

CHAPTER II

LITERATURE REVIEW

This chapter is divided into two major parts that present a discussion about the theoretical framework and previous study. The theoretical framework comprises related theorists in this study, while previous studies discuss the implementation of that related theorist in prior studies.

2.1 Theoretical Framework

2.1.1 Mobile Assisted Language Learning (MALL)

Technology in education has become increasingly important in enhancing students' skills. These skills include speaking, reading, writing, and vocabulary mastery. Various tools, such as websites and smartphones have become inseparable companions in the effort to improve students' language skills. The emergence of Mobile Assisted Language Learning (MALL) is a significant innovation that has transformed the way we learn languages, providing more flexible access and the ability to learn in various contexts. In the following discussion, we will explore the role of Mobile Assisted Language Learning in enhancing students' language skills, particularly in the context of English vocabulary acquisition (Saad &Rahim, 2022).

Over the past two decades, Mobile Assisted Language Learning (MALL) has emerged as a result of mobile device advancements. According to Thomas, Reinders, and Warshchauer (2012), it has become common for language learning with mobile device support to play a crucial role in the educational context

because mobile technology has permeated our daily lives. Pedagogically, MALL serves various functions, although it is still limited to behaviorist approaches, teacher-centered orientations, and tutorial applications (Kukulska-Hulme & Shield, 2008; Burston, 2014). Kukulska-Hulme (2012) points out that Mobile-Assisted Language Learning (MALL) has specific advantages that allow interaction across various contexts.

Furthermore, Burston (2014) notes that the material design in applications is based on a behaviorist approach that centers on the teacher's role in information delivery. Therefore, MALL has gained attention and popularity due to its ability to facilitate language learning, especially in the acquisition of English vocabulary. Ultimately, mobile technology creates a more authentic, context-responsive, socially interactive, and individual language learning environment (Lin & Lin, 2019). English vocabulary acquisition has become the focus of attention, and MALL research has investigated it. Burston (2014) argues that MALL can significantly contribute to enhancing language learning because students can complete their tasks, especially in the context of language acquisition, both inside and outside the classroom, using mobile devices.

Moreover, Zhang, Song, and Burston (2011) indicate that mobile assisted language learning (MALL) offers a convenient and frequently used approach to integrating various methods, such as adaptive computer-based flashcards and responsive quizzes. Mobile-assisted language learning has been implemented in educational programs due to its significant contribution to basic language learning, particularly in vocabulary acquisition. Grammar exercises, vocabulary, and phrases can be easily programmed, and students can receive automatic

feedback from the application. Therefore, MALL can be an option in higher education for instructors teaching L2 language learning, especially in classes where students may not have a basic knowledge of the second language.

In the context of Mobile Assisted Language Learning (MALL) and vocabulary acquisition, the Activity Theory framework by Engeström (1987) provides a valuable lens to understand how individuals or groups are involved in language learning activities using mobile applications such as Duolingo. Activity theory is increasingly used in research fields such as the humanities and computer-human interaction (Kuutti, 1996; Mwanza & Engeström, 2003), distributed learning research (Russell, 2002), conceptualizing online communities in educational settings (Barab, Schatz & Scheckler, 2004), and designing constructivist e-learning environments (Jonassen & Murphy, 1999; Said, Hassan, Idris, Zahiri, Forret, & Eames, 2013). In computer-supported learning environments, understanding the context in which technology is implemented helps to grasp the domain in terms of the relationship between individuals, artifacts, and social groups.

The activity theory (Engeström, 1987) is applied in this research. The activity system consists of six interacting components: subjects, objects, tools, rules, division of labor, and community. Subjects consist of individuals or groups of individuals involved in an activity. The object is a specific direction of an activity, materials that can be transformed or modified by participants in an activity, or abstractions like plans or ideas, and the activity system aims to transform the object (goal) into valuable outcomes. Tools are everything used to aid the transformation process, such as computers and pens, psychological

concepts like language or ideas that help execute activities, or they could be models or experiences. Rules include customs, conventions, social relations, schedules, or processes that govern the behavior of community members. Division of labor is the distribution of roles, strengths, and responsibilities among subjects. Finally, the community of the activity system refers to a group of people consistently interacting with the environment to pursue the object (Ng & Hung, 2003). The activity system formulated by Engeström is depicted in Figure 2.1.

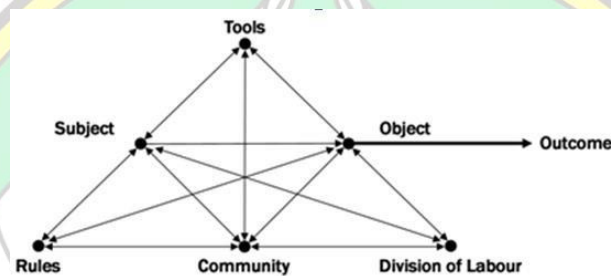


Figure 2.1 Activity theory by Engeström (1987)

2.1.2 Learning Vocabulary in EFL Context

Vocabulary knowledge is a crucial component of foreign language learning as vocabulary forms the fundamental building blocks for the four skills of students: listening, speaking, reading, and writing (Kizil & Savran, 2018). Moreover, Alqahtani (2015) claims that limited vocabulary in a second language impedes successful communication. Wilkins (1972) also states that without vocabulary, only a minimal amount of communication can occur. These arguments illustrate that vocabulary acquisition is central in language acquisition.

On the other hand, vocabulary acquisition involves understanding the meanings of words (Nurdiansyah, Asyid, & Parmawati, 2019). Additionally, Stahl (2005) reveals that having vocabulary knowledge goes beyond knowing the definition of a word; it also involves understanding how the word fits into context. Vocabulary knowledge can take two forms: receptive, which is related to a learner's ability to understand words when they hear or read them, and productive, which is associated with a learner's ability to use words effectively when speaking or writing (Schmitt, 2014). These two types of knowledge are often seen as existing on a developmental continuum, with understanding evolving from the receptive stage to productive mastery over time (Ardasheva, Hao & Zhang, 2019).

Conversely, vocabulary acquisition processes can be intentional or incidental (Hulstijn & Laufer, 2001). Deliberate vocabulary learning involves activities specifically designed to acquire new words, such as studying specific target words using vocabulary lists. On the other hand, incidental vocabulary learning refers to situations in which learners acquire new words without a specific focus on vocabulary acquisition, such as when they encounter new words while watching videos in a second language (L2) or playing online games without the specific goal of learning new words.

Vocabulary functions as the foundation of any language, as emphasized by Schmitt (2008), highlighting its vital role as an integral component of a language. Therefore, the acquisition of new words becomes a significant aspect of language teaching. Schmitt & Schmitt (2011) claim that vocabulary acquisition forms the fundamental basis for individuals who are starting their journey to learn the English language. Furthermore, Schmitt (2014) concludes that vocabulary

knowledge encompasses receptive skills related to a learner's ability to understand encountered words during listening or reading, and productive skills linked to a learner's ability to effectively use words in conversation or writing.

This research incorporates aspects of English vocabulary learning adapted from Thornbury (2002). These aspects include repetition, retrieval, spacing, pacing, use, cognitive depth, personal organizing, imaging, motivation, attention/arousal, and affective depth. Repetition aids in strengthening long-term memory by providing repeated exposure to the material. This process reinforces synaptic connections in the brain and enhances the likelihood of memory retention. Information retrieval activities, such as recalling words from memory, have been proven to enhance the ability to remember that information in the future, contributing to improved vocabulary retrieval skills. Distributing learning sessions over time allows for the formation of stronger memories. Introducing material gradually and testing comprehension at regular intervals can enhance long-term memory.

Granting learners, the freedom to set their own learning pace enables adaptation to individual learning speeds, helping to avoid fatigue or boredom. Applying words in practical contexts ensures that vocabulary knowledge is not merely theoretical but can be applied in everyday life, integrating practical aspects into learning. Making deeper cognitive decisions, such as determining word types or applying words in sentences, can enhance understanding and vocabulary retention. Personal assessments of words provide a deeper and more meaningful context, making them easier to remember.

Incorporating visual elements through mental imagery can enhance memory recall, as the brain tends to remember images better than words. Motivation plays a crucial role in inspiring learners to engage with and spend more time on learning, which can enhance retention. High levels of attention and arousal can improve memory recall, with words that trigger emotional or profound responses increasing attention levels. Finally, emotional connections with words can add value and bring a personal aspect to learning, making it more meaningful and easier to remember.

The use of Mobile-Assisted Language Learning (MALL) with technological support, such as the Duolingo app, is an effective and engaging way to enhance vocabulary understanding in language learning. Applications like Duolingo provide interactive exercises, games, and immediate feedback, enabling students to practice, remember, and apply vocabulary more efficiently. This not only expands vocabulary comprehension but also enhances overall language skills, making this technology a valuable tool for language skill development.

Several studies have recommended that improved vocabulary skills and English language comprehension can be achieved by embedding vocabulary within contexts that offer clear and easily understood explanations (Biemiller & Boote, 2006; Stahl & Fairbanks, 1986). In the learning process, it is suggested to use easily comprehensible explanation methods, such as technology or mobile devices, as they allow vocabulary acquisition based on the learner's desire for knowledge. Context-embedded language learning is a strategy for achieving meaningful learning goals (Comas-Quinh, Mardomingo, & Valentine, 2009) or context-dependent vocabulary acquisition (Wong, Chen & Liu, 2010).

Vocabulary acquisition can also be achieved through speaking, writing, listening, and reading skills. Technology offers many opportunities for students to enhance their literacy skills, including vocabulary strategies. Furthermore, technology provides technology-driven methods for students to improve their reading and writing skills (Reutzel & Cooter, 2013). Some recent studies have found that the use of new technology can indeed serve as potential vocabulary instruction, benefiting all readers when engaged with applications that involve listening, speaking, and interacting (Watts-Taffe & Gwinn, 2007). These applications help learners practice various types of words (verbs, nouns, adjectives, and adverbs) within language structures (Reutzel & Cooter, 2013).

In fact, a strong understanding of vocabulary plays a vital role in determining reading comprehension and language achievement for all learners (Kieffer & Lesaux, 2012; Nagy & Scott, 2001; Nation, 2001). Recognizing the importance of vocabulary knowledge has led to the development of theoretical foundations, followed by empirical research focusing on effective vocabulary acquisition in both primary and second languages (Hairrell, Rupley, & Simmons, 2011; Nagy & Scott, 2001).

There are many tools available, such as dictionaries, mobile apps, flashcards, books, and articles, to expand one's vocabulary. Moreover, in traditional teaching methods, educators use flashcards or textbooks to enhance students' vocabulary. Some literature has shown that technology has transformed the educational landscape, shifting from traditional teaching methods to digital platforms like mobile apps (Burston, 2014).

Several studies have provided evidence that mobile apps lead to improvements in various language skills, including spelling, reading comprehension, and listening comprehension (Hao, Lee, Chen, & Sim, 2018). Furthermore, it has proven beneficial for phonology (Kim, 2013), grammar in languages other than English, such as Spanish (Castaneda & Cho, 2016; Rachels & Rockinson-Szapkiw, 2018), and even writing through platforms like WhatsApp (Awada, 2016).

Additionally, the primary focus of this research is vocabulary acquisition (Hao et al., 2018; Rachels & Rockinson-Szapkiw, 2018; Rosell-Aguilar, 2016, 2018). Furthermore, this research employs Mobile-Assisted Language Learning (MALL), with a particular emphasis on the use of the Duolingo app to assist students in vocabulary acquisition.

2.1.3. Duolingo App

2.1.3.1 The Nature of Duolingo App

This application combines elements of gaming with language learning, creating an engaging and effective environment for its users. The application is designed to assist users in acquiring new language skills efficiently and effectively (Munday, 2016).

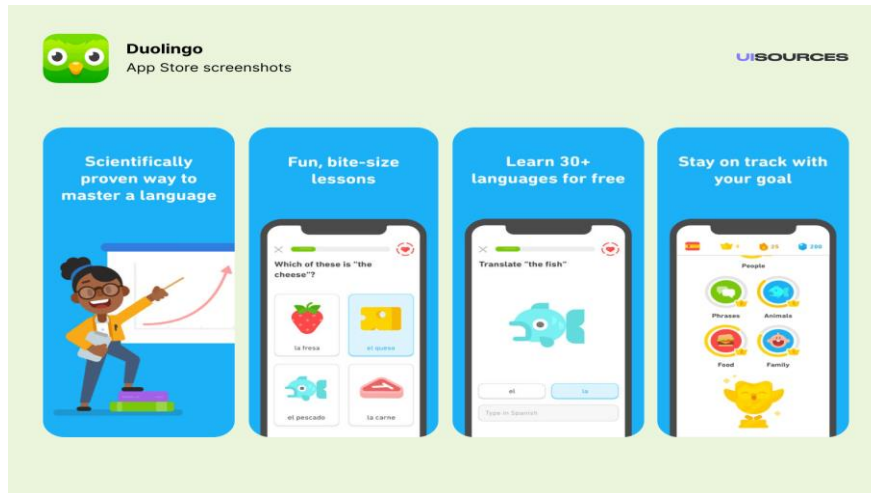


Fig 2.1 Illustrates the Duolingo app’s main interface, highlighting vocabulary lessons and progress indicators.

With the rapid advancement of technology, the entire world, including the field of education, has transformed into a digital medium. Based on (Fathi, Jalil, Saeedian, 2018) many educators are considering the utilization of technology to eliminate constraints in learning. Mobile phones have become an integral part of students' academic lives, irrespective of their age and objectives. Due to the plethora of online applications supporting teachers and students in vocabulary learning, many researchers have begun to focus their attention on studies related to improvements in vocabulary acquisition facilitated by mobile devices such as applications (Godwin-Jones, 2011; Heil et al., 2016).

One of the applications used as an aid in facilitating students' vocabulary learning is the Duolingo application. Duolingo is one of the most popular language learning applications. It is an application that can be accessed for free through computers or mobile phones. Munday (2016) states that Duolingo aims to teach languages in an enjoyable manner, although the application presents combined activities involving several skills in the form of games. This application

is an online language learning platform that focuses on vocabulary learning, allowing students to improve their foreign language skills without the assistance of a teacher.

Furthermore, the Duolingo application has experienced rapid growth, with over 100 million people from various countries around the world learning languages using this application. The application offers 40 languages, including English, Spanish, French, German, Italian, Japanese, Chinese, Russian, Korean, Portuguese, Arabic, Dutch, Swedish, Norwegian, Turkish, Polish, Irish, Greek, Hebrew, Danish, Hindi, Czech, Esperanto, Ukrainian, Welsh, Vietnamese, Hungarian, Swahili, Romanian, Indonesian, Hawaiian, Navajo, Klingon, High Valyrian, Latin, Gaelic, Finnish, Yiddish, Haitian Creole, and Zulu (Duolingo, 2023). Moreover, the application features interactive lessons, a point and level system, strengthening exercises, progress tracking, topic-specific lessons, listening exercises, community forums, graduation certificates, and a premium version. This application is also available for free download on the Apple Store and Google Play.

2.1.3.2 Duolingo App as A Language Learning System

The Duolingo app is a comprehensive language learning system designed to assist users in acquiring new language skills efficiently and effectively



Fig 2.2 Show the interface of the Duolingo application, including vocabulary exercises and gamified learning features.

The Duolingo app implements a repetition system as a core strategy to enhance language learning effectiveness. The main feature reflecting this principle is the adoption of an adaptive algorithm that adjusts exercises based on user progress. If a user provides the correct answer, the app automatically presents more challenging material or introduces new vocabulary. Daily tracking and repetition through daily exercises are designed to ensure that users are regularly engaged in practice and understanding the material. By embracing the concept of repetition, Duolingo provides a structured learning experience, ensuring that users are consistently involved to achieve optimal retention levels (Purwanto, 2023).

The Duolingo application offers various supportive features, such as multiple-choice questions, fill-in-the-blank exercises, bidirectional translation, writing based on audio input, and speaking using a microphone. First is the translation exercise, where students need to translate words, sentences, or phrases from English to Indonesian or vice versa. Second is the matching exercise, where students match provided images with available words. Third is the listening exercise, where students listen to words, sentences, or phrases in English and must

type them correctly. Fourth is the speaking exercise, where students hear words, sentences, or phrases in English and must pronounce them correctly. The final exercise involves fill-in-the-blank questions in the form of multiple-choice. Students must choose the correct answer from two or three options (Hafifah, 2019). Based on research conducted by Putri and Islamiati (2018), the method of delivering learning material is highly engaging because the Duolingo application system offers game features that make students feel like they are learning while playing, with an appealing visual display supported by audio.

Duolingo stands out with its sentence construction feature, which serves not only as an exercise to improve writing skills but also proves effective in enhancing student retention. Through sentence construction exercises, users are encouraged to build language structures and recall learned vocabulary. This process not only deepens grammatical understanding but also strengthens connections between words in sentence contexts. With repetition integrated into sentence construction, students are indirectly engaged in a more profound learning process. By utilizing this feature, Duolingo is not only a tool for understanding words but also an effective means to develop students' ability to construct sentences accurately and creatively (Herminingsih, 2021).

The provision of vocabulary in the Duolingo app is easily understood by users. With a user-friendly learning approach, Duolingo presents words and phrases in clear and relevant contexts to everyday life. Each word comes with examples of usage in sentences, providing users with the ability to quickly understand meanings. Thus, Duolingo not only provides access to diverse

vocabulary but also ensures that users can easily understand and remember each word, promoting more effective language learning progress (Devi, 2022).

The Duolingo app not only presents easily understandable vocabulary but also emphasizes everyday vocabulary concepts to enhance relevance in language use in practical life. By introducing vocabulary related to daily situations, users can directly apply what they learn in their everyday contexts. For example, the app introduces not only common words related to food or transportation but also teaches vocabulary useful in daily conversations. Through this approach, Duolingo helps users build a practical and useful vocabulary foundation for communicating in the language they are learning (Yusda, Nanda, Pratiwi, & Haninun, 2020).

The learning principles within Duolingo, as outlined by Ahn (2013), encompass several critical aspects. Firstly, Duolingo encourages active language learning by involving users in exercises that engage listening, speaking, reading, and writing in the target language. Point and level systems are used to provide motivation, awarding points and leveling up users as they progress in their learning journey.

Additionally, the application utilizes artificial intelligence to adapt learning material to individual users' skill levels and needs. Reinforcement exercises are provided after lessons to ensure strong comprehension. Duolingo emphasizes learning in real-life or situational contexts to help users relate language to everyday usage. The principle of "microvolunteerism" is also applied, inviting users to contribute to internet text translations as part of their learning experience. Motivation is enhanced through gamification elements, and flexibility

and accessibility are provided through features such as offline learning mode and mobile applications. Finally, the application creates a community of language learners by offering forums that allow users to interact with fellow language learners. These principles collectively contribute to making Duolingo an effective and engaging language learning platform.

Castro et al. (2016) state that Duolingo can motivate students to practice using a foreign language every day because it was found that the Duolingo application contributes to improving vocabulary, pronunciation, and basic grammar. One advantage of technology as a learning medium is that it makes language learning faster, more accessible, and allows for increased participation in language practice after learning (Siang, Nurdin, & Robinson, 2019).

According to Pramesti (2020), the Duolingo application has several advantages that make it an attractive choice for language learning. First, its high accessibility as a free application allows users from diverse backgrounds to easily access it. Furthermore, the gamified approach used by Duolingo makes language learning more enjoyable and interactive. The application also has daily challenges and a point system that rewards users, thereby enhancing motivation for consistent language learning. According to Koole (2009), Duolingo also has some drawbacks, such as dependence on an unstable internet connection, which can pose challenges for users in areas with limited or unreliable internet access. Moreover, the free version of Duolingo often displays ads that may disrupt the user experience. Users seeking an ad-free experience can opt for the premium version.

Several studies have employed the Duolingo application in language learning. Saad and Rahim (2022) found that students have a positive perception of Duolingo. They consider it easy to use, convenient, and entertaining. Test results showed an improvement in terms of acquiring French vocabulary, and it was found that Duolingo employs various methods to present and teach French vocabulary. This study indicates that Duolingo can be used to build and enhance French vocabulary outside the classroom. It is also beneficial in complementing French language classes to help students build confidence in using the language. Munday (2016), in his research on the use of Duolingo as part of the Spanish language class experience, found that Spanish learners enjoy the application and achieve more than the required levels.

2.2. Previous Study

In recent years, the results of these studies have generally shown a highly positive impact on learning through applications, especially in terms of flexibility and convenience (Brown, Castellano, Hughes & Worth, 2012; Castaneda & Cho, 2016; Khaddage&Lattemann, 2013; Kim, 2013). These studies support the idea that the use of smartphones and the implementation of gamified applications within the classroom environment will shape the future of higher education and enhance student productivity. Over the past decade, many empirical studies have examined the use of mobile devices as a support for learning systems in the process of teaching and acquiring English vocabulary, without being constrained by time and location (Oberg & Daniels, 2013).

Several empirical studies have been conducted, one of which was by Basosgl and Akdemir (2010), who recruited 60 university students to compare the effectiveness of learning English vocabulary through smartphones with conventional flashcards. The results of their experimental research indicated a positive effect on participants' vocabulary learning and a positive attitude toward learning English vocabulary. Although many students perceive vocabulary learning as one of the main challenges faced by foreign language learners during the second language or foreign language learning process, Azwar (2021) supports the idea that vocabulary learning or lexical processing is largely an unconscious process.

In addition, research by Munday (2016) explored the effectiveness of Duolingo when used in conjunction with traditional teaching methods in a university-level Spanish course. The goal was not to learn Spanish quickly but to enhance the learning process without time constraints. The results showed that Spanish learners enjoyed using this application and achieved more than the required proficiency levels. However, advanced learners did not show as much progress as beginners who improved rapidly during the course. Consequently, Munday (2016) suggested integrating Duolingo into classes because students preferred it over traditional homework assignments. Some students even continued to use Duolingo after the course ended.

In an Asian context, Saad and Rahim (2022) found that students have a positive view of Duolingo, considering it easy to use, convenient, and enjoyable. Furthermore, the research observed a significant improvement in the acquisition of French vocabulary, emphasizing that Duolingo employs various methods to

teach French vocabulary. This research suggests that Duolingo can be a valuable tool for expanding and enhancing the mastery of French vocabulary, even outside traditional classroom settings.

In the context of Indonesia, the use of Mobile-Assisted Language Learning (MALL) and the Duolingo mobile application for vocabulary learning. For example, in a study conducted by Ajisoko (2020) at Borneo Tarakan University, the research aimed to understand how the Duolingo application can help improve students' vocabulary. The findings indicated that students' scores improved, demonstrating the effectiveness of this application. This research is expected to benefit both teachers and students by offering a convenient way to enhance language learning through extensive exercises.

Apoko, Dunggio, and Chong (2023) found that the Duolingo application improved students' vocabulary mastery in their English language learning. Therefore, it is recommended to use Duolingo for both EFL (English as a Foreign Language) and non-EFL students at universities to enhance their English language proficiency, especially in vocabulary mastery. Duolingo is preferred for its ease of use, user-friendliness, and accessibility. Furthermore, the application offers engaging and informative features. This means that Duolingo enhances students' willingness and motivation to practice English more effectively. Additionally, Ilyas (2023) found that Duolingo can help increase students' vocabulary size and can also serve as a practical way to learn a language. Therefore, researchers suggest the continued use of Duolingo for language learning.

Mayangsari et al. (2022) found that students had a high perception of the effectiveness of Duolingo in improving vocabulary comprehension. In the

cognitive aspect, students believed that Duolingo greatly benefited their vocabulary mastery, as evidenced by high average scores. In the affective aspect, students reported high satisfaction and interest in using Duolingo for learning. Furthermore, in the psychomotor aspect, students exhibited high motivation and confidence when using Duolingo.

The commonality between this research and previous research is that Munday (2016), Saad and Rahim (2022), Vinh (2020), Ajisoko (2020), Apoko, Dunggio and Chong (2023), and Ilyas (2023) all sought to understand the effectiveness of the Duolingo application in language learning or vocabulary comprehension. They all found that students have a positive view of using Duolingo and feel that the application is easy to use, convenient, and effective in enhancing language comprehension or vocabulary. The commonality among these studies is the use of the Duolingo application as the research object.

The difference between this research and previous research is that Munday (2016) conducted the study at the international level, focusing on the use of Duolingo in Spanish language courses at Spanish universities. Saad and Rahim (2022) researched the use of Duolingo for learning French vocabulary on an Asian scale. On the other hand, research by Ajisoko (2020) focused on the Indonesian context, while Apoko, Dunggio, and Chong (2023) and Ilyas (2023) investigated the use of Duolingo in English language learning. However, this research aims to investigate students' reflections on using the Duolingo application to improve their English vocabulary learning by different method and students for learning general English.