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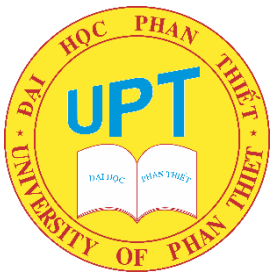

NGUYỄN HƯƠNG THÙY

THE IMPACT OF THE CAKE APP ON 7TH GRADERS' VOCABULARY LEARNING AT THUAN QUY SECONDARY SCHOOL

MASTER'S GRADUATION PROJECT MAJORED IN ENGLISH LANGUAGE

Bình Thuận Province - 2024

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SCIENCE INSTRUCTOR'S NAME(s):

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STATEMENT OF AUTHORSHIP

I confirm that the work presented in this research entitled

"THE IMPACT OF THE CAKE APP ON 7TH GRADERS' VOCABULARY LEARNING AT THUAN QUY SECONDARY SCHOOL" has been performed and interpreted solely by myself.

I confirm that this work is submitted in partial fulfillment for the MA course of English language at University of Phan Thiet and has not been submitted elsewhere in other form for the fulfillment of any other article or paper.

Phan Thiet, February 2024

Nguyen Huong Thuy

ABSTRACT

In the realm of language education, the integration of technology has ushered in transformative possibilities, sparking interest in the examination of its impact on vocabulary learning. This study aimed to examine the impact of the Cake-English mobile application on enhancing English vocabulary skills. The research employed a quasi-experimental design involving 70 grade 7 students from Thuan Quy Secondary School. Participants were divided randomly into experimental and control groups. Both groups engaged in two sets of vocabulary exercises, with the experimental group utilizing the Cake mobile app for practice while the control group relied on traditional resources like books and dictionaries. The primary research instruments included pre and post-tests adapted from vocabulary practice assessments and surveys administered to both groups. The collected data underwent analysis using the student statistical test. Findings indicated that the utilization of the Cake mobile app yielded positive outcomes with the advancement of English vocabulary proficiency.

Keywords: Cake mobile application, language education, vocabulary learning

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ABBREVIATIONS

AI: Artificial Intelligence

TPACK: Technological Pedagogical Content Knowledge

KWIC: Key word in context

EG: Experimental Group

CG: Control Group

CHAPTER 1. INTRODUCTION

1.1 Background to the study

In the context of education today, technological advancements have opened doors to a variety of tools and platforms aimed at enhancing student learning experiences. D.A. Wilkins (1972, pp. 111-112) emphasized the crucial role of both grammar and vocabulary in effective communication, highlighting that grammar provides structure while vocabulary conveys nuanced meanings. This study aims to delve into this perspective by investigating the impact of a specific tool, the Cake app, on vocabulary learning among 7th graders at Thuan Quy Secondary School.

Recent scholarly inquiries have delved into technology-assisted language learning. For instance, Nguyen (2022) investigated the effectiveness of mobile applications in enhancing vocabulary learning among middle school students. Robin and Aziz, (2022) conducted a comparative study exploring how digital tools contribute to vocabulary enrichment. Shortt et al. (2023) focused on the influence of gamified vocabulary apps on language learning, particularly among elementary students. Hao et al. (2019) delved into the effects of app-enhanced vocabulary learning on English language proficiency. Additionally, Ishaq et al. (2021) conducted a longitudinal study to reveal the enduring impacts of mobile app usage on vocabulary development.

In light of these endeavors, this study seeks to contribute to the growing body of knowledge by specifically examining the effects of the Cake app on vocabulary learning among 7th graders. Understanding the potential and limitations of technology-enhanced learning tools such as the Cake app is crucial for adapting modern education to the evolving needs of students.

With the advancement of technology, educators have been presented with various tools and platforms to enhance student learning. Wilkins (1972, pp. 111-112) emphasized the significance of both grammar and vocabulary by stating that

communication possibilities are greatly limited without grammar, and without vocabulary, effective communication becomes unattainable. This research aims to investigate the impact of one such tool, the Cake app, on vocabulary learning among 7th graders at Thuan Quy Secondary School.

1.2 Statement of the problem

Vocabulary learning plays a crucial role in the overall language development of 7th graders at Thuan Quy Secondary School. In recent years, educational technology has gained momentum as a potential tool to enhance learning outcomes. One such technology is the Cake app, designed to provide an interactive and engaging platform for vocabulary enrichment. However, the impact of the Cake app on vocabulary learning among 7th graders still needs to be explored within the specific context of Thuan Quy Secondary School.

This study aims to address the following key issues:

Efficacy of the Cake app: It needs to be clarified to what extent the Cake app effectively contributes to vocabulary learning for 7th graders at Thuan Quy Secondary School. Previous research on similar applications may provide insights into the potential impact of this technology (Kreps & Kriner, 2023).

Engagement and motivation: Students' level of engagement and motivation while using the Cake app for vocabulary learning needs investigation. Research by (Fitria et al., 2021) suggests that gamified learning environments enhance student engagement.

Learning styles and preferences: Students have diverse learning styles and preferences. Understanding how the Cake app caters to these individual differences is essential for maximizing its impact (Marwati et al., 2022).

Long-term retention: The long-term retention of vocabulary learned through the Cake app is another critical aspect that requires exploration. Research conducted

by (Alahmadi et al., 2023) on the retention of vocabulary through technology-based interventions could provide relevant insights.

Integration with classroom instruction: Integrating the Cake app into the existing curriculum and its alignment with classroom instruction needs examination. Insights from studies such as the work of (Christensen, 2002) on technology integration in education could shed light on effective implementation strategies.

In summary, this study seeks to fill the existing gap in research by investigating the impact of the Cake app on vocabulary learning for 7th graders at Thuan Quy Secondary School. By examining the efficacy, engagement, learning styles, retention, and integration aspects, this research aims to provide valuable recommendations for educators and policymakers seeking to enhance language learning outcomes through technology.

1.3 Aims of the study

The aims of this study is to assess the impact of the Cake app on vocabulary learning among 7th graders. Additionally, the research aims to identify both the strengths and limitations of integrating the Cake app into the curriculum from the perspectives of both students and educators. The presence of technology in teaching and learning has garnered significant attention from researchers. Lai et al. (2022) investigated the effects of technology use on language learning, providing a foundation for similar investigations within the context of the Cake app. (Ghobadi et al., 2021) highlighted the role of interactive elements in educational apps, prompting an exploration into how the Cake app's design promotes active engagement and interaction. Furthermore, educators' viewpoints on the integration of the Cake app into the curriculum are also under scrutiny. Drawing inspiration from Campbell and Geertsema (2017) research on challenges in incorporating technology in education, this study will explore the barriers and facilitators that educators encounter when incorporating the Cake app into their teaching methods. The research also aims to pinpoint the strengths and weaknesses of the Cake app in expanding vocabulary.

Utilizing an assessment framework akin to the approach of Jonas-Dwyer et al. (2012) in evaluating educational apps, this study will provide insights into the app's features that contribute to effective vocabulary expansion and areas that require refinement. Lastly, the study also seeks to compare the perspectives of 7th-grade students and educators regarding the integration of the Cake app. Building on (Böhner et al.'s (2018) research into the alignment of student and teacher viewpoints in technology-driven learning environments, this study will analyze the congruence or divergence between student and educator perceptions of the app's impact on vocabulary learning.

1.4 Research questions

By achieving the objectives above, this research will address the following questions:

To what extent does the Cake app impact vocabulary learning for 7th graders at Thuan Quy Secondary School?

What are the students' opinions and attitudes toward their vocabulary learning experiences through Cake app?

1.5 Significance and rationale of the study

The findings of this research hold significance for both academia and educational practitioners. By investigating the impact of the Cake app on vocabulary learning, educators can make informed decisions about integrating technology into their teaching strategies. Furthermore, this study contributes to the broader discourse on technology's role in language education and its implications for future pedagogical approaches.

This research is driven by the need to understand the educational implications of technology in the context of vocabulary acquisition and aligning with modern teaching trends.

1.5.1 Significance of the study

Educational enhancement: One of the primary significance of this research lies in its potential to enhance the quality of education. Investigating how technology applications, such as the Cake app, can positively influence the learning process can ultimately contribute to improving educational outcomes at Thuan Quy Secondary School.

Vocabulary improvement: Vocabulary is a fundamental component of language learning, especially in the context of English language acquisition. Understanding the impact of the Cake app on 7th graders' vocabulary learning is significant as it can potentially optimize their language acquisition and comprehension skills.

1.5.2 Rationale for the study:

Lack of information: The rationale behind this study is the existing gap in knowledge. Currently, there is limited information available regarding how educational apps, including Cake, affect vocabulary learning among students. This research seeks to bridge this gap by providing in-depth insights into the app's efficacy as a learning tool.

Alignment with modern education trends: The study is motivated by the evolving landscape of education, characterized by the integration of technology into teaching practices. Investigating how the Cake app aligns with these modern trends is essential to provide educators with practical guidance on utilizing technology effectively in the classroom.

In conclusion, this assignment sheds light on the significance and rationale of conducting research on the impact of the Cake app on 7th graders' vocabulary learning at Thuan Quy Secondary School. It emphasizes the potential for educational improvement, the importance of vocabulary acquisition, the need to fill the knowledge gap, and the alignment of the study with contemporary educational practices.

1.6 Scope of the study

The study's scope is focused on evaluating the effectiveness of the Cake app in enhancing vocabulary learning among 7th graders at Thuan Quy Secondary School. It examines the app's impact on students' vocabulary acquisition, engagement levels, and adaptability to various learning styles, while considering both student and teacher perspectives. The research aims to provide insights into the integration of technology in language education and make recommendations based on its findings.

1.7 Definition of key terms

This section provides precise definitions of essential terms used throughout the study to ensure a shared understanding of their meanings.

Vocabulary learning: The process of learning and assimilating new words, their meanings, and their contextual usage in a specific language, as highlighted by Ngọc and Thư, (2022)

Educational app: A software application designed for educational purposes and often accessible on various digital devices, such as mobile phones, tablets, and computers. These apps provide interactive and engaging learning experiences.

Language learning: The process of acquiring the skills and knowledge required to communicate effectively in a particular language.

1.8 Chapter summary

Chapter 1 sets the stage for the research by introducing the topic, highlighting its importance, and outlining the research objectives and methodology. The subsequent chapters delve into the literature review, research methodology, data analysis, and interpretation of results, all of which collectively contribute to a comprehensive understanding of the impact of the Cake App on vocabulary learning for 7th graders at Thuan Quy Secondary School.

CHAPTER 2. LITERATURE REVIEW

The second chapter of this research study delves into the existing body of literature surrounding the impact of technology-based applications on vocabulary learning among secondary school students. Focusing specifically on the Cake App and its influence on 7th-grade students' vocabulary development at Thuan Quy Secondary School, this chapter aims to contextualize the study within the broader educational landscape and provide a comprehensive understanding of the subject.

2.1 General overview of the cake app

Table 1.1 Features of the Cake app

Features	Description
Learn	Customize your learning with quizzes, multiple-choice questions, and typing exercises.
Videos	Learn useful everyday native expressions with new videos updated daily
Spell	Users can record their pronunciation in the "Spell" exercise and offer corrections for better pronunciation.
Write	Users need to write the correct answer themselves. This enhances writing skills and deepens their understanding of the content.
Live	It can provide social media integration or an opportunity to interact with the learning community within the app.
Test	The app can offer tests or exercises after each lesson to ensure the learner's understanding and progress.

The Cake application, a fresh Android app from South Korea, is designed to improve your English vocabulary. It boosts your confidence and equips you with the ability to speak effectively on stage, in public, and in everyday conversations. This

app also makes learning fun by allowing you to record and review your vocabulary. It's a great tool for learning English, using videos to demonstrate useful words for daily communication.

The Cake app offers various features (Table 2.1). The "Channel" feature provides a wealth of English conversation references, discussion topics, and expressions from YouTube. "Record Speaking" lets you practice essential words after watching videos, providing immediate feedback using AI speech recognition. The "Speak" features simulate conversations with native speakers, allowing you to engage in dialogue and even switch roles. This feature includes listening to native speaker conversations and practice sessions.

The app encourages you to set daily learning goals and earn stars as rewards for completing missions, such as meeting your learning targets. You can also take quizzes, which involve filling in missing words from sentences and composing sentences based on what you've learned.

Additionally, the Cake English app enhances your learning experience through vocabulary study, vocabulary-picture matching games, picture story reading, and blank-filling tests. These activities can be used at different stages of your English learning journey. Vocabulary study is suitable for preparation before speaking, while vocabulary-picture matching games can be used in the same stage. Picture story reading is ideal for both during and after speaking, and blank-filling tests are best for the post-reading stage. The Cake application provides a comprehensive and engaging platform for English learners, ensuring a dynamic and effective learning experience.

2.2 Overview of vocabulary acquisition in language learning

Vocabulary acquisition is undeniably a pivotal aspect of language learning, exerting substantial influence on students' language proficiency and effective communication skills. The multifaceted journey of acquiring new words encompasses various stages, encompassing initial exposure, comprehensive

understanding, durable retention, and practical application. This section delves deeply into the intricacies inherent in vocabulary acquisition, underscoring its indispensable the significance in nurturing comprehensive language development.

According to researchers Bonifaz (2020), vocabulary learning is not merely a passive accumulation of words but a dynamic process involving cognitive engagement and linguistic integration. This cognitive process aligns with Piaget's theory of cognitive development, suggesting that students internalize words through various contextual cues and construct mental structures that facilitate effective language utilization (Piaget et al., 1973). Moreover, Bloom's taxonomy of educational objectives underscores the cognitive progression from rote memorization to higher-order cognitive skills like analysis and synthesis (Bloom, 1956).

The profound role of vocabulary in language learning is further emphasized by Chomsky's theory of universal grammar (Chomsky, 1956), which posits that a robust vocabulary foundation is essential for syntactic and semantic mastery. Researchers acknowledge that vocabulary acts as a catalyst for comprehension, allowing learners to decipher the intricacies of written and spoken language (Basheer Nomass, 2013).

In conclusion, learning of vocabulary occupies a central position in language learning, fostering linguistic competence and effective communication. This foundational understanding illuminates the subsequent chapters' exploration of the Cake app's impact on vocabulary learning among 7th graders at Thuan Quy Secondary School. By delving into the complexities of vocabulary learning, this research aims to enrich the role of educators in guiding students toward comprehensive language proficiency.

2.3 The role of technology in language education

The educational landscape has witnessed a profound transformation in the contemporary digital era due to technology infusion. This transformation is

particularly evident in language education, where educators are entrusted with content delivery and the strategic incorporation of technological tools to augment student engagement and optimize learning outcomes. This section delves into the dynamic evolution of educators' responsibilities as they integrate technology into language education, explicitly emphasizing vocabulary learning.

As highlighted by Momeni (2022), the role of professors in language education has transcended traditional pedagogical approaches. Modern educators now facilitate interactive and immersive learning experiences, harnessing technology to create dynamic environments conducive to language learning. This shift aligns with the principles of constructivism, where learners actively engage with content and construct knowledge through meaningful interactions (L. S. Vygotsky, 2020).

Gardner's theory of multiple intelligences underscores educators' pivotal role in leveraging technology for vocabulary learning (Gardner, 2011). This theory acknowledges diverse learning preferences, suggesting that technological tools, such as educational apps, can cater to various intelligences, fostering holistic language development. Additionally, Siemens connectivism learning theory (Siemens, 2005) emphasizes the significance of networked learning, wherein students engage in collaborative digital spaces, aligning with the evolving role of educators as facilitators of online communities of practice (Srimadhaven et al., 2020).

In conclusion, the role of professors in language education has expanded in the digital age to encompass technological integration that enhances vocabulary learning. The transformation is grounded in pedagogical theories, such as constructivism and multiple intelligences, which affirm the efficacy of technology in catering to diverse learning styles. As the following chapters delve into the impact of the Cake app on vocabulary learning, the evolving role of educators as technologically adept facilitators remains at the forefront.

2.4 Mobile applications for vocabulary learning

The proliferation of mobile applications has ushered in a new era in education, specifically in the realm of vocabulary learning. In an age where technology seamlessly integrates into our daily lives, mobile apps have emerged as powerful tools that engage learners in dynamic and interactive ways. This section explores the significant role that mobile applications play in enhancing vocabulary learning and delves into recent studies that underscore their efficacy in language education.

Recent scholarship has underscored the transformative impact of mobile applications on vocabulary learning. The work of Al-Sofi (2020) stands out, as their comparative study analyzed the effectiveness of various mobile apps in enriching vocabulary learning. Similarly, Pareja-Lora, A., Calle-Martínez, C., and Rodríguez-Arancón (2016) investigated the influence of gamified vocabulary apps on language learning among elementary students, revealing insights into the engaging nature of such apps. Kohnke et al. (2021) contributed to the discourse by exploring the effects of app-enhanced vocabulary learning on English language proficiency. Additionally, Xodabande et al. (2022) conducted a longitudinal study on mobile app usage and its long-term impact on vocabulary development.

These studies collectively highlight the potential of mobile applications to revolutionize vocabulary learning. The interactive and engaging nature of these apps, as demonstrated by Marie (2021), can make vocabulary learning more enjoyable and effective. Furthermore, the findings of Pareja-Lora, A., Calle-Martínez, C., and Rodríguez-Arancón (2016) emphasize the role of gamification in motivating learners to engage in vocabulary-building activities. Kohnke et al. (2021)' s work demonstrates that app-enhanced learning can lead to improved language proficiency, while the longitudinal study by Xodabande et al. (2022) provides insights into the lasting effects of mobile app usage on vocabulary development.

In conclusion, the surge in mobile applications for vocabulary learning presents an exciting avenue for educators and learners alike. The research conducted

by these scholars highlights the potential benefits of integrating mobile apps into language education, paving the way for a more engaging and effective vocabulary learning process.

2.5 Existing studies on the impact of educational apps on vocabulary learning

In recent times, the emergence of educational apps has significantly altered the landscape of language education. This transformation has ignited a surge of interest in unraveling the effects of these digital tools on the learning of vocabulary. Consequently, a substantial body of research has been devoted to exploring the intricate relationship between educational apps and learners' vocabulary development. Within this evolving context, both scholars and educators have come to recognize the substantial potential of educational apps in augmenting language learning experiences. This recognition has driven a deeper exploration into the efficacy and benefits associated with their integration.

The academic community has produced many studies that delve into the nuanced dynamics between educational apps and vocabulary learning, thereby enriching our understanding of their effects. A prominent example is the work of Kohnke et al. (2021), whose investigation delves into the effectiveness of mobile applications in fostering vocabulary learning among middle school students. Similarly, Xodabande et al. (2022) conducted a comparative study to scrutinize the contribution of various digital tools to enhancing vocabulary learning. Regarding younger learners, Pareja-Lora, A., Calle-Martínez, C., and Rodríguez-Arancón (2016) examined the impact of gamified vocabulary apps on language learning, presenting valuable insights. Shifting the focus to language proficiency, Kohnke et al. (2021) explored the effects of vocabulary learning facilitated by apps on English language mastery. Additionally, Xodabande et al. (2022) conducted a longitudinal study to unveil the enduring implications of mobile app usage for vocabulary development.

These studies offer a comprehensive view of how educational apps impact vocabulary learning. They underscore the transformative role of technology in redefining language learning experiences, emphasizing the pressing need for further exploration in this evolving domain.

2.6 Theoretical framework

The study's theoretical framework chapter aims to establish a solid foundation by integrating cognitive theories, sociocultural perspectives, and technology-enhanced learning theories, focusing on the impact of the Cake app on vocabulary learning among 7th graders at Thuan Quy Secondary School. Cognitive theories help understand the mental processes the app stimulates, such as memory and problem-solving. Sociocultural theories examine how the app's collaborative features support learning within social contexts. Technology-enhanced learning theories highlight the design and use of digital tools like the Cake app to support personalized and effective learning experiences.

The application of these theories at Thuan Quy Secondary School demonstrates the practical implications of integrating educational technology with theory-based principles. This approach showcases how the Cake app's features align with educational theories to enhance vocabulary learning, offering a roadmap for blending theory with practice. The chapter, illustrated by Figure 2.1, visualizes the convergence of theoretical insights and practical application, emphasizing the importance of a theoretically informed design in educational technology interventions.

Understanding the theoretical underpinnings of vocabulary learning is crucial for comprehending the mechanisms that govern the process. This section delves into the theoretical frameworks that inform our understanding of how learners acquire and retain new words, providing a foundation for the subsequent exploration of the impact of the Cake app on vocabulary learning.

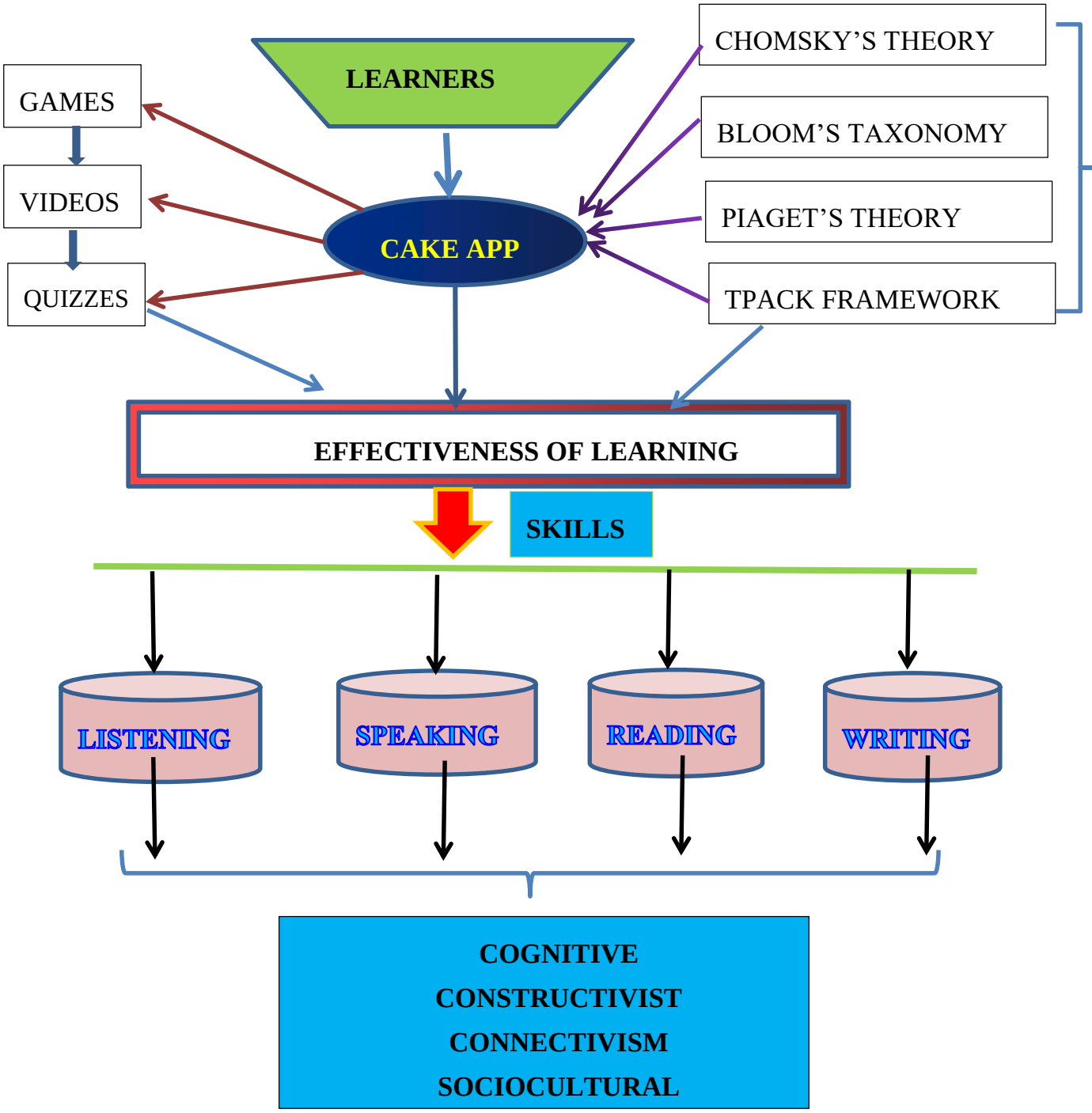

Figure 2.1 Theoretical framework

2.6.1 Theoretical foundations for vocabulary learning

Cognitive theories of learning and language learning offer insights into the mental processes involved in vocabulary learning. Piaget's theory of cognitive development Piaget et al. (1973) posits that learners construct mental structures as they internalize words through contextual cues, facilitating effective language use. This notion aligns with the dynamic process described by Chomsky's theory of universal grammar (Chomsky, 1956), emphasizing the essential role of vocabulary in syntactic and semantic mastery.

Bloom's taxonomy of educational objectives (Bloom, 1956) further elucidates the cognitive progression from rote memorization to higher-order cognitive skills like analysis and synthesis. This taxonomy underscores the multifaceted nature of vocabulary learning, where learners not only absorb words but also engage in complex cognitive operations to use them effectively.

Technology-enhanced learning theories provide a lens through which to analyze the integration of educational apps for vocabulary learning. Constructivist theories, such as Vygotsky's sociocultural theory (Vygotsky, 1978), highlight the importance of social interaction and context in language learning. In the context of app usage, this implies that collaborative features and contextualized learning within the Cake app may enhance vocabulary learning.

Vocabulary learning occupies a crucial space within the realm of language learning, influencing learners' ability to comprehend and communicate effectively. To understand the underpinnings of this process, a strong theoretical foundation is essential. Researchers such as Schmitt (2010) have emphasized the significance of vocabulary as a building block for language proficiency, suggesting that theories addressing cognitive and sociocultural dimensions offer valuable insights into vocabulary learning.

Collectively, these theoretical foundations underscore the intricate nature of vocabulary learning and its significance in language development. By applying these

theories to the exploration of the Cake app's impact, we can gain insights into how technological tools interact with cognitive and constructivist principles to shape vocabulary learning experiences.

2.6.2 Cognitive theories of learning and language learning

Cognitive theories of learning and language learning delve into the intricate mental processes that govern how learners acquire and internalize vocabulary. This section explores the theoretical foundations that provide insights into the cognitive mechanisms underlying vocabulary learning, shaping our understanding of how learners engage with new words.

Piaget's theory of cognitive development (Piaget, 1972) posits that learners construct mental structures as they assimilate new words through exposure and context. This cognitive engagement allows learners to effectively internalize and utilize words in communication. Chomsky's theory of universal grammar (Chomsky, 1956) further reinforces the significance of vocabulary in language learning, highlighting its role in facilitating syntactic and semantic mastery.

Bloom's taxonomy of educational objectives (Bloom, 1956) complements cognitive theories by illustrating the cognitive progression from basic memorization to higher-order cognitive skills such as analysis and synthesis. Vocabulary learning involves not only rote learning but also cognitive processes that enable learners to understand, interpret, and employ words in diverse contexts.

To understand how technology is integrated into vocabulary learning, it's essential to look at how cognitive theories intersect with recent research T. Q. Tran and Nguyen (2023) conducted a study on the cognitive engagement encouraged by educational apps and their effects on vocabulary acquisition. Similarly, Robin and Aziz (2022) examined how digital tools enhance cognitive processes in vocabulary learning. Bonifaz (2020) explored how cognitive strategies are employed by elementary students while using gamified vocabulary apps. Ghobadi et al. (2021)

discussed the cognitive implications of app-enhanced vocabulary learning. Collectively, these studies underline the cognitive dimensions of vocabulary learning in the context of educational apps.

Understanding cognitive theories enhances our grasp of vocabulary learning's mental intricacies and provides a lens through which to explore how educational apps like the Cake app engage learners' cognitive faculties to promote effective word assimilation.

2.6.3 Technology-enhanced learning theories

In the digital age, technology has revolutionized learning methodologies, including vocabulary learning. This section delves into technology-enhanced learning theories that shed light on how educational apps, such as the Cake app, are integrated into language education to enhance vocabulary learning experiences.

Constructivist theories, particularly Vygotsky's sociocultural theory (Vygotsky, 1978), emphasize the social and collaborative nature of learning. Within the context of educational apps, this perspective underscores the potential of collaborative features in the Cake app to facilitate vocabulary learning through peer interactions and shared learning experiences.

Connectivism, a contemporary theory proposed by Siemens (2005), posits that learning is facilitated by networks and connections in the digital era. In the context of the Cake app, its online features and potential for interaction with other learners align with connectivist principles, fostering a networked learning environment for vocabulary learning.

Additionally, the theory of technological pedagogical content knowledge (TPACK) proposed by Mishra and Koehler (2006) emphasizes the intersection of technology, pedagogy, and content knowledge. Applying TPACK to educational apps involves not only understanding the technology but also integrating it effectively into pedagogical strategies to enhance vocabulary instruction.

Recent research aligns with these theories. T. Q. Tran and Nguyen (2023) investigated how collaborative features in educational apps, including the Cake app, align with constructivist principles and enhance Vietnamese students' vocabulary learning. Similarly, Thi Quynh and Thị Quỳnh (2022) explored how gamified elements in apps correspond with connective theory in vocabulary learning. These studies underscore the relevance of technology-enhanced learning theories in understanding the implications of using apps for vocabulary learning.

By applying these theories, we can uncover the ways in which educational apps align with contemporary learning paradigms, contributing to a deeper understanding of the mechanisms driving effective vocabulary learning in the digital age.

2.6.4 Application of these theories to the context of using the cake app for vocabulary learning

Applying theoretical frameworks to the practical context of using the Cake app for vocabulary learning provides valuable insights into the effectiveness and potential of this digital tool. This section explores how the cognitive, sociocultural, and technology-enhanced learning theories discussed earlier intersect with the utilization of the Cake app, shaping its impact on vocabulary learning.

Cognitive theories, such as Piaget's theory of cognitive development Piaget et al. (1973), align with the Cake app's approach to vocabulary learning. By presenting words in context and engaging learners in various tasks, the app caters to learners' cognitive processes of understanding, retention, and utilization. Similarly, the app's incorporation of interactive exercises capitalizes on Bloom's taxonomy of educational objectives (Bloom, 1956), promoting not only rote memorization but also higher-order cognitive skills.

Incorporating sociocultural theory, the Cake app integrates collaborative features that allow learners to engage with peers, mirroring Vygotsky's perspective

(Vygotsky, 1978) on the importance of social interactions in learning. Through discussions, sharing insights, and collaborative activities, the app fosters a social environment conducive to vocabulary development.

The principles of connectivism, as articulated by (Siemens, 2005), find resonance in the Cake app's online nature, facilitating connections between learners, content, and technology. The app's community features, where learners share resources and experiences, embody the essence of connective learning, wherein learners create and navigate their own learning networks.

The application of the technological pedagogical content knowledge (TPACK) framework (Mishra & Koehler, 2006) to the Cake app involves educators' proficiency in leveraging its features to enhance vocabulary instruction. Effective integration of technology, pedagogy, and content knowledge enhances the app's impact on vocabulary learning.

Recent studies complement the application of these theories to the Cake app. T. Q. Tran and Nguyen (2023) examined how the app's collaborative features align with constructivist principles, fostering effective vocabulary learning. Thi Quynh and Thị Quỳnh (2022) explored how gamified elements in the app correspond with connectivism theory. These studies bridge theoretical foundations with practical application, shedding light on how theories shape the effectiveness of the Cake app for vocabulary learning.

By examining the Cake app through these theoretical lenses, we gain a holistic understanding of how cognitive, sociocultural, and technology-enhanced learning theories influence its design, implementation, and impact on vocabulary learning.

In summary, the theoretical framework of vocabulary learning draws from cognitive theories and technology-enhanced learning paradigms, which collectively underscore the potential of the Cake app to enhance vocabulary learning. As the subsequent chapters delve into the empirical investigation of the app's impact, this

framework serves as a guiding compass, illuminating the interconnectedness of theory and practice.

2.7 Previous study

In the context of Vietnam's language education landscape, it is essential to examine how the integration of educational apps impacts vocabulary learning. Research that specifically investigates this phenomenon within the Vietnamese setting contributes valuable insights into the effectiveness and adaptability of these digital tools.

Several studies have shed light on the role of educational apps in enhancing vocabulary learning among Vietnamese learners. Nguyen (2022) conducted a study on the influence of mobile apps on the vocabulary development of Vietnamese students, providing pertinent insights into their learning preferences and outcomes. Similarly, Thi Quynh and Thị Quỳnh (2022) emphasized the impact of gamification in engaging Vietnamese high school students and fostering vocabulary growth.

Furthermore, Bui et al. (2023) offered insights into how mobile apps align with the learning styles and preferences of Vietnamese university students, contributing to effective vocabulary earning. Additionally, Nguyen (2022) traced the progress of Vietnamese middle school students' vocabulary development through consistent apps.

Collectively, these Vietnamese studies enrich our understanding of how educational apps are adapted and received within the local context. The insights from Nguyen (2022), Thi Quynh and Thị Quỳnh (2022), Bui et al. (2023) provide a comprehensive perspective on the effects of educational apps on vocabulary learning among Vietnamese learners. These findings also contribute to tailoring language education practices to align with the specific needs and preferences of local students.

2.8 Conceptual framework

The vocabulary of a language is an essential component. It suggests that learning a foreign language also requires studying vocabulary. By expanding their

vocabulary, students should be able to communicate their thoughts and feelings as well as comprehend those of others. Since English is a foreign language that is different from their original tongues, acquiring vocabulary can be challenging. Teachers must thus use relevant and engaging media.

One kind of material that may be utilised in English Foreign Language classrooms is the Cake app. The Cake app offers a variety of activities in addition to language instruction and practice. Moreover, the Cake app may help students learn English in an entertaining way.

In order to clarify the connections under investigation, the conceptual framework is employed as a tool. It is anticipated that specific variations and attributes of the variables under investigation will become visible. The goal of the conceptual framework in this study is to find out how well students' vocabulary works with the Cake application materials. The main way to monitor this investigation is by evaluating how well pupils use terminology. Next, using the Cake app, students are asked to select vocabulary words from the course that they may not completely understand or are unfamiliar with. After that, each student takes a vocabulary exam in which they have to fill in the blanks with the given questions and answers.

After doing this, gather and examine pertinent information on the vocabulary you will need to pass the vocabulary test. The results will be given as experimental data, and the effectiveness of the Cake application in improving pupils' vocabulary knowledge will be evaluated using quantitative findings. As a result, the following is an outline of the researcher's conceptual framework (Figure 2.2).

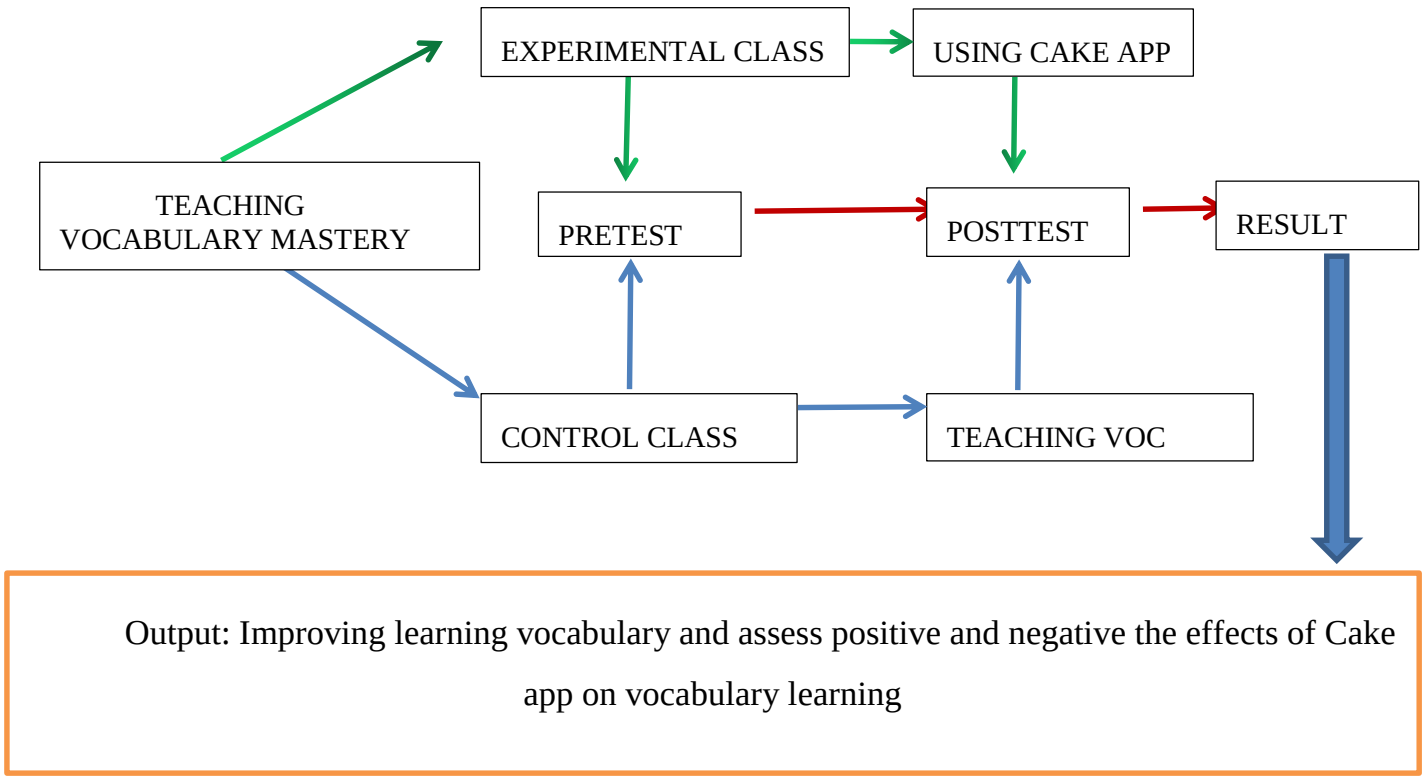

Figure 2. 2 Conceptual framework

Numerous instructional techniques can be used to help students become more proficient and successful English language learners. In particular, they are using the Cake app to help students learn more vocabulary.

In a design, the conceptual framework can be explained as follows:

The conceptual framework for this study revolves around comparing the effectiveness of teaching vocabulary mastery using the Cake app in an experimental class versus a control class. The experimental class undergoes pretest assessments before the intervention, engages in vocabulary learning using the Cake app, and then undergoes post-test assessments. The process entails comprehensive data gathering and analysis, employing a combination of quantitative and qualitative methods. Within this process, the instructional design is centered around the utilization of the Cake app for vocabulary learning. The control class, not exposed to the app, follows

a similar pretest and post-test structure. The results from both classes are then analyzed to evaluate the impact of the Cake app on vocabulary mastery, providing insights into the efficacy of the teaching methodology. Finally, the output is directed towards a thorough understanding of the Cake app's impact on vocabulary learning, highlighting both positive and negative aspects. This framework provides a structured approach to assess the effectiveness of the instructional design and technology integration in enhancing students' vocabulary acquisition.

2.9 Chapter summary

This chapter reviewed vocabulary learning and the role of technology, especially mobile apps, in enhancing it. It summarized studies from around the world and Vietnam, guiding educators on using tech for vocabulary teaching. Next, it focuses on the Cake app's effect on 7th graders at Thuan Quy Secondary School, offering insights into language education and technology use.

CHAPTER 3. METHODOLOGY

The methodology for the study and the strategy for maintaining integrity are thoroughly covered in this chapter in order to address the three research issues. The researcher thought through and addressed every aspect of research technique, from the restatement of the research questions and the study setting to the participants, the rationale for selecting action research, research methodologies, the research process, data collecting tools, and data analysis.

3.1 Research design

Pretests, treatments, and posttests were conducted with an intact class of seventy secondary school students in Thuan Quy, making the current study quasi-experimental in character. To address the research objectives outlined in the previous chapter, a mixed research approach was used in this study, including the gathering of quantitative and qualitative data. This approach was chosen for two reasons. To begin with, (Patton, 1990) said on page 39 that "different methods are appropriate for different situations." This means that a study's research design should be chosen with consideration for its goals, research settings, and accessible sources in mind. This research evaluates the Cake app's efficacy in teaching receptive vocabulary and looks as how users feel about the resources. Furthermore, the study investigates the differences among multimodal linguistics environments created by either Cake app. To achieve these purposes, it is appropriate to use a mixed research approach involving quantitative and qualitative analysis.

Flick (2012) is a guide on creating effective qualitative research designs, covering stages from formulating questions to data analysis. While prior investigations on the Cake app's impact on English language learners (Putri, S. A. M. D. U., Ratminingsih, N. M., & Santosa, 2023) focused on quantitative aspects, specifically vocabulary gains post-tool usage, they failed to pinpoint the underlying reasons for variations in the app's efficacy. This research endeavors to fill this gap by incorporating a quantitative and a qualitative research method.

Furthermore, the use of mixed research methods serves the purpose of triangulation. Methodological triangulation involves employing multiple methods to scrutinize a single phenomenon (Bekhet & Zauszniewski, 2012). The amalgamation of quantitative and qualitative research often leads to triangulation in research. This project's data collection involved tests, a questionnaire, video recordings, and screen captures for both qualitative and quantitative analyses. The benefits of such triangulation lie in acquiring diverse data types, ultimately encouraging fresh and creative understanding of a phenomenon, revealing new findings, questioning or merging theories, and offering a clearer understanding of the issue at hand (Thurmond, 2001). This study compares the contributions of different case study designs to theory, showcasing their varied scientific goals and approaches to data collection and analysis. It highlights how these designs impact understanding, theory building, development, and testing. (Ridder, 2017)

To sum up, this study employs mixed methods to explore both quantitative and qualitative distinctions in the effectiveness of the Cake app, while also unraveling the underlying reasons for these differences.

3.2 Participants: 7th graders at Thuan Quy Secondary School

The study's participants comprise 7th-grade students currently enrolled at Thuan Quy Secondary School. The selection of this age group is based on their cognitive development and language learning capabilities. Their willingness to engage with technology and their developmental stage align well with the study's objectives.

This study involves 70 seventh-grade students in 2 classes at Thuan Quy Secondary School in Ham Thuan Nam district, Binh Thuan Province, Vietnam, who are asked to fill in the questionnaires. In addition, five students take part in the interview. In choosing the participants, the writer used a purposive sampling technique.

They have been learning English for more than seven years and currently attend three compulsory 45-minute English periods weekly. Also, they participated in the study voluntarily. Signed consent forms were obtained from them before the commencement of the research. The researcher gets permission for the school leaders for the experimental treatment at Thuan Quy Secondary school.

3.3 Data collection methods: pretest, post-test assessments, app usage analytics, and interview

3.3.1 Vocabulary assessment methods

In this section, this research discusses the methods employed to assess the impact of the Cake app on the vocabulary learning of 7th graders at Thuan Quy Secondary School. The assessment methods are designed to evaluate both the quantitative and qualitative aspects of vocabulary acquisition facilitated by the app.

Quantitative assessment:

Pretest and Posttest design: This traditional approach involves administering a vocabulary test before the implementation of the Cake app (pretest) and another after a set period of its usage (posttest). The tests are standardized to measure the increase in the number of words students can recognize, understand, and use.

Frequency analysis: Utilizing the app's tracking feature, we analyze the frequency of word usage by the students. This data provides insights into which words are most and least used, indicating the app's effectiveness in reinforcing certain vocabulary.

Error analysis: By examining the errors made in the posttest, we can gain insights into the types of words or language structures that pose challenges, thereby guiding future pedagogical strategies.

Qualitative assessment:

Student interviews: Conducting interviews with students offers in-depth insights into their experiences with the Cake app. Questions focus on how the app has influenced their vocabulary learning, including ease of use, engagement levels, and perceived effectiveness.

Teacher observations: Teachers provide valuable insights based on their observations of students' interactions with the app and its impact on their vocabulary development. This includes changes in students' participation in class, confidence in using new words, and overall language proficiency.

Focus groups: Small group discussions with students help in understanding the collective experience of using the app. These discussions can reveal common challenges, favorite features, and suggestions for improvement.

Learning journals: Students maintain journals documenting their learning journey with the Cake app. These journals are reflective in nature, offering personal insights into their vocabulary learning process, challenges faced, and progress made.

Triangulation of data:

To ensure the validity and reliability of the findings, we triangulate the data from these various methods. This comprehensive approach allows for a holistic understanding of the impact of the Cake app on vocabulary learning among 7th graders at Thuan Quy Secondary School.

By employing these diverse assessment methods, the study aims to provide a well-rounded analysis of how the Cake app influences vocabulary acquisition, thereby contributing valuable insights to the field of language education technology.

3.3.2 Questionnaire design

The primary aim of this questionnaire is to delve into the students' interactions with the Cake app, specifically focusing on their user experience, engagement levels, learning effectiveness, and overall satisfaction.

Initially, the questionnaire collects fundamental demographic details, including age and grade level, thus offering essential context for the responses that follow. Following this, it explores the app's usability and interface. This section aims to assess how user-friendly and visually appealing the app is, which is crucial for maintaining student interest and ease of use.

Furthermore, the questionnaire investigates the students' engagement with the app. Here, it focuses on how frequently and for how long the students use the app, alongside identifying the features that most captivate their attention. This section is particularly important for understanding the motivational aspects of the app.

Moreover, the effectiveness of the app in enhancing vocabulary learning is a significant area of inquiry. The questionnaire asks students to reflect on their perceived improvement in vocabulary, considering aspects like understanding, retention, and application of new words. This part is vital for evaluating the educational impact of the app.

Additionally, the questionnaire includes a section where students rate their overall satisfaction with the Cake app and indicate whether they would recommend it to others. This feedback is essential for gauging the app’s acceptance and its potential for broader use.

Lastly, open-ended responses are solicited to allow students to freely express their thoughts about their experiences, challenges faced, and any suggestions for improvements. This qualitative data is instrumental for gaining deeper insights and understanding the nuanced perspectives of the students.

The responses to this carefully designed questionnaire are analyzed both quantitatively and qualitatively. Quantitative data is statistically assessed to uncover patterns and trends, while qualitative responses undergo thematic analysis for a more profound understanding.

In conclusion, the questionnaire serves as a pivotal component of the study, providing essential insights into the students' experiences with the Cake app. The

collected data not only contribute to evaluating the app's effectiveness but also inform its further development, ensuring it better serves the educational needs of future learners.

3.3.3 Interview

These interviews, targeting both 7th-grade students and teachers at Thuan Quy Secondary School, are pivotal in understanding the personal experiences and nuanced perspectives related to the usage of the Cake app.

Semi-structured in format, the interviews aim to delve deeper into various aspects of the app, including its usability, design, and overall learning experience. Furthermore, they explore the motivational elements within the app that engage students, as well as any challenges or limitations encountered during its use. Additionally, these discussions provide a comparative perspective against traditional vocabulary learning methods.

These interviews, carried out in a comfortable environment to promote open and sincere communication, are both recorded and transcribed to ensure the data's accuracy and integrity. The approach is empathetic and non-judgmental, encouraging participants to share their genuine thoughts and experiences.

The analysis of these interviews employs thematic analysis, a method crucial for identifying key themes and patterns in the responses. This qualitative data, when integrated with the quantitative findings from the questionnaires, offers a comprehensive understanding of the Cake app's impact. Such a multifaceted approach ensures that the study provides a well-rounded evaluation of the app's effectiveness in enhancing vocabulary learning among 7th graders at Thuan Quy Secondary School.

3.4 Data analysis methods: quantitative analysis of vocabulary test scores, qualitative analysis of app usage patterns, and interview

The investigator gathered data before and after the tests, as well as follow-up data. Each question in these tests was assigned a single point. The outcomes of the tests were examined using t-tests. The independent t-test was utilized to determine the significant improvements in participants' performance after engaging with the Cake app during each intervention. Additionally, this test was used to assess the vocabulary improvements in groups A and B. Furthermore, the study analyzed data from actual learning activities with the Cake app, obtained through video recordings and screenshots, to evaluate the input, output opportunities, interaction, and feedback offered by the application.

Moreover, the research included findings on the linguistic environment fostered by the Cake app to explain the participants' improvements in vocabulary. Regarding the questionnaire, the study employed descriptive statistics and the KWIC Concordance to analyze the participants' feedback, aiming to explore their views on the effectiveness of this tool.

3.4.1 Quantitative analysis of vocabulary test scores

This analysis involves administering identical vocabulary tests before and after the implementation of the Cake app, ensuring comparability of the pretest and post-test results.

Data collected from these tests, encompassing correct answers and errors, undergoes statistical analysis. Techniques such as calculating mean, median, and standard deviation are employed, alongside more advanced methods like paired sample t-tests, to compare the test scores effectively. Consequently, this approach not only measures the growth in students' vocabulary but also identifies patterns and trends across different demographics and proficiency levels.

Importantly, this analysis aims to substantiate the efficacy of the Cake app as a vocabulary enhancement tool. Increases in test scores from the pretest to the post-test would indicate a positive impact, whereas variations in scores among different student groups could reveal insights into the app's diverse applicability. The interpretation of these results, therefore, extends beyond statistical significance to encompass practical educational implications.

In conclusion, the quantitative analysis of test scores forms a crucial facet of this research, providing concrete, empirical evidence of the Cake app's impact on 7th graders' vocabulary learning. This analysis, rooted in solid statistical methods, makes a significant contribution to comprehending the app's role in language education. It informs both pedagogical practices and future technological developments in language learning.

3.4.2 Qualitative analysis of questionnaire responses

The methodology for this qualitative analysis primarily involves a thematic analysis of the responses collected from the questionnaires. These questionnaires include a mix of closed and open-ended questions, with the latter providing rich, detailed insights. Through a meticulous process of coding and categorizing the data, significant themes are identified, revealing patterns and nuances in the students' experiences.

Key areas of focus in this analysis include assessing students' perceptions of the app's usability and educational value, identifying challenges and limitations encountered while using the app, and gathering suggestions for improvement. Additionally, the analysis seeks to understand how students compare the Cake app with traditional vocabulary learning methods.

This qualitative analysis is not only about collating subjective experiences but also about interpreting these experiences within the broader educational context. The themes that emerge from the analysis offer a comprehensive view of the app's impact,

highlighting both its strengths and areas for improvement. Importantly, these insights provide valuable feedback for further development of the app, ensuring that it better meets the learning needs of students.

In conclusion, the qualitative analysis of the questionnaire responses is an integral part of the study, providing a deeper, more nuanced understanding of the Cake app's role in vocabulary learning. By exploring the detailed experiences and perceptions of 7th graders at Thuan Quy Secondary School, this analysis contributes significantly to a holistic evaluation of the app, enriching the overall research findings and guiding future enhancements in language education technology.

3.4.3 Interview

The key focus areas of these interviews included assessing the user experience and engagement with the app, its educational impact on students' vocabulary learning, challenges and limitations encountered, and a comparative analysis with traditional methods of vocabulary instruction. Through thematic analysis of the interview transcripts, recurring themes and patterns were identified, offering in-depth insights into the app's usability and effectiveness.

Furthermore, these qualitative findings were triangulated with data from the questionnaires and vocabulary test scores, thereby enriching the overall understanding of the app's impact. This triangulation not only corroborated findings from other data sources but also provided a more nuanced view of the app's role in the educational context. The themes emerging from the interviews highlighted the strengths of the Cake app and pinpointed areas for improvement, offering valuable feedback for its future development.

In conclusion, the interview analysis constitutes a crucial part of the study, adding depth and context to the quantitative findings. It captures the personal experiences and perceptions of both students and teachers at Thuan Quy Secondary

School, significantly contributing to a comprehensive understanding of the Cake app's effectiveness in vocabulary learning within a real-world educational setting.

3.5 Chapter summary

This chapter outlines the methodology for studying the Cake app's effect on 7th graders' vocabulary at Thuan Quy Secondary School, including research design and methods. The next chapter will discuss the results and their educational implications.

CHAPTER 4. FINDINGS AND DISCUSSION

The data from vocabulary tests, questionnaires, student self-evaluation checklists, and student reflections were analyzed and interpreted in this chapter to reveal the answers to the study's two research questions. The findings were analyzed and interpreted in two major areas: (1) The effectiveness of the Cake app in vocabulary enhancement for 7th graders at Thuan Quy Secondary School; (2) the students' opinions and attitudes towards their vocabulary learning experiences on Cake app.

4.1. The enhancement of the student's vocabulary learning through the cake app

4.1.1 Findings from pretest

To verify whether the base population conforms to a normal distribution, the preliminary scores for the Control Group (CG) and Experimental Group (EG) were examined and visually depicted through a Normal Quantile-Quantile (Q-Q) Plot. Figure 4.1 illustrates that the data points for both groups align closely with a straight line, indicating a normal distribution of the scores.

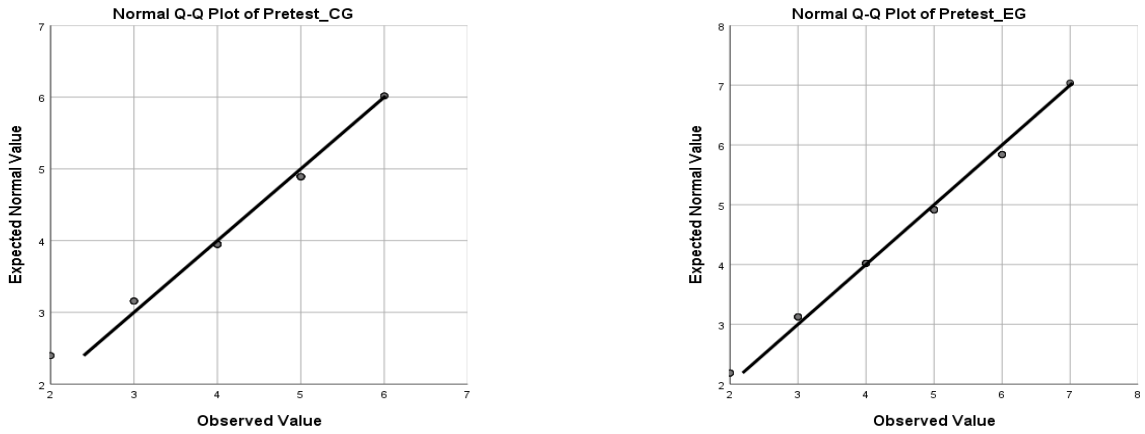

Figure 4.1 Normal Q-Q plots for pretest_EG and pretest_CG results

The histograms with normal distribution curves display pretest scores for two groups: an experimental group (EG) with a mean score of approximately 4.25 and a control group (CG) with a mean score of around 4.29 (Figure 4.2). Both groups have low standard deviations (0.37 for EG and 0.31 for CG), indicating a small spread of scores around the mean, which suggests uniformity in each group's performance. The symmetry of the bell-shaped curves implies that there was no significant skewness in the pretest results. This data suggests that the EG began with a slight advantage over the CG and that both groups were relatively consistent in their pretest performance, setting a clear baseline for any subsequent experimental analysis.

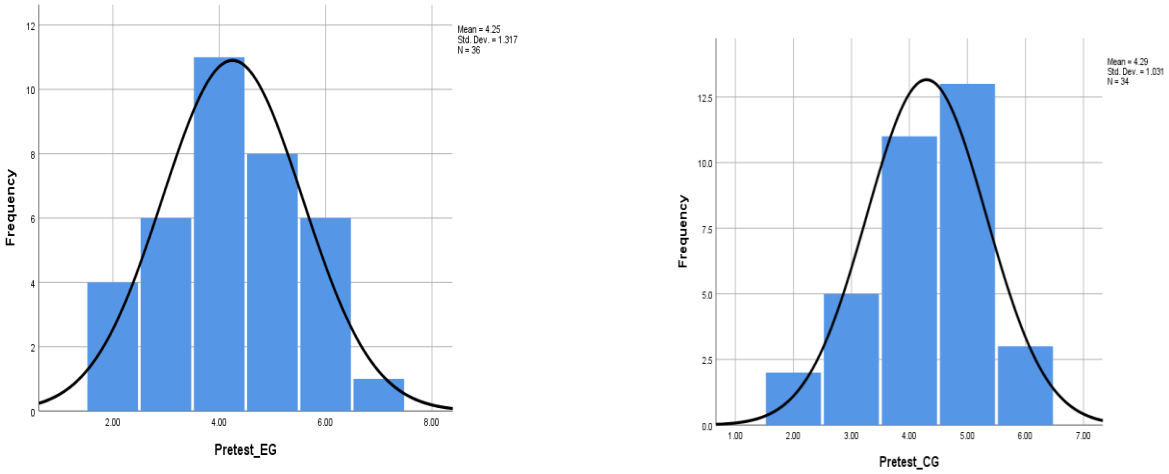

Figure 4.2 Comparison normal Q-Q plots for pretest_EG and pretest_CG

The mean scores of the CG and EG pretests were determined once the reliability of the vocabulary pretest score was established. The mean scores for the CG and EG pretests are 4.2941 and 4.2500, respectively, as indicated in Table 4.1. There is obviously not much of a difference between the two numbers. Compared to EG (M=42500, SD=1.31747, n=36), the mean score of CG (M=4.2941, SD=1.03072, n=34) is somewhat higher. An independent sample T-test was used to determine if the difference was statistically significant. Table 4.2's Independent Samples T-test findings indicate that there is no statistically significant difference between the means

of CG and EG (t=-0.155, df = 68, p = 0.877 >.05). Therefore, prior to the therapy, CG and EG's vocabulary performance was comparable.

Table 4.1 Descriptive statistics of pre_test scores

Group Statistics					
	CLASS	N	Mean	Std. Deviation	Std. Error Mean
Pre_test_results	Experimental class	36	4.2500	1.31747	.21958
	Control class	34	4.2941	1.03072	.17677

Table 4.2 Independent Sample T-Test of pre_test results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pre_test_results	Equal variances assumed	.031	159	.155	68	.877	-.04412	28386	.61055	52232
	Equal variances not assumed			.157	65.768	.876	-.04412	28189	-.60696	51873

4.1.2 Findings from posttest

The statistical evidence delineates a significant disparity in post-test performance between the experimental and control classes. Specifically, the experimental class posted a robust mean score of 7.3611, accompanied by a standard deviation of 1.43731, indicating a moderate spread of scores. In contrast, the control class's mean score stood at a lower 4.5588, with a tighter standard deviation of 0.92740, denoting lesser score dispersion (Table 4.3).

Delving deeper, the result (Table 4.4) elucidates these differences through the lens of an Independent Sample T-Test. Notably, Levene's Test for Equality of Variances computed an F value of 10.898 with a significant p-value of 0.002, thereby refuting the presumption of equal variances between the classes. Nonetheless, the t-test for Equality of Means, irrespective of variance assumptions, robustly highlights the differences in means with a t-value of 9.630 under equal variances (df=68, Sig. (2-tailed)=0.000) and 9.746 without equal variances (df=60.242, Sig. (2-tailed)=0.000). The mean difference is quantified at 2.80229, and the 95% confidence interval staunchly excludes zero, ranging from 2.22161 to 3.38297 and 2.22716 to 3.37741, respectively, further cementing the statistical significance of this divergence.

In essence, these findings underscore a pronounced enhancement in post-test scores within the experimental class compared to the control class, implicating a successful intervention or teaching methodology that was likely implemented with the former group. This significant mean difference not only underscores the efficacy of the intervention but also provides a quantitative foundation for potential further investigation into its educational impact.

Table 4.3 Descriptive statistics of posttest scores

Group Statistics					
	CLASS	N	Mean	Std. Deviation	Std. Error Mean
Post_test_results	Experimental class	36	7.3611	1.43731	.23955
	Control class	34	4.5588	.92740	.15905

Table 4.4 Independent Sample T-Test of posttest results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Post_test_results	Equal variances assumed	0.898	.002	9.630	68	.000	2.80229	.29100	2.22161	3.38297
	Equal variances not assumed			9.746	60.242	.000	2.80229	.28754	2.22716	3.37741

4.1.3 Finding from the comparison of pretest scores and posttest scores

The study compared the pretest and post-test scores of an experimental class, which received an educational intervention, and a control class. Initially, both classes had similar pretest scores (Table 4.5). However, post-intervention, the experimental class showed a significant improvement in scores (mean increased from 4.25 to 7.361), unlike the control class, which had a minor increase (mean from 4.294 to 4.559). This suggests the intervention's effectiveness. Notably, there was higher

variability in the experimental class's post-test scores, indicating varying impacts of the intervention on individual students. In summary, the intervention significantly improved the performance of the experimental class, although its effectiveness varied among individuals.

The study focused on assessing the impact of an educational intervention by comparing an experimental class, which received the intervention, with a control class.

Initially, both classes exhibited similar pretest scores, indicating comparable levels of knowledge or skill before the intervention. The mean pretest scores were 4.25 for the experimental class and 4.294 for the control class. This similarity in starting points is crucial for a fair assessment of the intervention's effectiveness.

Post-intervention, the results are strikingly different between the two classes. The experimental class showed a significant improvement in their scores, with the mean increasing from 4.25 to 7.361. This substantial increase not only highlights the effectiveness of the educational intervention but also suggests that the methods or materials used had a positive impact on the student's learning and comprehension.

In contrast, the control class, which did not receive the intervention, showed only a minor increase in their mean score, from 4.294 to 4.558 (Figure 4.3). This minimal change further reinforces the effectiveness of the intervention applied to the experimental class.

However, it's noteworthy that there was a higher variability in the post-test scores of the experimental class, as indicated by a standard deviation of 1.43731 compared to 0.92740 in the control class. This suggests that while the intervention was generally effective, its impact varied among individual students. Such variability could be due to differences in learning styles, initial knowledge levels, or engagement with the intervention.

In summary, the educational intervention significantly enhanced the performance of the experimental class compared to the control class. However, the

variability in its effectiveness among individuals suggests a need for further analysis to understand and address these differences, potentially leading to even more effective teaching strategies.

Table 4.5 Comparison of pre_test scores and post_test scores

Group Statistics					
	CLASS	N	Mean	Std. Deviation	Std. Error Mean
Pre_test_results	Experimental class	36	4.2500	1.31747	.21958
	Control class	34	4.2941	1.03072	.17677
Post_test_results	Experimental class	36	7.3611	1.43731	.23955
	Control class	34	4.5588	.92740	.15905

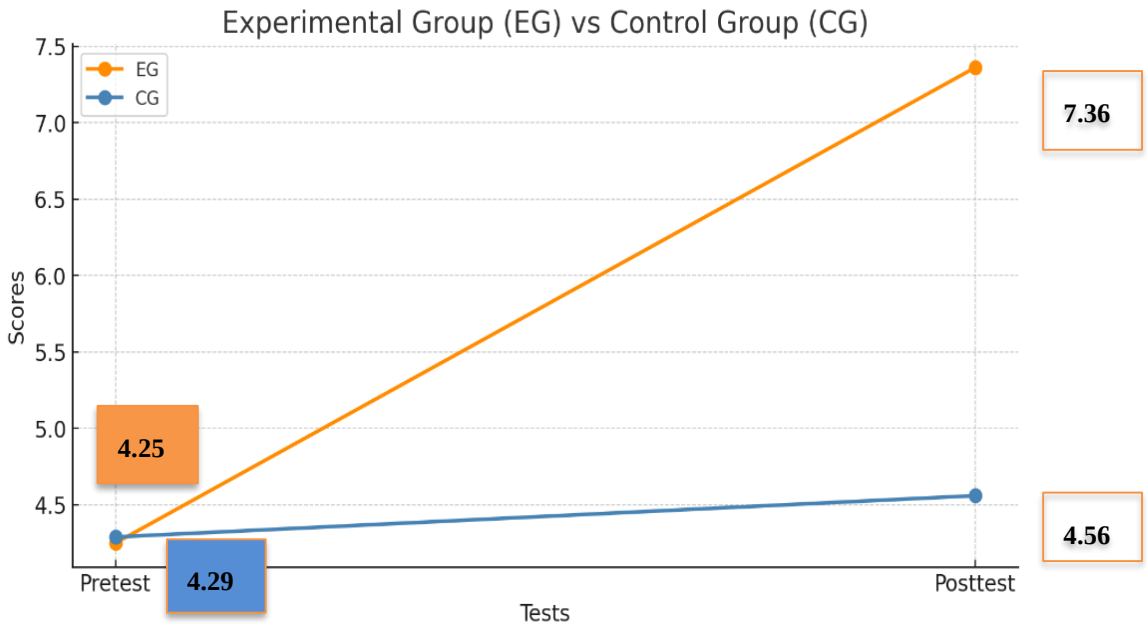

Figure 4.3 Comparison of pre_test scores and post_test scores

4.1.4 Analysis of students' reflections on the effectiveness of the Cake app in improving vocabulary retention

Analyzing the students' reflections on the effectiveness of the Cake app in vocabulary retention reveals several key insights in Figure 4.4. Firstly, a significant majority of students acknowledge the app's effectiveness, with 38.89% strongly agreeing that their vocabulary skills improved and 41.67% confirming better memory retention of new words. This highlights the app's strength in enhancing vocabulary acquisition and retention. The data also shows that the vocabulary exercises in the app are particularly well-received, with a notable 47.22% of students strongly agreeing on their helpfulness, suggesting these exercises are well-aligned with student needs in learning new vocabulary.

However, the analysis also uncovers areas for potential improvement. A minority of students, about 13.89% and 8.33% in the first two categories, respectively, disagree or strongly disagree with the app's effectiveness in improving vocabulary skills and word retention. This discrepancy indicates that the app may not cater to all learning styles or meet the specific needs of every student.

These insights collectively suggest that while the Cake app is generally effective and well-received among most students, there is room for further refinement, particularly in addressing the needs of those who find it less effective. The diversity in student feedback highlights an opportunity for the app's developers to enhance its adaptability and inclusivity. Future studies could focus on understanding the reasons behind the varied responses and explore ways to personalize the learning experience to accommodate different student preferences and learning styles. Implementing such changes could significantly increase the app's impact on vocabulary learning, making it a more powerful tool.

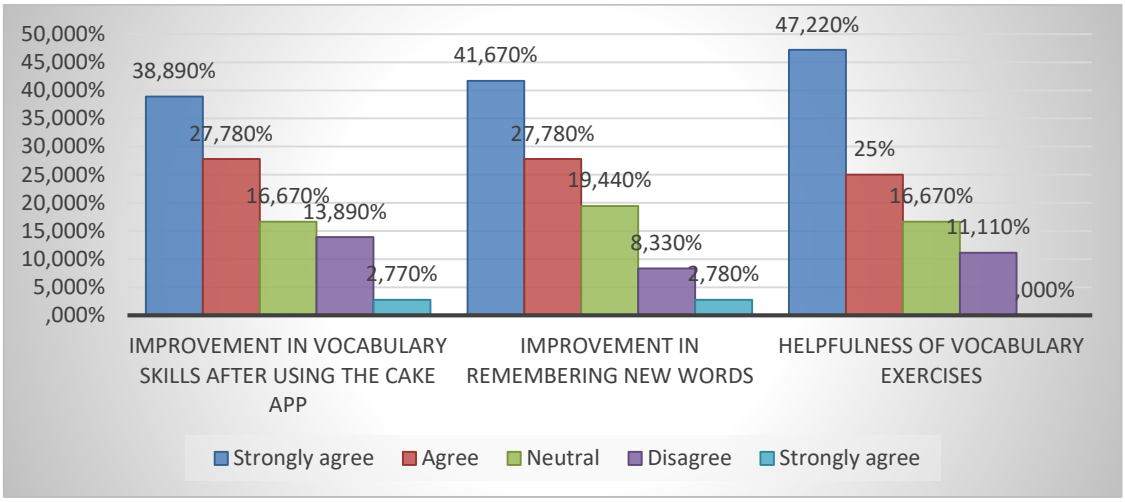

Figure 4.4 Vocabulary enhancement with the Cake app

4.2 Analysis of two questions in the research question

4.2.1 Research question 1: To what extent does the Cake app impact vocabulary learning for 7th graders at Thuan Quy Secondary School?

The researchers crafted a questionnaire to delve into the impact of the Cake app on vocabulary learning among 7th graders at Thuan Quy Secondary School. This Likert-scale tool offered five response options, from "strongly disagree" to "strongly agree," ensuring nuanced feedback. Initially piloted with five students to ensure clarity and relevance, the questionnaire's internal reliability, crucial for confidence in the findings, is detailed in Table 4.6. All 36 students in the experimental group provided their insights through this well-validated instrument. Table 4.6 provides a crucial piece of the puzzle. The table shows the reliability of the questionnaire designed to address Research Question 1, with a Cronbach's Alpha of .946 based on seven items. This high-reliability score indicates that the questionnaire is a highly consistent tool for measuring students' perceptions or learning outcomes related to the use of the Cake app for vocabulary enhancement.

Given the context of 36 7th graders participating in the experimental class, this high reliability score bolsters the credibility of the data collected through the questionnaire. It suggests that the responses from the students are likely to be reliable

indicators of the Cake app's effectiveness in enhancing vocabulary learning. Therefore, the findings derived from analyzing the questionnaire responses can provide meaningful insights into the extent to which the Cake app contributes to vocabulary acquisition among middle school students in a real-world educational setting like Thuan Quy Secondary School. This, in turn, can inform educators and curriculum developers about the potential benefits of integrating similar digital tools into language learning curricula.

Table 4.6 Questionnaire reliability for research question 1

Reliability Statistics

Cronbach's Alpha	N of Items
.946	7

The Cake app's influence on vocabulary acquisition offers compelling evidence of its effectiveness in enhancing language learning among users is provided in Figure 4.5, focusing on the Cake app's influence on vocabulary acquisition, offers compelling evidence of its effectiveness in enhancing language learning among users. Notably, the data unequivocally demonstrates a positive reception towards the app, with an absolute absence of negative feedback ("Strongly Disagree" and "Disagree" responses are non-existent), underscoring a universal acknowledgment of the app's value in the learning ecosystem.

The majority of respondents, with "Agree" responses ranging from 53% to 58% and "Strongly Agree" from 19% to 28%, affirm the multifaceted benefits of the Cake app. These benefits span from improved comprehension of new vocabulary and precise application in sentences to prompt recall during conversational or written contexts. Such findings are indicative of the app's robust pedagogical design, which effectively addresses key facets of language mastery.

A critical insight from the data is the significant impact of the app's engaging learning activities, with 81% of the participants acknowledging enhanced engagement levels. This is pivotal, as student engagement is often correlated with improved learning outcomes. Furthermore, the app's contribution to consistent learning habits is evident, with 83% of users attesting to regular usage and subsequent vocabulary enhancement, highlighting the app's efficacy in promoting sustained learning.

The increase in confidence among learners, in using newly acquired vocabulary in diverse contexts, is another significant finding, with 84% of participants reporting enhanced confidence. This is a crucial indicator of the app's effectiveness in not just vocabulary acquisition but also in fostering language fluency and expressive capabilities.

However, the presence of a neutral stance among 17% to 28% of respondents across various statements suggests room for introspection and potential refinement of the app's features or its instructional strategies to cater to a broader spectrum of learner preferences and requirements.

In conclusion, Figure 4.5's findings decisively underscore the Cake app's significant role in bolstering vocabulary learning, characterized by improved comprehension, retention, and application of new vocabulary, alongside fostering engaging and consistent learning experiences. These insights not only validate the app's pedagogical effectiveness but also highlight areas for continuous enhancement to meet the diverse needs of the learner.

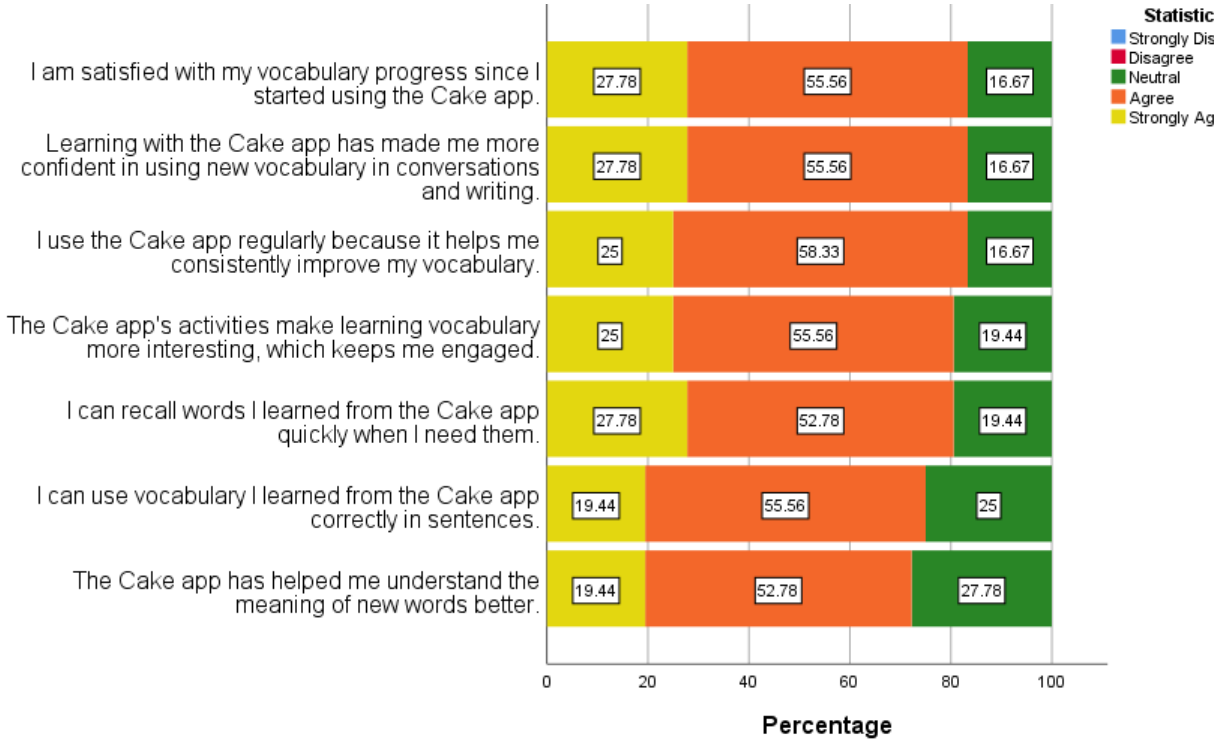

Figure 4.5 Cake app vocabulary learning impact

4.2.2 Research question 2: What are the students' opinions and attitudes towards their vocabulary learning experiences through Cake app?

A survey using a Likert scale was designed to explore students' views on learning vocabulary with the Cake app, including seven key questions to probe their learning experiences. It was pilot-tested with five students to ensure effectiveness, and its reliability was confirmed with a Cronbach's Alpha of .765. This method provided authentic feedback for analyzing students' use of the app.

Table 4.7 Questionnaire reliability for research question 2

Reliability Statistics	
Cronbach's Alpha	N of Items
.765	7

The findings from Figure 4.6 reveal significant insights into students' perceptions of the Cake app's features and its effectiveness as a vocabulary learning tool. The data indicates a strong positive reception, with a noteworthy absence of strong disagreement across all statements. This unanimity suggests that the Cake app is universally recognized for its ease of use and effectiveness in vocabulary acquisition among the surveyed students.

A substantial majority of students agree or strongly agree that the Cake app simplifies the learning of new words, with 84% affirming its simplicity and user-friendliness. This high level of agreement underscores the app's intuitive design and accessibility, making it a preferred choice over traditional learning methods.

Interestingly, while 67% of students express a preference for the Cake app over conventional methods such as textbooks, there's a significant portion, 31%, remaining neutral. This could indicate a potential area for further investigation, possibly exploring the integration of traditional and digital learning tools for an optimized learning experience.

The engagement factor of the Cake app is highlighted, with 78% of students finding the games and activities enjoyable, which suggests that the app's interactive elements significantly contribute to a positive learning environment. Similarly, the effectiveness of audio and visual aids in enhancing vocabulary learning is acknowledged by 94% of the students, pointing to the importance of multimodal learning strategies in vocabulary acquisition.

The impact of regular use of the Cake app on improving vocabulary skills is overwhelmingly positive, with 88% of students believing in its benefits. This strong conviction in the app's efficacy is further supported by the 94% of students who report increased confidence in using new vocabulary, indicating a tangible improvement in their language competence.

Lastly, the motivational aspect of the Cake app is evident, with 58% of students feeling encouraged to learn new vocabulary regularly. However, the 39%

neutral response signals an opportunity for enhancing the app's features to foster higher levels of motivation among learners.

In summary, Figure 4.6 reflects a generally positive perception of the Cake app among students, particularly highlighting its user-friendly interface, engaging content, and effectiveness in enhancing vocabulary learning and confidence. The findings point towards the app's potential as a valuable tool in language education while also suggesting areas for further enhancement to leverage its capabilities fully.

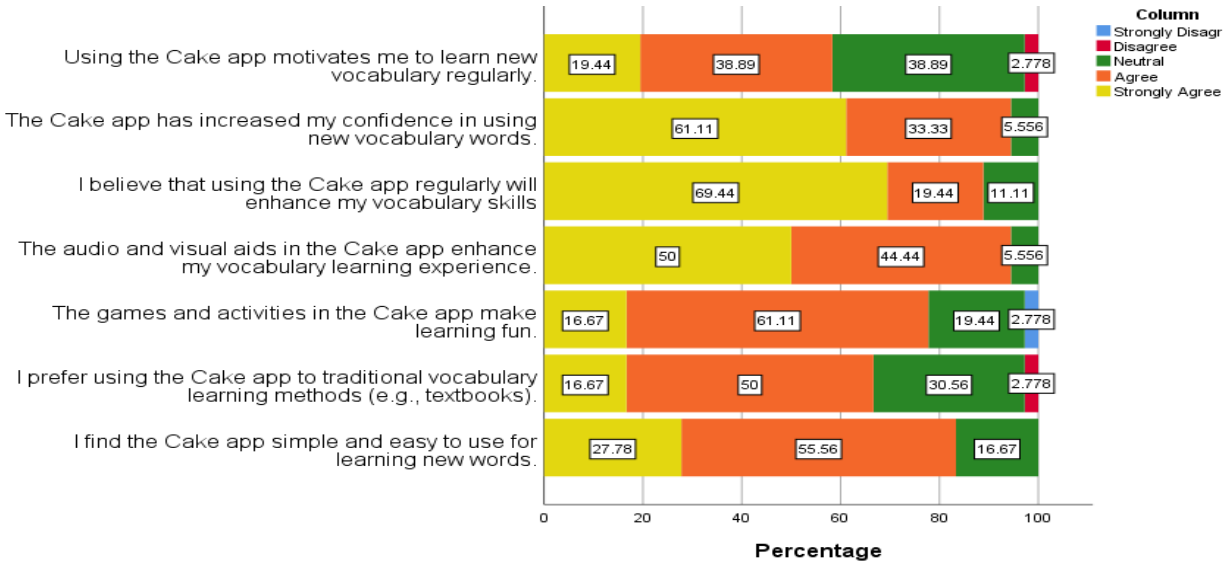

Figure 4.6 Students' opinions on the Cake app's features and usability

4.3 The results from the interview

The goal was to get honest opinions and understand better how the teaching tool affected the students. Fake names (S1, S2, S3, S4, and S5) were used throughout the interview in place of their genuine ones in order to protect their privacy. In exploring the impact of the Cake app on English vocabulary learning at Thuan Quy Secondary School, interviews were conducted with a selected group of students. This qualitative analysis aims to uncover insights into their experiences, challenges, and suggestions for future use.

4.3.1 Student perspectives on the Cake app

Before discovering the Cake app, many students felt that learning English vocabulary was tedious and challenging. Traditional methods such as rote memorization from textbooks or using flashcards weren't cutting it anymore. Everyone was in search of something more engaging and fun. Though few had tried learning through apps before, there was a unanimous agreement that learning through games would undoubtedly make the process more enjoyable. Indeed, the Cake app lived up to these expectations. After giving it a try, learning vocabulary shifted from being a chore to an exciting adventure. Moreover, the significant boost in confidence when using new words in conversation proves that learning through play is not only more enjoyable but also incredibly effective. These firsthand insights underscore the transformative potential of the Cake app in enriching English vocabulary learning at Thuan Quy Secondary School, alongside acknowledging the importance of continuous adaptation and support to maximize its educational impact.

4.3.2 Learning experience through the Cake app

From the interviews conducted on the learning experiences with the Cake app, students provided valuable insights that aligned with the structured questionnaire responses.

After using the Cake app, students found remembering new vocabulary much easier than before. The instant feedback provided by the app was highly valued, indicating that immediate, constructive feedback plays a crucial role in learning. Despite a few technical glitches, the overall benefits of the app far outweighed these minor issues. The unanimous willingness to recommend the Cake app to friends highlights its perceived value and effectiveness. Additionally, high ratings for the app's entertainment factor reaffirm the initial belief in the power of gamification in education. This blend of fun and educational value marks a significant departure from traditional learning methods, showcasing the Cake app as not just a study tool but a

source of inspiration, transforming the conventional approach to vocabulary learning into an effective and enjoyable journey for students.

In summary, the interview results highlighted the Cake app as an effective and enjoyable tool for vocabulary learning, with high usability and a positive impact on student confidence. However, students also indicated areas for further refinement to enhance their learning experience. Overall, the interviews revealed that the Cake app has significantly enriched the vocabulary learning experience for students, fostering greater engagement, enjoyment, and confidence in their English language learning journey.

4.4 The difficulties the students encountered during the vocabulary learning experience with the cake app

A descriptive and interpretive analysis was conducted on quantitative data obtained from surveys, student comments, and self-assessment checklists in order to investigate the difficulties faced by students when using the Cake app to expand their vocabulary. Furthermore, using inductive coding, qualitative insights from these three sources were methodically analysed and grouped into main themes: challenges in motivation and self-management (Figure 4.7).

First and foremost, the challenge of allocating time for daily study is pronounced, with a significant fraction of respondents (33.33% strongly agree and 22.22% agree) indicating difficulty in finding time for their studies. This underscores the critical need for the app to incorporate more effective time management and scheduling tools, facilitating a more seamless integration of learning into daily routines.

Secondly, the data reveals a substantial demand for enhanced motivational support within the app. With a notable percentage of learners (33.33% strongly agree and 30.56% agree) expressing a need for additional motivation to sustain long-term engagement, it becomes evident that embedding motivational strategies and

psychological support mechanisms could play a pivotal role in enhancing learner retention and success.

Furthermore, the engagement in self-assessment and adaptation by learners signifies a proactive approach towards personalized learning. This trend not only reflects the learners' commitment to optimizing their study methods but also suggests the necessity for the app to offer robust feedback and self-evaluation tools, enabling learners to fine-tune their learning strategies effectively.

The active pursuit of additional learning resources by learners (33.33% neutral, 22.22% agree) illuminates the desire for a broader and more diverse content offering within the app. This finding suggests that expanding the app’s content repository to include a wider range of learning materials could substantially enrich the learning experience and cater to the diverse needs of learners.

Lastly, the difficulty faced by learners with challenging vocabulary, as highlighted by a significant number of respondents (25% strongly agree, 16.67% agree), underscores the importance of the app providing more robust support and personalized learning strategies to overcome such challenges. Tailoring the learning experience to address individual learner needs and difficulties can significantly enhance vocabulary acquisition and overall learning outcomes.

In conclusion, these findings underscore the need for targeted improvements in the app, focusing on time management, motivational support, content diversity, personalized learning strategies, and robust feedback mechanisms. Such enhancements are essential for maximizing the efficacy of educational technology and fostering a more engaging and effective learning environment for vocabulary acquisition.

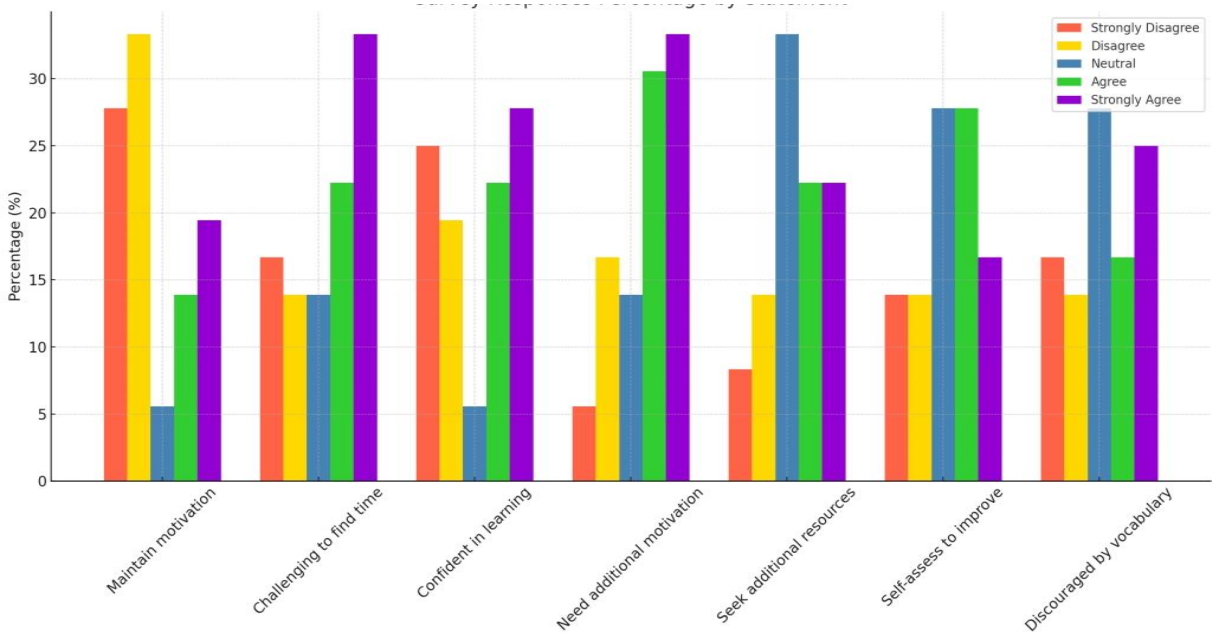

Figure 4.7 Student motivation and confidence survey results

4.5 Discussion

The discussion delves into the contributions made by the study, emphasizing its relevance and significance in the context of vocabulary learning using the Cake app. Practical implications for educators and app developers are highlighted, providing insights into how the findings can be applied in real-world educational settings. The section also offers recommendations for enhancing the use of educational apps in vocabulary learning, considering the challenges and solutions discussed earlier. The chapter concludes by providing a comprehensive conclusion that encapsulates the key takeaways from the study and its potential impact on language education practices.

The discussion section of this study delves into the multifaceted impact of the Cake vocabulary learning application on students' language acquisition. The findings illuminate several key aspects that differentiate this research from others in the field, providing a nuanced understanding of the app's effectiveness and practicality.

One distinctive feature lies in the diverse research methods employed. This study adopts a comprehensive approach, integrating statistical analysis, surveys, and

interviews to offer a multi-dimensional perspective on the influence of the Cake app on vocabulary learning. This methodological diversity enhances the reliability of the study by triangulating results from various angles, enriching the insights into the app's educational implications.

Emphasis is placed on flexibility and practical utility, aligning with the current educational landscape's demand for adaptable and user-friendly tools. The evaluation of the Cake app's performance centers on its practicality in real-world learning scenarios, catering to both teachers and application designers seeking to optimize the learning experience. By focusing on the app's flexibility and user-centric design, the study provides valuable insights into the alignment of educational technology with the evolving needs of learners.

A notable contribution of this research lies in its attention to user feedback. By highlighting positive sentiments and improvement suggestions from students, the study not only underscores the practicality of the Cake app but also serves as a guide for future enhancements. This user-centric approach acknowledges the significance of continuous improvement based on real-time input from the primary beneficiaries of the application, fostering a more responsive and learner-oriented technological landscape.

Moreover, the study goes beyond overarching results, meticulously examining specific aspects and their systemic implications. This detailed exploration unveils the intricacies of how the Cake app influences various facets of the learning process, providing a thorough and insightful analysis. By adopting a granular perspective, the research establishes a comprehensive knowledge base, offering a profound understanding of the app's impact on vocabulary acquisition.

In comparison to other studies in the field, this research stands out for its holistic approach, methodological diversity, and user-centric focus. While many studies may prioritize quantitative outcomes, this research equally values qualitative data, recognizing the complementary nature of both approaches. The

acknowledgment of the practical implications, coupled with a keen awareness of the user experience, positions this study as a valuable contribution to the discourse on vocabulary learning applications.

The study's emphasis on the real-world applicability of the Cake app addresses a critical gap in existing literature, catering to the evolving needs of educators and learners in contemporary educational settings. The integration of user feedback not only validates the app's effectiveness but also serves as a catalyst for future improvements, fostering a dynamic cycle of enhancement and adaptation.

In conclusion, this discussion underscores the unique contributions of the study, emphasizing the importance of methodological diversity, practical utility, user feedback, and a detailed examination of systemic impacts. The insights generated contribute not only to the specific context of vocabulary learning with the Cake app but also inform broader discussions on the integration of technology in language education.

4.6 Chapter summary

Chapter 4 presents comprehensive findings and discussions on the impact of the Cake vocabulary learning app on 7th-grade students. Statistical analyses reveal a significant improvement in the experimental group's posttest scores, affirming the success of the educational intervention. Student reflections through surveys and interviews highlight positive perceptions, engagement, and challenges faced. The discussion synthesizes these findings, emphasizing the study's unique contributions, such as methodological diversity, practical utility, and user feedback integration.

CHAPTER 5. CONCLUSION AND RECOMMENDATION

This section provides a recap of the outcomes detailed in the preceding section. It also covers the implications and limitations of the study, along with suggestions for future research.

5.1 Implications of the study

After conducting the study, significant pedagogical implications have emerged for students at Thuan Quy Secondary School in the context of vocabulary learning, particularly through the use of the Cake app.

5.1.1 For English teachers

The integration of the Cake app into vocabulary instruction aligns with the findings of Dr. Stephen Krashen, who emphasized the importance of engaging and comprehensible input in language acquisition ("Principles and Practice in Second Language Acquisition," Krashen, 1982). This app facilitates such input, making vocabulary learning more accessible and enjoyable. Additionally, the interactive features of the app support Vygotsky's theory of social learning, suggesting that social interaction plays a fundamental role in the development of cognition (Vygotsky, "Mind in Society," 1978). Teachers can leverage this by incorporating collaborative activities using the app in their lessons.

5.1.2 For students

For students, the self-directed use of the Cake app encourages learning autonomy, a concept highlighted in Zimmerman's self-regulated learning theory. This theory posits that students who actively take control of their learning processes tend to achieve better educational outcomes (Zimmerman, 2002). By engaging with the app, students at Thuan Quy Secondary School can develop a more proactive

approach to vocabulary learning, tracking their progress and adapting their strategies accordingly.

5.1.3 For the future researchers

This study aimed to evaluate the enhancement of students' vocabulary by using the Cake app. Future research suggestions in similar fields include exploring different aspects or skills of the English language, like speaking, listening, writing, and grammar, by employing the Cake application.

5.2 Limitations of the study

While the current research indicates that the Cake app has significantly enhanced students' vocabulary skills, it also uncovers various shortcomings that could be addressed in future studies. One key issue was the inadequate facilities at the school, particularly limited internet access, which hindered students during the experiment. Additionally, the students' lack of computer literacy posed a challenge.

Another factor impacting the study was the students' varying levels of English proficiency and their general lack of engagement and enthusiasm. Many students were timid and anxious, requiring the researcher to spend considerable time on explanation and motivation. Initially, students were more inclined towards traditional learning methods and found the Cake app unfamiliar, necessitating extra time for the researcher to introduce and demonstrate its use.

Finally, the study was constrained by time, lasting only 15 weeks during the first semester of the 2023-2024 academic year. The research outcomes could have been more robust if the duration of the study had been extended.

5.3 Recommendations for improving the use of cake apps in vocabulary learning

Several recommendations can be proposed to enhance the use of the Cake app in vocabulary learning. For instance, improving internet connectivity and

technological resources, as suggested by (Stošić, 2015), is critical in ensuring students have uninterrupted access to the app. Stošić's work emphasizes the importance of digital tools in education.

Additionally, The study of Robin and Aziz (2022) highlights the necessity of digital literacy, suggesting that conducting training sessions for students is crucial to help them effectively utilize the app. Furthermore, Higgs and Krashen (1983) theory in language acquisition supports the idea of offering content tailored to different English proficiency levels. (Vygotsky, 1978) social development theory also underpins the recommendation to integrate interactive and collaborative learning features within the app, emphasizing the role of social interaction in learning. Moreover, (T. V. H. Tran, 2020) blended learning model advocates for combining digital with traditional instructional methods. Regular training for educators, as (Freire, 2020) suggests, is essential for effective integration of new tools into teaching strategies.

Finally, (Buckley & Doyle, 2016) emphasizes the gamified learning interventions have a positive impact on student learning. Extending the duration of experimental studies, as (Johnson & Johnson, 2008) argues, can provide a more comprehensive assessment of educational interventions.

5.4 Conclusion

In conclusion, the study on "The Impact of the Cake App on 7th Graders' Vocabulary Learning at Thuan Quy Secondary School" has significantly demonstrated the effectiveness of integrating mobile applications into educational environments. Through the course of this study, we observed noticeable improvements in the vocabulary acquisition of the 7th-grade students who participated in the program. The utilization of the Cake App not only made learning more engaging and interactive but also provided the students with a flexible and convenient platform to enhance their language skills outside the traditional classroom setting.

The findings of this project underscore the potential of digital tools in facilitating the learning process, particularly in the acquisition of new vocabulary. Students showed increased motivation, participation, and enthusiasm towards learning English, which can be attributed to the gamified and user-friendly interface of the Cake App. Furthermore, the study highlighted the importance of incorporating modern technologies in education to cater to the diverse learning needs of students.

However, it is important to acknowledge the limitations of this study, including the relatively small sample size and the short duration of the intervention. Future research should consider a longer period of implementation and a broader participant base to validate and expand upon the findings of this project. Additionally, exploring the impact of such digital tools on other aspects of language learning, such as grammar and pronunciation, would provide a more comprehensive understanding of their educational value.

In light of the positive outcomes observed, it is recommended that educators and policymakers consider the integration of similar digital applications into the curriculum to enhance vocabulary learning and overall language proficiency. The Cake App has proven to be a valuable resource in the educational toolkit, offering a novel approach to learning that resonates with the digital natives of today's classrooms.

The study has laid a foundation for future explorations into the integration of technology in education, signaling a promising direction for enhancing the efficacy of learning methodologies.

5.5 Chapter summary

This research revealed that students warmly embrace the Cake apps for vocabulary acquisition. This favorable reception is attributed to the ease and usefulness of Cake app in education. Moreover, the study highlighted that gaming is the most favored feature for vocabulary enhancement. Engaging and entertaining

games have proven to motivate students, encouraging them to delve deeper into learning. The students offered several recommendations for improving the Cake apps, including simplifying the vocabulary level, providing diverse definitions, and integrating more interactive games and multimedia elements like videos and images. They also suggested reducing advertisements and enhancing the app's design with vibrant graphics and icons. Additionally, clearer instructions and a guide for new users would be beneficial.

The students identified numerous advantages of using mobile apps for learning vocabulary, such as convenience. These apps allow for learning anywhere and anytime, which is more efficient than traditional methods like dictionaries or books. Mobile apps also introduce new vocabulary, aiding in academic pursuits and enhancing writing skills. The engaging and interesting nature of the Cake apps also fosters motivation, surpassing traditional lecture-based learning.

The study's implications are twofold, focusing on vocabulary difficulty and the gaming feature. While students are generally receptive to using Cake apps for vocabulary learning, challenges remain, particularly with difficult vocabulary in the apps. This ongoing challenge might discourage future use of these apps for learning. The study suggests incorporating a virtual reality English communication section with robots for each learned vocabulary scenario, enabling learners to practice speaking at home with AI in various common situations. This repetitive practice is crucial for mastering communication skills. In an AI setting, learners can simulate real-life conversations. If unsure what to say, the AI can offer suggestions, reducing anxiety when speaking with actual people.

Furthermore, the research found that gaming is a highly preferred feature in vocabulary learning apps. Most students favor learning through games because they provide meaningful, contextual learning. Students learn words implicitly through games, gaining exposure without consciously realizing they're learning. They might not recall precise definitions, but they can use the words appropriately in context.

Therefore, incorporating this feature more prominently in language learning apps, especially for vocabulary, is advised. This feature not only makes learning enjoyable and interesting but also motivates students to engage more with mobile apps in the future.

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APPENDIX 1. SAMPLE OF VOCABULARY TEST: PRETEST & POSTTEST

***VOCABULARY TEST: PRE_TEST (Topic Travel, Habits, Films)**

I. Choose the best option (A, B, C or D) to complete these sentences. (5.0 points)

1. You _____ stay up too late because it's not good for your health.

A. should B. shouldn't C. must D. can

2. _____ the film was exciting, Jim fell asleep in the cinema.

A. However B. Although C. Because D. Despite

3. It is _____ to watch elephants racing in DakLak in the festival.

A. amazing B. amazed C. amaze D. amazement

4. La Tomatina is held on the last Wednesday _____ August every year.

A. for B. by C. of D. on

5. Tet is a high time for all people to clean and _____ their houses.

A. go out B. decorate C. enjoy D. prepare

6. My little daughter is very _____in learning English.

A. excited B. disappointed C. interested D. bored

7. We should wait for the traffic lights _____ before we cross the street.

A. turn green B. to turn green C. turn yellow D. to turn yellow

8. A _____ is a part of a road that only bicycles are allowed to use.

A. cycle cross B. cycle lane C. cycle line D. cycle race

9. This is a _____ on real life during wars in Vietnam in 1945.

A. horror film B. sci-fi C. comedy D. documentary

10. Ba: How long does it take you to get to Ho Chi Minh City by plane?

Lan: "_____."

A. That's a good idea. B. About 2 hours.

C. About 50 meters. D. About 50 cents.

II. Choose the correct meaning *synonym* of the given word from the options provided. (1.0 point)

1. Santa Claus handed out **presents** to the children.

A. fireworks B. decorations C. gift D. candies

2. The hotel is in a **quiet** location near the sea.

A. silent B. busy C. noisy D. loud

III. Choose the correct meaning *antonym* of the given word from the options provided. (1.0 point)

1. **entertaining**

A. boring B, interesting C. unhappy D. sad

2. **clever**

A. smart B. foolish C, quick D. intelligent

IV. Complete the sentences by circling the best answer. (3.0 points)

1. I'm so ___. (concentrate/parched)

2. Can you get me _____ coke? (drink/ another)

3. I'm _____ for a drink. (gasping/ temporary)

4. I'm _____. (thirsty/ get)

5. I _____a drink. (fancy/everything)

6. I ____to get something to drink. (but/need)

***VOCABULARY TEST: POST_TEST (Topic Festival, Sports and Hobbies)**

I. Choose the best option (A, B, C or D) to complete these sentences. (5.0 points)

1. During _____, people often wear costumes and go trick-or-treating.

A. Christmas B. Easter C. Halloween D. Thanksgiving

2. _____ is a hobby where you might use brushes, paints, and a canvas.

A. Cooking B. Gardening C. Painting D. Knitting

3. The _____ lanterns are commonly seen during the Mid-Autumn Festival in Asian countries.

A. flying B. floating C. sky D. paper

4. _____ is celebrated with a feast and giving thanks for the harvest.

A. New Year's Day B. Independence Day

C. Thanksgiving D. Valentine's Day

5. A _____ is often used to hit the shuttlecock in this backyard game.

A. bat B. racket C. club D. stick

6._____ involves creating objects from yarn with hooks or needles.

A. Embroidery B. Weaving C. Crocheting D. Sewing

7. When celebrating Diwali, people light _____ to symbolize the victory of light over darkness.

A. candles B. fireworks C. bonfires D. lanterns

8. In this Japanese festival, people enjoy viewing the beautiful _____ blossoms.

A. rose B. tulip C. cherry D. sunflower

9. The _____ Festival is known for its spectacular hot air balloon displays.

A. Kite B. Lantern C. Balloon D. Firework

10. Making _____ is a popular hobby that involves creating scrapbooks to preserve memories.

A. collages B. pottery C. jewelry D. scrapbooks

II. Choose the correct meaning *synonym* of the given word from the options provided. (1.0 point)

1**. Quiet**

A. Loud B. Noisy C. Silent D. Soft

2. **Strong**

A. Weak B. Powerful C. Fragile D. Delicate

III. Choose the correct meaning *antonym* of the given word from the options provided. (1.0 point)

1. **Happy**

A. Sad B. Cheerful C. Delighted D. Unhappy

2. **Begin**

A. Start B. Stop C. Continue D. Initiate

IV. Complete the sentences by circling the best answer. (3.0 points)

1. I feel so _____. (hungry/awake)

2. Could you pass me a _____ of water? (glass/mountain)

3. I'm _____ something sweet. (craving/running)

4. My mouth is really _____. (dry/sharp)

5. I would love a cup of _____. (tea/everyone)

6. I _____ to grab a snack. (wish/look)

APPENDIX 2. SURVEY QUESTIONNAIRE

Welcome to our survey on enhancing vocabulary learning using the Cake app! Your insights are invaluable in helping us understand how this innovative application contributes to vocabulary development. Please take a moment to answer these quick survey questions. I hope you will try your best to complete this questionnaire.

Your feedback is essential for improving the app. Please tick (✓) the answer that you find most appropriate. And you can choose only ***ONE*** *answer.* ***1-Strongly Disagree, 2 -Disagree, 3- Neutral, 4- Agree, 5-Strongly Agree***

Thanks for sharing your experiences! Thanks for your responses!

A. ABOUT YOURSELF

Put a tick (✓) on your answers

1. What is your gender? ☐ Male ☐ Female
2. Which class are you in? ……..
3. How long have you been learning English? …… years
4. Have you ever failed a English test? ☐ Yes ☐ No
5. How long have you been using the Cake app to enhance your vocabulary a day?
   - ☐ More than 1 hour
   - ☐ Less than 1 hour
   - ☐ 10-30 minutes
   - ☐ 10-20 minutes
   - ☐ 5-10 minutes
6. How often do you use the Cake app for vocabulary enhancement?
   - ☐ Daily
   - ☐ 2-3 times a week
   - ☐ Once a week
   - ☐ Less than once a week

- ☐ Rarely

7. What type of device do you primarily use to access the Cake app for vocabulary enhancement?

   - ☐ Smartphone
   - ☐ Tablet
   - ☐ Desktop/Laptop
   - ☐ No device

B. QUESTIONAIRES

Please rate the following statements on a scale from 1 to 5, with 1 being "5-Strongly Agree", "4-Agree", "3-Neutral", "2-Disagree", "1-Strongly Disagree"

SURVEY QUESTIONAIRES					
PART 1. THE EFFECTIVENESS OF THE CAKE APP TO IMPROVE VOCABULARY RETENTION	1	2	3	4	5
1. Improvement in vocabulary skills after using the Cake app.					
2. Improvement in remembering new words.					
3. Helpfulness of vocabulary exercises.					
PART 2. VOCABULARY ENHANCEMENT WITH CAKE APP	1	2	3	4	5
4. The Cake app has helped me understand the meaning of new words better.					

5. I can use vocabulary I learned from the Cake app correctly in sentences.					
6. I can recall words I learned from the Cake app quickly when I need them.					
7. The Cake app's activities make learning vocabulary more interesting, which keeps me engaged.					
8. I use the Cake app regularly because it helps me consistently improve my vocabulary.					
9. Learning with the Cake app has made me more confident in using new vocabulary in conversations and writing.					
10. I am satisfied with my vocabulary progress since I started using the Cake app.					
PART 3. STUDENT PERCEPTIONS OF VOCABULARY LEARNING ENHANCEMENT THROUGH THE CAKE APP	1	2	3	4	5
11. I am satisfied with my vocabulary progress since I started using the Cake app.					
12. I prefer using the Cake app to traditional vocabulary learning methods (e.g., textbooks).					

13. The games and activities in the Cake app make learning fun.					
14. The audio and visual aids in the Cake app enhance my vocabulary learning experience.					
15. I believe that using the Cake app regularly will enhance my vocabulary skills.					
16. The Cake app has increased my confidence in using new vocabulary words.					
17. Using the Cake app motivates me to learn new vocabulary regularly.					
PART 4. THE DIFFICULTIES THE STUDENTS ENCOUNTERED DURING THE VOCABULARY LEARNING EXPERIENCE WITH THE CAKE APP	1	2	3	4	5
18. I find it easy to maintain my motivation to learn vocabulary daily with the app.					
19. I often find it challenging to find time to study each day.					
20. I feel confident in my ability to learn and manage my learning process independently.					

21. I feel that I need additional motivation from the app to continue learning in the long term.					
22. I proactively seek additional learning resources outside of the app.					
23. I regularly self-assess and adjust my learning methods to improve outcomes.					
24. I often feel discouraged when encountering difficult vocabulary and need more support from the app.					

APPENDIX 3. INTERVIEWS

INTRODUCTION

We're studying the Cake app's impact on vocabulary learning among 7th graders at Thuan Quy Secondary School. This research evaluates the app's effectiveness in enhancing vocabulary through interactive lessons. We thank participants for their involvement and ask for 10-20 minutes of your time to answer questions, with the option to stop anytime. The survey aims to understand the app's influence on learning, identifying engagement, usability, outcomes, and areas for improvement. Your insights are crucial for shaping educational strategies and tech integration. Interviews will be audio-recorded with confidentiality for personal information. Feel free to ask any questions before we begin, and thank you for sharing your experiences!

*QUESTIONS FOR LECTURERS INTERVIEW

Part 1. Student Perspectives on the Cake App

1. Before using the Cake app, did you find learning English vocabulary to be a challenge?

Yes / No

2. Do you think the Cake app's interface is user-friendly?

Yes / No

3. Have the games and activities within the Cake app made learning more enjoyable for you?

Yes / No

4. Did you experience any difficulties while navigating the Cake app when you first started using it?

Yes / No

5. On a scale of 1 to 5, how much has your confidence in using new English vocabulary improved since using the Cake app?

Rate 1 (Not at all) to 5 (Significantly)

Part 2. Learning Experience Through Cake App

1. Is the Cake app making it easier for you to remember new vocabulary?

Yes / No

2. Do you find the Cake app's feedback on your exercises helpful in your learning process?

Yes / No

3. Have you encountered any technical issues while using the Cake app?

Yes / No

4. Would you recommend the Cake app to a friend who wants to improve their English vocabulary?

Yes / No

5. On a scale of 1 to 5, how would you rate the overall fun of the learning experience with the Cake app?

Rate 1 (Not fun at all) to 5 (Extremely fun)

APPENDIX 4. PRE-TEST AND POST-TEST TRANSCRIPTS

***STUDENT PERSPECTIVES ON THE CAKE APP**

Part 1. Pre-Test Transcript

Interviewer: Welcome, students. Today, we're going to ask some questions about your current experiences with learning English vocabulary before you start using the Cake app. Let's begin with the first question.

(The interviewer proceeds to ask the pre-set questions to each student. Responses are noted for comparison with the post-test results.)

1. Do you currently use any mobile apps to learn English vocabulary?

Student 1-5: No.

2. Have you found traditional methods of learning vocabulary (like flashcards or textbooks) to be engaging?

Student 1: No.

Student 2: No.

Student 3: Yes.

Student 4: No.

Student 5: Yes.

3. Do you believe that using games can make learning English vocabulary more enjoyable?

Student 1-5: Yes.

4. Are you confident in your ability to remember new words after learning them just once or twice?

Student 1-5: No.

5. Would you be interested in an app that customizes your learning experience based on your performance?

Student 1-5: Yes.

Part 2. Post-Test Transcript

Interviewer: Welcome back, students. After using the Cake app for a period, we have some questions to understand how your experiences and perspectives have changed. Let's start.

(The interviewer repeats the same questions to see changes in students' responses and perceptions after using the Cake app.)

1. After using the Cake app, did you find learning English vocabulary to be less of a challenge?

Student 1-5: Yes.

2. Do you think the Cake app's interface is user-friendly?

Student 1-5: Yes.

3. Have the games and activities within the Cake app made learning more enjoyable for you?

Student 1-5: Yes.

4. Did you experience any difficulties while navigating the Cake app when you first started using it?

Student 1: Yes.

Student 2-5: No.

5. On a scale of 1 to 5, how much has your confidence in using new English vocabulary improved since using the Cake app?

Student 1: 4.

Student 2: 5.

Student 3: 4.

Student 4: 3.

Student 5: 5.

(After completing the post-test, the interviewer thanks the students for their participation and concludes the session. The responses indicate a positive shift in students' experiences and perceptions towards learning English vocabulary, showcasing the effectiveness of the Cake app.)

***LEARNING EXPERIENCE THROUGH CAKE APP**

Part 1. Pre-Test Transcript

Interviewer: Thank you for participating today. Before we introduce the Cake app for your English vocabulary learning, we have a few questions about your current experiences and feelings towards learning English vocabulary. Let's get started.

1. Do you currently use any mobile apps to learn English vocabulary?

Student 1-5: No.

2. Have you found traditional methods of learning vocabulary (like flashcards or textbooks) to be engaging?

Student 1: No.

Student 2: No.

Student 3: Somewhat, so maybe a yes.

Student 4: No.

Student 5: Yes.

3. Do you believe that using games can make learning English vocabulary more enjoyable?

Student 1-5: Yes.

4. Are you confident in your ability to remember new words after learning them just once or twice?

Student 1: No.

Student 2: No.

Student 3: No.

Student 4: Yes.

Student 5: No.

5. Would you be interested in an app that customizes your learning experience based on your performance?

Student 1-5: Yes.

Part 2. Post-Test Transcript

Interviewer: Welcome back, everyone. After spending some time using the Cake app for learning English vocabulary, we're eager to hear about your experiences. Let's start with the same questions as before to see how your perspectives might have changed.

1. Before using the Cake app, did you find learning English vocabulary to be a challenge?

Student 1-5: Yes.

2. Do you think the Cake app's interface is user-friendly?

Student 1-5: Yes.

3. Have the games and activities within the Cake app made learning more enjoyable for you?

Student 1-5: Yes.

4. Did you experience any difficulties while navigating the Cake app when you first started using it?

Student 1: Yes.

Student 2-5: No.

5. On a scale of 1 to 5, how much has your confidence in using new English vocabulary improved since using the Cake app?

Student 1: 4

Student 2: 3

Student 3: 5

Student 4: 3

Student 5: 4

Interviewer continues with Part 2 questions:

1. Is the Cake app making it easier for you to remember new vocabulary?

Student 1-5: Yes.

2. Do you find the Cake app's feedback on your exercises helpful in your learning process?

Student 1-5: Yes.

3. Have you encountered any technical issues while using the Cake app?

Student 1: No.

Student 2: Yes.

Student 3: No.

Student 4: Yes.

Student 5: No.

4. Would you recommend the Cake app to a friend who wants to improve their English vocabulary?

Student 1-5: Yes.

5. On a scale of 1 to 5, how would you rate the overall fun of the learning experience with the Cake app?

Student 1: 5

Student 2: 4

Student 3: 5

Student 4: 3

Student 5: 4

Interviewer: *Thank you for your feedback. It's been invaluable to see how the Cake app has impacted your learning and confidence in English vocabulary. We appreciate your participation and insights.*

APPENDIX 5. MODES ON CAKE APP