = .144.

(2) Post-test: experimental group Sig. = .095, control group Sig. = .219.

(3) Delayed post-test: experimental group Sig. = .181, control group Sig. = .127.

Because all Sig. values are > 0.05 , H_0 is accepted for all variables. In conclusion, all data in this study are normally distributed, thus meeting the first requirement for conducting a parametric test.

b) Homogeneity Test

The homogeneity test aims to determine whether the two groups have equal variances (homogeneity). Equal variances mean that the level of diversity in the values in the two groups is not too different, so the comparison is fair. The test used was Levene's Test for Equality of Variances, which is available in the SPSS independent samples t-test output.

The basis for the decision: if Sig. > 0.05 , then the variances are homogeneous (H_0 is accepted), and the Equal Variances Assumed line is used in the t-test. If Sig. < 0.05 , then the variances are not homogeneous, and the Equal Variances Not Assumed line is used.

The results of the homogeneity test from the SPSS output are shown in Table 4.12 below.

Homogeneity of Variance Test

		Levene's Test for Equality of Variances	
		F	Sig.
pretest	Equal variances assumed	1.754	.191
posttest	Equal variances assumed	3.623	.062

delayed	Equal variances assumed	.164	.687
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Table 4. 12 Levene's Test Homogeneity Results

Based on Table 4.12, the results of Levene's Test show the following significance values: pre-test $F = 1.754$ (Sig. = .191), post-test $F = 3.623$ (Sig. = .062), and delayed post-test $F = .164$ (Sig. = .687). All three variables yielded Sig. values > 0.05 . Although the F value for the post-test (3.623) was relatively larger, the significance value of .062 was still above the threshold of $\alpha = 0.05$.

Because all variances were homogeneous, the Equal Variances Assumed row was used for all variables in the subsequent hypothesis testing. With these two assumptions (normality and homogeneity) met, the hypothesis testing using the independent samples t-test could proceed.

4.1.5 Hypothesis Testing

Hypothesis testing was conducted using the Independent Samples T-Test to address both research problem formulations. The significance level used was $\alpha = 0.05$. The decision rule is simple, if the Sig. (2-tailed) value is < 0.05 , then H_0 is rejected and H_1 is accepted, meaning there is a significant difference between the two groups. Conversely, if Sig. ≥ 0.05 , then H_0 cannot be rejected.

a) Effectiveness of Quizlet on Vocabulary Mastery

The first hypothesis tests whether the use of Quizlet-based digital flashcards significantly improves students' vocabulary mastery. The data used are the post-test scores of both groups.

H₀: There is no significant difference between the vocabulary mastery of the experimental and control groups after treatment.

H₁: There is a significant difference between the vocabulary mastery of the experimental and control groups after treatment.

Independent Samples Test

		t-test for Equality of Means			
		Significance			
		t	df	One-Sided p	Two-Sided p
posttest	Equal variances assumed	6.109	58	<.001	<.001
	Equal variances not assumed	6.109	51.905	<.001	<.001

Table 4. 13 Independent Samples T-Test Post-Test Results

Based on Table 4.13, the Independent Samples T-Test results show a t-value of 6.109 with df = 58 and Sig. (2-tailed) < .001. Since .001 < 0.05, H₀ is rejected and H₁ is accepted.

This means there is a significant difference between the vocabulary mastery of the experimental and control groups after treatment. The experimental group obtained an average of 83.83, 12.17 points higher than the control group (71.67). The 95% confidence interval for the difference in means is between 8.180 and 16.153, all positive and excluding zero, meaning we are 95% confident that the experimental group's advantage is not due to chance.

In addition to statistical significance, it is also important to assess the practical impact through the effect size. Cohen's d = 1.577 indicates a very large effect size (d > 0.8 according to Cohen's criteria, 1988). This means that Quizlet is not only

statistically significant but also has a very meaningful practical impact on real-life learning.

As a reinforcement, a paired samples t-test on all 60 students from pre-test to post-test yielded a $t = -6.465$ (Sig. $< .001$, Cohen's $d = 0.835$), proving that the improvement from pre-test to post-test was statistically significant with a large effect size.

b) Effectiveness of Quizlet on Vocabulary Retention

The second hypothesis tested whether the use of Quizlet-based digital flashcards significantly improved students' vocabulary retention. The data used were delayed post-test scores taken one week after the post-test.

H_0 : There is no significant difference between vocabulary retention in the experimental and control groups.

H_1 : There is a significant difference between vocabulary retention in the experimental and control groups.

Independent Samples Test

		t-test for Equality of Means			
		Significance			
		t	df	One-Sided p	Two-Sided p
delayed	Equal variances assumed	5.033	58	<.001	<.001
	Equal variances not assumed	5.033	57.612	<.001	<.001

Table 4. 14 Independent Samples T-Test Delayed Post-Test Results

Based on Table 4.14, the Independent Samples T-Test results on the delayed post-test data show a t-value of 5.033 with $df = 58$ and Sig. (2-tailed) $< .001$. Since $.001 < 0.05$, H_0 is rejected and H_1 is accepted.

This means there is a significant difference between the vocabulary retention of the experimental and control groups. The experimental group retained an average of 79.67 points, 9.83 points higher than the control group (69.83). The 95% confidence interval for the difference in means is between 5.923 and 13.744, all positive.

Cohen's $d = 1.300$ indicates a very large effect size, proving that Quizlet not only has a statistical advantage in terms of retention but also has a very meaningful practical impact.

To deepen the analysis, a paired samples t-test was also conducted on the entire data from the post-test to the delayed post-test, resulting in $t = 2.302$ (Sig. = .025, Cohen's $d = 0.297$). However, although statistically significant, this decrease is small ($d < 0.5$). In other words, the decrease is there, but it is not very large. This decrease is natural because of the Ebbinghaus Forgetting Curve.

Test	t	Sig. (2-tailed)	Cohen's d	Decision
Independent T-Test – Post-Test (Vocabulary Mastery)	6,109	< ,001	1,577	H₁ Accepted✓
Independent T-Test – Delayed Post-Test (Vocabulary Retention)	5,033	< ,001	1,300	H₁ Accepted✓
Paired T-Test – Pre → Post (Overall improvement)	-6,465	< ,001	0,835	Significant
Paired T-Test – Post →	2,302	.025	0,297	Small

Test	t	Sig. (2-tailed)	Cohen's d	Decision
Delayed (Retention decrease)				decrease (natural)

Table 4. 15 Summary of Hypothesis Test Results

Table 4.15 provides a summary of the results of all the statistical tests. It is quite evident from this table that both the alternate hypotheses (H_1) have been accepted at an extremely high level of significance ($p < .001$) with extremely large effect sizes ($d = 1.577$ for vocabulary mastery, $d = 1.300$ for vocabulary retention).

4.2 Discussion

This part highlights the importance of the above-discussed research results and their connection to the theoretical background and existing literature. The discussion consists of two sections that are formulated according to the problem statement.

4.2.1 The Effect of Quizlet-Based Digital Flashcards on Vocabulary Mastery

The findings of the research show that Quizlet digital flashcards exert a considerable influence on the vocabulary learning of the participants. While the members of the experimental group (X DPIB) had gained an average score of 18.50 points between pre-test and post-test, the participants of the control group (X TKJ) gained 2.17 points. This finding is statistically significant according to the findings of an independent-samples t-test ($t = 6.109$, $p < .001$, Cohen's $d = 1.577$).

Why is Quizlet so efficient? First, the use of the Flashcards

mode makes Quizlet a multimodal tool because it uses text, pictures, and sound in one presentation. When a learner sees the word, listens to how it is pronounced, and sees a picture of the word at the same time, his/her brain receives information through two channels: verbal and visual. This corresponds to the Dual Coding Theory (Aufa et al., 2023), which states that the information encoded using two channels creates a significantly more powerful memory trace than the information coded through one channel.

Second, the Match mode and Quizlet Live features create a competitive and enjoyable learning experience. In Quizlet Live, DPIB students must collaborate with their teams to answer vocabulary questions quickly and correctly. This situation creates positive learning pressure, students become more motivated to memorize vocabulary because they don't want to let their team down. Zakaria et al. (2022) demonstrated that regular implementation of Quizlet Live significantly improves vocabulary mastery because it creates collaborative pressure that encourages students to study more seriously.

Third, Quizlet's Learn mode works adaptively. Words that students haven't mastered will continue to appear more frequently, while words that they have mastered will decrease in frequency. This system automatically adapts to each student's individual weaknesses, ensuring each student receives targeted practice tailored to their needs. This is a practical application of the spaced repetition

principle, a method proven to strengthen long-term memory consolidation (Gantari, 2024). This contrasts with conventional methods, which require all students to work on the same problems regardless of their mastery level.

These findings align with various previous studies. Damayanti et al. (2025) found that Quizlet significantly improved junior high school students' vocabulary mastery. Anisa (2024) demonstrated that Quizlet positively impacted vocabulary skills because its engaging and consistent presentation of material stimulated learning motivation. Sudrajat and Pratama (2022) also reported that Quizlet improved students' vocabulary in a flexible and enjoyable way. This study strengthens these findings with robust quantitative data at the vocational high school level using a more rigorous quasi-experimental design.

4.2.2 The Effect of Quizlet-Based Digital Flashcards on Vocabulary Retention

The second finding, and the main novelty of this study, is that Quizlet-based digital flashcards significantly support long-term vocabulary retention. The experimental group maintained an average of 79.67 on the delayed post-test, significantly higher than the control group (69.83), with $t = 5.033$, $p < .001$, and Cohen's $d = 1.300$ (very large).

The decline in scores from post-test to delayed post-test in both groups is normal. The experimental group dropped 4.16 points,

while the control group dropped 1.84 points. This phenomenon is exactly as predicted by Ebbinghaus's Forgetting Curve, which states that humans will naturally forget some learned information if there is no repetition. However, what matters is not the magnitude of the decline, it's the point at which each group stopped.

The experimental group stopped at 79.67, which is 14.34 points above their pre-test. The control group stopped at 69.83, only 0.33 points above their pre-test. This means that vocabulary learned through Quizlet is truly embedded in long-term memory, whereas vocabulary learned conventionally is almost completely forgotten within a week without repetition.

Why is Quizlet superior in terms of retention? The key lies in two main mechanisms: spaced repetition and retrieval practice. During six treatment sessions, DPIB X students were exposed to the same vocabulary repeatedly through various modes (Flashcards, Learn, Match, Quizlet Live). This spread-out exposure, rather than in one long study session, activated the spacing effect, where distributed repetition has been shown to be far more effective for long-term memory consolidation than a single intensive memorization session (Gantari, 2024). Furthermore, students could access Quizlet independently outside of school hours, providing flexible additional review opportunities.

Quizlet's Test and Learn modes also force students to practice retrieval, which involves recalling information from

memory without directly viewing the answers. Every time students type a translation or choose the correct word pair, their brains actively reconstruct their memories of the words. This active process is much more powerful for long-term memory than simply rereading notes. Arsyad, (2024) explains that learning activities that encourage students to actively recall vocabulary can significantly improve vocabulary learning outcomes. Ordena and Susanti (2025) also report that memory retrieval-based activities improve vocabulary retention because they involve active cognitive engagement.

Harmades (2025) emphasizes that the alignment of Quizlet flashcard content with the learning material being studied in class strengthens retention because contextual relevance creates stronger associations between word forms and their meanings. In this study, Quizlet flashcard sets were specifically designed from narrative text vocabulary learned in each session, rather than random vocabulary. This reinforces contextual learning, which has been shown to support better retention. Sujarwati et al. (2025) also found that gamification-based learning environments like Quizlet significantly outperform traditional approaches in vocabulary retention, as the competitive and collaborative elements increase students' motivation and depth of cognitive engagement.

Overall, this study demonstrates that Quizlet-based digital flashcards are not only effective in improving vocabulary acquisition in the short term, but also highly effective in retaining vocabulary in

the long term. The key underlying mechanisms, spaced repetition, retrieval practice, multimodal input, and gamification, are all grounded in sound learning theory and supported by empirical data obtained in this study. These findings confirm that integrating Quizlet into EFL vocabulary learning in 10th grade vocational high school students is a strategy that is not only engaging and enjoyable for students but also scientifically proven to be effective in building and retaining long-term vocabulary knowledge.

Beyond the statistical evidence, it is also worth examining the role of specific Quizlet features in facilitating vocabulary improvement from a pedagogical standpoint. The Flashcards Mode introduced students to new vocabulary through repeated visual and auditory exposure, enabling them to form initial word-meaning associations before moving on to more active practice. The Learn Mode then reinforced this initial exposure by presenting vocabulary in a written recall format, requiring students to actively retrieve word meanings rather than passively recognize them. As the sessions progressed, the Match Mode and Quizlet Live shifted the learning experience toward competitive and collaborative vocabulary practice, further deepening the cognitive engagement of students with the target words. This gradual progression, from passive recognition to active recall and finally to competitive use, mirrors the stages of vocabulary mastery described in the literature, where meaningful and repeated encounters with words across varied contexts are essential for moving vocabulary from short-term awareness to genuine, usable mastery.

CHAPTER V

CONCLUSION

5.1 Conclusion

This study aimed to determine the effectiveness of using Quizlet-Based Digital Flashcards on vocabulary mastery and vocabulary retention in tenth-grade EFL high school students. Based on the data analysis, the following conclusions can be drawn.

The use of Quizlet-Based Digital Flashcards proved effective in improving students' vocabulary mastery. The results of the Independent Samples T-Test on post-test scores showed that the experimental group achieved a significantly higher average score compared to the control group, with a very large effect size. This indicates that Quizlet-based learning produces substantially better short-term vocabulary outcomes than conventional methods.

In addition, the use of Quizlet-Based Digital Flashcards demonstrated a significant advantage in vocabulary retention. The Independent Samples T-Test on delayed post-test scores revealed that the experimental group significantly outperformed the control group one week after the treatment ended, also with a large effect size. Although both groups experienced a natural and slight score decrease from post-test to delayed post-test, a phenomenon consistent with Ebbinghaus's Forgetting Curve, the experimental group retained substantially more vocabulary compared to the control group, with a much higher score gain from their pre-test baseline.

Taken together, the statistical analysis results demonstrate that the

experimental group consistently outperformed the control group across both vocabulary mastery and vocabulary retention measures. These findings confirm that students who learned vocabulary using Quizlet-Based Digital Flashcards achieved significantly better learning outcomes in both short-term mastery and long-term retention compared to those who used conventional learning methods.

Based on the overall research results, it can be concluded that Quizlet-Based Digital Flashcards are effective in improving students' vocabulary mastery and helping maintain vocabulary retention in EFL students at the high school level.

5.2 Recommendations

5.2.1 For English Teachers

English teachers are advised to utilize Quizlet-Based Digital Flashcards as a medium for vocabulary learning in the classroom. The features available in Quizlet can help students learn vocabulary in a more engaging, interactive, and flexible way. Furthermore, using Quizlet can increase student engagement in the learning process and help them retain vocabulary for a longer period of time.

5.2.2 For Students

Students are advised to use Quizlet independently outside of class as a means of vocabulary practice. Consistent use can help students expand their vocabulary mastery and improve their ability to recall previously learned vocabulary. Thus, students can achieve more optimal learning outcomes in English.

5.2.3 For Future Researchers

Further researchers are advised to conduct similar studies with a larger sample size, longer treatment duration, or at different educational levels. Furthermore, future research could examine the use of Quizlet on other language skills, such as reading, writing, speaking, and listening, to gain a broader understanding of the effectiveness of digital learning media in English learning.

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APPENDICES

Appendix I Questions of Pre-Test, Post-Test and Delayed Post-Test

SOAL PRE-TEST

Name :

No. Absen/Class :

Please choose the correct answer by crossing one of the letters A, B, C, or D!

No	Question	Answer
1	The word "Kingdom" is best defined as... A. A land ruled by a king or queen B. A small village C. A forest area D. A group of people	A
2	The word "Liver" belongs to which category? A. Place B. Animal C. Body part D. Object	C
3	A "Wound" is... A. A type of food B. A place C. A feeling of sadness D. An injury on the body	D
4	A "Scar" is best described as... A. A mark left after healing B. A weapon C. A new injury D. A disease	A
5	The word "Horizon" refers to... A. A house B. The line where sky meets earth C. A mountain D. A forest	B
6	A "Stepmother" is... A. A grandmother B. A father's new wife C. A daughter D. A mother's sister	B
7	The word "Jealousy" is closest in meaning to... A. Fear B. Happiness C. Envy D. Kindness	C
8	"Wickedness" describes... A. Smart thinking B. Evil actions C. Friendly attitude D. Good behavior	B

9	"Compassion" is best described as... A. Fear B. Pride C. Anger D. Care for others	D
10	"Consequences" are... A. Results of actions B. Plans C. Ideas D. Causes	A
11	Bawang Merah was known for her ____ and jealousy.	wickedness
12	Bawang Putih was known for her kindness and ____.	beauty
13	Their father remarried a ____ stepmother.	cruel
14	Bawang Putih ____ followed her stepmother's order.	obediently
15	While she was washing clothes, a magic fish ____.	appeared

SOAL POST-TEST

Name :

No. Absen/Class :

Please choose the correct answer by crossing one of the letters A, B, C, or D!

No	Question	Answer
1	The word 'desperate' means... A. Hopeful B. Calm C. Hopeless D. Happy	C
2	Which word is opposite of 'cruel'? A. Kind B. Angry C. Fast D. Loud	A
3	'Obediently' is a... A. Noun B. Verb C. Adjective D. Adverb	D
4	Which sentence uses 'wicked' correctly? A. He wicked the book B. She is a wicked queen C. They wicked quickly D. He is wickedly person	B
5	'Outraged' expresses... A. Feeling B. Place C. Object D. Time	A

6	'Once upon a time' is used to... A. End a story B. Begin a story C. Show conflict D. Describe place	B
7	'After that' shows... A. Comparison B. Sequence C. Cause D. Place	B
8	'Soon' means... A. After a long time B. Immediately C. After a short time D. Never	C
9	'Years passed' indicates... A. Short time B. Long time C. No time D. Exact time	B
10	'In the end' signals... A. Beginning B. Conflict C. Resolution D. Setting	C
11	After hunting all day, Sangkuriang became ____ because he hunted no deer.	desperate
12	Soon, Dayang Sumbi found out the truth and became ____.	furious
13	In that incident, Sangkuriang got ____ on his head.	wounded
14	After many years, Dayang Sumbi finally ____ that Sangkuriang was her son.	realized
15	She lit up the eastern ____ to stop him from finishing the task.	horizon

SOAL DELAYED POST-TEST

Name :

No. Absen/Class :

Please choose the correct answer by crossing one of the letters A, B, C, or D!

No	Question	Answer
1	Which word is an adjective? A. Jealousy B. Kingdom C. Desperate D. Horizon	C
2	'Outraged' is closest to... A. Happy B. Angry C. Calm D. Tired	B

3	Which word is opposite of 'wicked'? A. Evil B. Kind C. Angry D. Bad	B
4	A 'cruel' person usually... A. Helps others B. Hurts others C. Teaches others D. Supports others	B
5	'Obediently' modifies... A. Noun B. Verb C. Adjective D. Subject	B
6	'Once upon a time' is used in... A. Narrative text B. Report text C. News D. Procedure	A
7	'After that' is used to show... A. Comparison B. Sequence C. Cause D. Description	B
8	'Soon' indicates... A. Long time B. Short time C. No time D. Exact time	B
9	'Years passed' suggests... A. Short duration B. Long duration C. No duration D. Immediate action	B
10	'In the end' appears in... A. Orientation B. Complication C. Resolution D. Title	C
11	After hunting all day, Sangkuriang became ____ because he hunted no deer.	desperate
12	Soon, Dayang Sumbi found out the truth and became ____.	furious
13	In that incident, Sangkuriang got ____ on his head.	wounded
14	After many years, Dayang Sumbi finally ____ that Sangkuriang was her son.	realized
15	She lit up the eastern ____ to stop him from finishing the task.	horizon

Appendix II Lesson Plan

MODUL AJAR KURIKULUM MERDEKA

I. INFORMASI UMUM

A. Identitas Modul

Nama Penyusun : Firda Nur Zakiyah Arofah
Satuan Pendidikan : SMK Nasional Malang
Mata Pelajaran : Bahasa Inggris
Fase / Elemen : E / Membaca-Memirsa
Kelas / Semester : X / Genap
Alokasi Waktu : 8 Pertemuan x (2 JP x 45')

B. Kompetensi Awal

- Peserta didik mampu mengidentifikasi fungsi dan struktur *Narrative Text*.
- Peserta didik mampu menuliskan *Narrative Text* secara sederhana.

C. Profil Pelajar Pancasila & Target Peserta Didik

- Profil Pelajar Pancasila:** Beriman dan bertakwa kepada Tuhan Yang Maha Esa, Bergotong royong, Berkebinekaan global, Mandiri, Bernalar kritis, Kreatif.
- Target Peserta Didik:** Peserta didik reguler/tipikal: umum, tidak ada kesulitan dalam mencerna dan memahami materi ajar.

D. Sarana, Prasarana & Model Pembelajaran

- Sarana & Prasarana:** Gawai, Laptop/Komputer PC, Papan tulis, Infokus/Proyektor/pointer, Buku teks, Google sites, Worksheet, Referensi lain (Aplikasi Quizlet).
- Model Pembelajaran:** *Cooperative & Contextual Learning*.

II. KOMPETENSI INTI

A. Tujuan Pembelajaran:

- Identify sequences of main events in a story.*
- Write the main events of a story.*

B. Pemahaman Bermakna: *In this learning stage students learn to ask for and giving opinion that led to create narrative text.*

C. Pertanyaan Pemantik: *What kind of text is it?*

III. KEGIATAN PEMBELAJARAN

A. RUTINITAS UMUM (Berlaku untuk SEMUA Pertemuan 1–8):

- Pre-Activity (10–15 Menit):** Guru membuka kelas dengan salam, doa, memeriksa kehadiran siswa, memberikan motivasi, serta menyampaikan tujuan pembelajaran/agenda hari itu.
- Post-Activity (10–15 Menit):** Guru dan siswa melakukan ulasan balik (*review*), refleksi pembelajaran, pemberian umpan balik/apresiasi, penugasan mandiri di rumah (jika ada), dan menutup kelas dengan doa/salam.
- Matriks Inti Pembelajaran (60 Menit per Pertemuan)

Pertemuan	Agenda Utama & Langkah Inti (60 Menit)	Media/ Aplikasi
Pertemuan 1	Pre-Test & Introduction to Quizlet: - Guru membagikan lembar soal <i>Pre-Test</i> (kosakata pilihan ganda dan fill in the blank). Siswa mengerjakannya secara mandiri (30 menit). - Guru mengenalkan aplikasi Quizlet melalui proyektor, lalu siswa membuka tautan Quizlet melalui gawai mereka dan mencoba fitur <i>Flashcard Mode</i> (30 menit).	Lembar Pre-Test, Smartphone, Quizlet
Pertemuan 2	Introduction to Narrative Text (Bawang Merah Bawang Putih): - Guru menampilkan gambar tokoh cerita, menjelaskan definisi teks naratif, serta 3 struktur utamanya (<i>Orientation, Complication, Resolution</i>). - Siswa dibagi kelompok (4–5 orang) untuk membaca dan menganalisis letak struktur cerita <i>Bawang Merah Bawang Putih</i> (10 menit). Perwakilan kelompok mempresentasikan hasilnya. - Siswa berlatih kosakata teks terkait di Quizlet melalui <i>Flashcard Mode</i> (7 menit) dan <i>Match Game</i> (8 menit).	Teks Cerita (Appendix 2), Quizlet
Pertemuan 3	- Guru menjelaskan secara mendalam 6 <i>Language Features</i> (<i>Simple Past Tense, Action Verbs, Saying & Thinking Verbs, Conjunctions of Time, Adjectives, Nouns</i>). - Siswa bekerja berpasangan mencari contoh-contoh fitur kebahasaan tersebut dari teks <i>Bawang Merah Bawang Putih</i> (10 menit), lalu membagikan temuannya. - Siswa mempelajari jenis-jenis teks naratif lainnya (<i>fairy tale, legend, dll</i>) secara interaktif. - Siswa mencoba fitur Quizlet <i>Learn Mode</i> (10 menit) lalu bermain <i>Quizlet Live</i> menggunakan kosakata yang dipelajari (20 menit).	Teks Cerita, Quizlet (Learn & Live)
Pertemuan 4	Analysis of Legend Text (Sangkuriang): - Siswa mendapatkan teks cerita <i>Sangkuriang</i> dan dijelaskan bahwa teks tersebut masuk dalam jenis <i>Legend</i>. - Siswa membaca teks dalam kelompok kecil (4–5 orang) untuk berdiskusi mengidentifikasi struktur (<i>Orientation, Complication, Resolution</i>) serta mencari contoh <i>Simple Past Tense, Action Verbs</i>, dan <i>Time Conjunctions</i> di dalam teks (10 menit). Perwakilan kelompok mempresentasikan hasilnya. - Siswa memfokuskan latihan kosakata <i>Sangkuriang</i> di Quizlet melalui <i>Flashcard Mode</i> (7 menit) dan <i>Match Game</i> (8 menit).	Teks Sangkuriang, Quizlet

Pertemuan 5	• Guru menampilkan contoh teks naratif pendek di papan tulis untuk dianalisis bersama terkait struktur dan fitur bahasanya, kemudian menjelaskan langkah-langkah menulis teks naratif. • Siswa menulis sebuah cerita naratif sederhana secara individu (20 menit). • Beberapa siswa membacakan tulisannya untuk diberi masukan, lalu karya dikumpulkan sebagai nilai formatif. • Siswa melakukan pemanasan via <i>Match Game</i> (5 menit) dilanjutkan dengan kompetisi final <i>Quizlet Live Session 2</i>.	Whiteboard, Lembar Kerja, Quizlet
Pertemuan 6	Post-Test Unit: • Siswa menyelesaikan lembar soal <i>Post-Test</i> (pilihan ganda, fill in the blank) secara mandiri, jujur, tanpa gawai selama 60 menit.	Lembar Post-Test
Pertemuan 7	Interval Meeting (No Treatment): • <i>Note:</i> Pertemuan ini merupakan masa jeda sengaja agar dapat mengukur kemampuan retensi kosakata jangka panjang siswa pada pertemuan berikutnya.	Buku Teks Kurikulum
Pertemuan 8	Delayed Post-Test: • Siswa menyelesaikan soal <i>Delayed Post-Test</i> dengan format yang sama seperti <i>Post-Test</i> secara mandiri dan tenang selama 60 menit.	Lembar Delayed Post-Test

IV. LAMPIRAN MATERI & LEMBAR KERJA

Appendix 1: Rangkuman Teori Pembelajaran (Narrative Text)

Definition & Social Function: *Narrative text* adalah jenis teks yang menceritakan rangkaian peristiwa fiksi/imajinatif masa lampau secara kronologis yang bertujuan untuk menghibur pembaca (*to entertain*).

Generic Structure:

Orientation: Bagian pengenalan tokoh, latar tempat, dan waktu cerita.

Complication: Bagian munculnya konflik/masalah yang dihadapi tokoh (urutan: Masalah → Konflik mendalam → Klimaks/puncak drama → Anti-klimaks → Solusi awal). Jenis konflik berupa: konflik alam (*natural*), konflik sosial antar tokoh, atau konflik psikologis dalam batin tokoh.

Resolution: Akhir/kesimpulan cerita, masalah terselesaikan dengan akhir bahagia (*happy ending*) atau sedih (*sad ending*).

Re-orientation (Optional): Bagian penutup yang menceritakan kondisi akhir tokoh atau menyampaikan pesan moral/pelajaran bagi pembaca.

Types of Narrative Texts: *Fairy Tale* (dongeng ajaib), *Folktale/Folklore* (cerita rakyat turun-temurun), *Legend* (legenda asal-usul tempat), *Myth* (mitos makhluk halus/dewa), *Science Fiction* (fiksi ilmiah), *Romance* (percintaan), *Horror Stories* (cerita hantu), *Fable* (fabel tokoh hewan), *History* (sejarah), *Slice of Life* (potongan hidup biasa), *Personal Experience* (pengalaman pribadi penulis).

Language Features: Menggunakan kata kerja bentuk lampau (*Simple Past Tense*),

kata kerja aksi (*Action Verbs*), kata kerja ujaran/pikiran (*Saying and Thinking Verbs*), kata hubung waktu (*Conjunction of Time*), kata sifat (*Adjective*), dan kata benda pengganti (*Noun*).

Appendix 2: Contoh Teks Cerita (Narrative Stories)

Story 1: Bawang Merah Bawang Putih

Once upon a time, in a small village in Indonesia, there lived two sisters named Bawang Merah and Bawang Putih. Bawang Merah was known for her wickedness and jealousy, while Bawang Putih was known for her kindness and beauty. Their mother had passed away when they were young, and their father had remarried a cruel and wicked stepmother who favored Bawang Merah and treated Bawang Putih poorly.

One day, the stepmother asked Bawang Putih to go to the river and wash some clothes. Bawang Putih obediently did as she was told and went to the river. While she was washing the clothes, a magic fish appeared and asked her why she was crying. Bawang Putih told the fish about her troubles and how her stepmother treated her badly. The magic fish gave her a magical flower and told her to keep it safe.

Bawang Putih returned home and showed the flower to her sister, Bawang Merah. However, Bawang Merah became jealous and stole the flower, hoping to use it for her own benefit. The next day, Bawang Merah went to the river to wash some clothes, and the magic fish appeared to her. But instead of asking why she was crying, the fish scolded her for her wickedness and told her that she would be punished for her actions. The magic flower that Bawang Merah had stolen from her sister turned into a stone, and she was unable to remove it from her hand. She became known as “Bawang Merah Berbatu” or “Onion with a Stone,” while Bawang Putih’s kindness and beauty earned her the nickname “Bawang Putih Bersih” or “Clean Garlic.”

In the end, Bawang Putih married a kind and wealthy prince, while Bawang Merah was left alone to suffer the consequences of her actions. The story teaches the importance of kindness, honesty, and compassion, and the consequences of greed and jealousy.

Story 2: Sangkuriang and Dayang Sumbi

Once upon a time, a happy family lived in a kingdom in Priangan Land. They were a father in the form of a dog, his name was Tumang, a mother who was called Dayang Sumbi, and a child who was called Sangkuriang. One day, Dayang Sumbi asked her son to hunt with his lovely dog, Tumang. After hunting all day, Sangkuriang became desperate and worried because he hunted no deer. Then he thought of shooting his dog. After that, he took the dog’s liver and carried it home. Soon, Dayang Sumbi found out that it was not deer liver but Tumang’s dog. So, she was furious and hit Sangkuriang’s head. In that incident, Sangkuriang got wounded, and a scar was cast away from their home.

Years passed, and Sangkuriang traveled to many places and finally arrived at a village. He met a beautiful woman and fell in love with her. When they were discussing their wedding plans, the woman looked at the wound on Sangkuriang’s head. It matched her son’s wound, who had left several years earlier. Soon she

realized that she had fallen in love with her son. She couldn't marry him, but how to say it? Then, she found the way. She needed a lake and a boat to celebrate their wedding day. Sangkuriang had to make them one night before sunrise. He built a lake.

With dawn just a moment away, the boat was almost complete. Dayang Sumbi had to stop it. Then, she lit up the eastern horizon with flashes of light. It made the cock crow for a new day. Sangkuriang failed to marry her. He was outraged and then kicked the boat. It fell over and became the mountain of Tangkuban Perahu Bandung.

Appendix 3: Daftar Kosakata Terintegrasi (Vocabulary List)

No	Word	Meaning	Category	No	Word	Meaning	Category
1	Kingdom	Kerajaan	Noun	16	Scolded	Memarahi	Verb
2	Liver	Hati	Noun	17	Punished	Dihukum	Verb
3	Wound	Luka	Noun	18	Married	Menikahi	Verb
4	Scar	Bekas luka	Noun	19	Traveled	Mengembara	Verb
5	Horizon	Cakrawala	Noun	20	Furious	Sangat marah	Adjective
6	Stepmother	Ibu tiri	Noun	21	Desperate	Putus asa	Adjective
7	Jealousy	Kecemburuan	Noun	22	Outraged	Murka	Adjective
8	Wickedness	Kejahatan	Noun	23	Wicked	Jahat	Adjective
9	Compassion	Kasih sayang	Noun	24	Cruel	Kejam	Adjective
10	Consequences	Akibat/ konsekuensi	Noun	25	Obediently	Dengan patuh	Adverb
11	Hunt	Berburu	Verb	26	Once upon a time	Pada zaman dahulu	Time Conjunction
12	Realize	Menyadari	Verb	27	After that	Setelah itu	Time Conjunction
13	Kicked	Menendang	Verb	28	Soon	Tidak lama kemudian	Time Conjunction
14	Appeared	Muncul	Verb	29	Years passed	Bertahun- tahun berlalu	Time Conjunction
15	Stole	Mencuri	Verb	30	In the end	Pada akhirnya	Time Conjunction

Appendix III Validation Sheet

Validations Sheet

Instrument Validation Sheet of Pre-Test, Post-test and Delayed Post-test for Research Entitled

“THE EFFECTIVENESS OF QUIZLET-BASED DIGITAL FLASHCARD IN EFL LEARNERS’ VOCABULARY RETENTION”

Validator : Dian Arsitades Wiranegara, M.Pd
 NIP : 198012302023211010
 Expertise : English Language Teaching Development
 Instance : Maulana Malik Ibrahim State Islamic University of Malang
 Validation Date : 2 April 2026

A. Introduction

This validation was made to obtain an assessment from the validator (Mr/Ms) on the research instrument used in this study. Every comment and suggestion given is very useful to improve the quality of the research instrument. Thank you for your willingness to become a validator instrument in this research.

B. Guidance

1. In this section, asses by ticking (✓) with the following criteria to the columns bellow:

1: Very poor
 2: Poor
 3: Average
 4: Good
 5: Excellent

2. Please give comments and suggestion in the columns below:

C. Validation Sheet

No	Aspect	Score				
		5	4	3	2	1
1.	Suitability of Instrument with basic competencies		✓			
2.	Clarity of question items contained in the research instrument		✓			
3.	Clarity of instrument on each question items contained in the research instrument		✓			
4.	The research instrument is relevant with the research objectives		✓			
5.	The research instrument can help the research find out students' abilities in vocabulary mastery		✓			
6.	The research instrument is easy to understand		✓			
7.	Each question has one correct or most correct answer		✓			
8.	The research using proper text		✓			
9.	The choice of answers to the research instrument is appropriate and logical in terms of material		✓			
10.	The subject matter must be formulated clearly and unequivocally		✓			

D. Suggestion

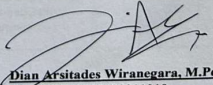
can be proceed / continued and processed

E. Conclusion

Based on the validation sheet above, it can be concluded that the instruments that have been made is:

Please cross out (abcd) the answer that doesn't match the conclusion you gave.

☒ The instrument can be used without revision.
☒ The instrument can be used with alight revision.
☒ The instrument can be used with many revisions.
☐ The instrument can be used.

Malang, 2 April 2026
 Validator,

 Dian Arsitades Wiranegara, M.Pd
 NIP. 198012302023211010

Appendix IV Research Permission Letters


KEMENTERIAN AGAMA REPUBLIK INDONESIA
UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM MALANG
FAKULTAS ILMU TARBIYAH DAN KEGURUAN
Jalan Gajayana 60, Telepon (0341) 552398 Faximile (0341) 552398 Malang
http://fitk.uin-malang.ac.id email : fitk@uin-malang.ac.id

Nomor : 859/Un.03.1/TL.01.04/03/2026
Lampiran : -
Hal : Izin Survey

30 Maret 2026

Kepada Yth.
Kepala SMK Nasional Malang
di
Tempat

Assalamu'alaikum Wr. Wb.
Dengan hormat, dalam rangka penyusunan proposal Skripsi Tadris Bahasa Inggris (TBI) Fakultas Ilmu Tarbiyah dan Keguruan (FITK) Universitas Islam Negeri Maulana Malik Ibrahim Malang, kami mohon dengan hormat agar mahasiswa berikut:

Nama : Firda Nur Zakiyah Arofah
NIM : 220107110052
Tahun Akademik : Genap - 2025/2026
Judul Proposal : THE EFFECTIVENESS OF QUIZLET-BASED DIGITAL FLASHCARD IN EFL LEARNERS' VOCABULARY RETENTION

Diberi izin untuk melakukan survey/studi pendahuluan di lembaga/instansi yang menjadi wewenang Bapak/Ibu
Demikian, atas perkenan dan kerjasama Bapak/Ibu yang baik disampaikan terimakasih.
Wassalamu'alaikum Wr. Wb.

*Acc 1/4 Pro: P. Ocho.
mohon di fikirkan mahasiswa
tersebut dalam peminatan
Prms.*


Muhammad Walid, MA
19730823 200003 1 002

Tembusan :
1. Ketua Program Studi TBI
2. Arsip



SURAT KETERANGAN

Nomor : 462/104.5/SMK Nas Mlg/ 1.2026

Yang bertanda tangan di bawah ini :

Nama : Drs. Rusdi, M.Si
NIP.P. : 303 020 0375
Jabatan : Kepala SMK Nasional Malang

Menerangkan dengan sebenarnya bahwa :

No	Nama	NIM	Prodi/Jurusan
1	Firda Nur Zakiyah Arofah	220107110052	Tadris Bahasa Inggris

Mahasiswa dari Universitas Islam Negeri Maulana Malik Ibrahim Malang tersebut telah melaksanakan kegiatan penelitian di SMK Nasional Malang dalam rangka penyusunan proposal skripsi dengan judul : Flashcard In EFL Leaners' Vocabulary Retention

Demikian Surat Keterangan ini dibuat untuk dipergunakan sebagaimana mestinya.

Malang, 11 Mei 2026
Kepala Sekolah

Drs. Rusdi, M.Si
NIP.P. 303 020 0375

Appendix V Students' Answer Sheet

70

PRE-TEST

Name : Vinoo Gading A
No. Absen/Class : 30/x-0818

A. Please choose the correct answer by crossing one of the letters A, B, C, or D!

- The word "Kingdom" is best defined as...
☒ A. A land ruled by a king or queen
☐ B. A small village
☐ C. A forest area
☐ D. A group of people
- The word "Liver" belongs to which category?
☐ A. Place
☐ B. Animal
☒ C. Body part
☐ D. Object
- "Wound" is...
☐ A. A type of food
☐ B. A place
☒ C. A feeling of sadness
☐ D. An injury on the body
- A "Scar" is best described as...
☒ A. A mark left after healing
☐ B. A weapon
☐ C. A new injury
☐ D. A disease
- The word "Horizon" refers to...
☒ A. A house
☐ B. The line where sky meets earth
☐ C. A mountain
☐ D. A forest
- A "Stepmother" is...
☒ A. A grandmother
☐ B. A father's new wife
☐ C. A daughter
☐ D. A mother's sister
- The word "Jealousy" is closest in meaning to...
☐ A. Fear
☒ B. Happiness
☐ C. Envy
☐ D. Kindness
- "Wickedness" describes...
☐ A. Smart thinking
☐ B. Evil actions
☐ C. Friendly attitude
☒ D. Good behavior
- "Compassion" is best described as...
☐ A. Fear
☐ B. Pride
☐ C. Anger
☒ D. Care for others
- "Consequences" are...
☒ A. Results of actions
☐ B. Plans
☐ C. Ideas
☐ D. Causes

B. Please complete the sentences by filling in the blanks with the correct words!

- Bawang Merah was known for her kindness and jealousy.
- Bawang Putih was known for her kindness and beauty.
- Their father remarried a cruel stepmother.
- Bawang Putih obediently followed her stepmother's order.
- While she was washing clothes, a magic fish appeared.

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POST-TEST

Name : Vinoo Gading A
No. Absen/Class : 30/x-0818

A. Please choose the correct answer by crossing one of the letters A, B, C, or D!

- The word 'desperate' means...
☐ A. Hopeful
☐ B. Calm
☒ C. Hopeless
☐ D. Happy
- Which word is opposite of 'cruel'?
☒ A. Kind
☐ B. Angry
☐ C. Fast
☐ D. Loud
- 'Obediently' is a...
☐ A. Noun
☐ B. Verb
☐ C. Adjective
☒ D. Adverb
- Which sentence uses 'wicked' correctly?
☐ A. He wicked the book
☒ B. She is a wicked queen
☐ C. They wicked quickly
☐ D. He is wickedly person
- 'Outraged' expresses...
☒ A. Feeling
☐ B. Place
☐ C. Object
☐ D. Time
- 'Once upon a time' is used to...
☐ A. End a story
☒ B. Begin a story
☐ C. Show conflict
☐ D. Describe place
- 'After that' shows...
☐ A. Comparison
☒ B. Sequence
☐ C. Cause
☐ D. Place
- 'Soon' means...
☐ A. After a long time
☐ B. Immediately
☒ C. After a short time
☐ D. Never
- 'Years passed' indicates...
☐ A. Short time
☒ B. Long time
☐ C. No time
☐ D. Exact time
- 'In the end' signals...
☐ A. Beginning
☐ B. Conflict
☒ C. Resolution
☐ D. Setting

B. Please complete the story by filling in the blanks with the correct word!

After hunting all day, Sangkuriang became (11) exhausted because he hunted no deer. Soon, Dayang Sumbi found out the truth and became (12) angry. In that incident, Sangkuriang got (13) wounded on his head. After many years, Dayang Sumbi finally (14) realized that Sangkuriang was her son. She lit up the eastern (15) horizon to stop him from finishing the task.

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DELAYED POST-TEST

Name : Vinoo Gading A
No. Absen/Class : 30/x-0818

A. Please choose the correct answer by crossing one of the letters A, B, C, or D!

- Which word is an adjective?
☒ A. Jealousy
☐ B. Kingdom
☐ C. Desperate
☐ D. Horizon
- 'Outraged' is closest to...
☐ A. Happy
☒ B. Angry
☐ C. Calm
☐ D. Tired
- Which word is opposite of 'wicked'?
☐ A. Evil
☒ B. Kind
☐ C. Angry
☐ D. Bad
- A 'cruel' person usually...
☐ A. Helps others
☒ B. Hurts others
☐ C. Teaches others
☐ D. Supports others
- 'Obediently' modifies...
☒ A. Noun
☐ B. Verb
☐ C. Adjective
☐ D. Subject
- 'Once upon a time' is used in...
☒ A. Narrative text
☐ B. Report text
☐ C. News
☐ D. Procedure
- 'After that' is used to show...
☐ A. Comparison
☐ B. Sequence
☒ C. Cause
☐ D. Description
- 'Soon' indicates...
☐ A. Long time
☒ B. Short time
☐ C. No time
☐ D. Exact time
- 'Years passed' suggests...
☐ A. Short duration
☒ B. Long duration
☐ C. No duration
☐ D. Immediate action
- 'In the end' appears in...
☒ A. Orientation
☐ B. Complication
☐ C. Resolution
☐ D. Title

B. Please complete the story by filling in the blanks with the correct word!

After hunting all day, Sangkuriang became (11) exhausted because he hunted no deer. Soon, Dayang Sumbi found out the truth and became (12) angry. In that incident, Sangkuriang got (13) wounded on his head. After many years, Dayang Sumbi finally (14) realized that Sangkuriang was her son. She lit up the eastern (15) horizon to stop him from finishing the task.

Appendix VI Documentation



Appendix VII Curriculum Vitae



Curriculum Vitae

Name	: Firda Nur Zakiyah Arofah
Student ID	: 220107110052
Place, Date of Birth	: Pasuruan, 02 Maret 2003
Gender	: Female
Religion	: Islam
Address	: Penjalinan, RT.04 RW.02 Jatisari, Purwodadi, Pasuruan

Education Background

1. 2007-2009 RA Muslimat NU Jatisari
2. 2009-2015 SDN Jatisari II
3. 2015-2018 SMP Bhinneka Tunggal Ika Purwosari
4. 2018-2021 SMA Darut Taqwa Purwosari
5. 2022-2026 UIN Maulana Malik Ibrahim Malang