

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter discusses the theoretical foundations and previous research using Duolingo in teaching and learning vocabulary mastery. The theoretical foundations described include: Definition of Vocabulary, Vocabulary Mastery, Problems in Vocabulary Learning, Definition of Duolingo, Advantages of Duolingo, Disadvantages of Duolingo, Use of Duolingo Application in Learning and Teaching English and also discusses the previous studies.

A. Vocabulary

1. Definition of vocabulary

Vocabulary is not merely the accumulation of isolated words; it includes knowledge of pronunciation, spelling, and semantics stored in long-term memory. Stahl (2005) emphasized that words often possess complex and overlapping meanings, requiring careful and contextual instruction. He argued that vocabulary development must be strategic and consistent, especially for English language learners who need to internalize terms and use them independently in communication. In this regard, vocabulary learning should go beyond rote memorization to ensure meaningful acquisition. Learners need repeated exposure and usage in various contexts to fully comprehend and use new words accurately. As argued by Nation (2001), without adequate vocabulary, learners cannot effectively comprehend texts or express their thoughts. Thus, vocabulary serves not only as a tool for communication but also as a determinant of overall language proficiency.

Vocabulary is a central aspect of language proficiency and communication. It enables learners to access, understand, and convey information in both oral and written forms. Without a solid vocabulary base, learners will struggle to communicate ideas or understand others, making vocabulary acquisition a priority in second language learning.

2. Vocabulary Mastery

Vocabulary mastery refers to a learner's comprehensive knowledge and ability to use vocabulary accurately in various contexts. It encompasses the recognition, understanding, and application of words in both spoken and written language. Anderson and Bachman (2000) define vocabulary mastery as the ability of learners to relate English words to their definitions, synonyms, or equivalents in their native language. This perspective suggests that vocabulary knowledge is not limited to word recognition but also includes semantic understanding and practical use.

In addition, Fisher and Frey (2016) assert that vocabulary knowledge reflects prior knowledge and significantly contributes to reading comprehension and oral proficiency. They emphasize that students should not only be able to define words but also understand the concepts behind them, which aids in deepening their language skills. Mastery of vocabulary, therefore, supports the development of the four language skills and strengthens learners' confidence in communication.

Vocabulary mastery also facilitates cognitive processes such as inferencemaking, summarizing, and interpreting meaning. According to Schmitt (2010), vocabulary knowledge develops incrementally and requires continuous

reinforcement through reading, listening, and practical usage. Without sufficient vocabulary, learners face challenges in achieving fluency and accuracy in English. Vocabulary mastery is essential for effective language use. It enables learners to understand and produce language confidently, enhances comprehension, and supports academic achievement. Therefore, fostering vocabulary mastery should be a primary goal in English language instruction.

3. Problems in Learning Vocabulary

EFL learners, including Indonesian students, often experience difficulties in memorizing and understanding new vocabulary. Boredom in the learning process is one of the main causes, where students tend to learn passively by only listening to the teacher's explanation (Lee, 2022). In addition, the limited amount of vocabulary they master limits their interaction in English, especially in speaking and writing despite their high initial motivation (Telaumbanua et al., 2024).

Some of the factors that influence this difficulty can be classified into two dimensions: personal and social (Syafira et al., 2023; Lee, 2022). Personal factors such as low motivation, interest, and lazy memorization are the main obstacles (Telaumbanua et al., 2024). Meanwhile, social factors, including lack of attractive learning media support and monotonous learning environment, make students' interest decrease (Wananstra, 2019). Azar (2020) warns about “illusory competence” - when students feel familiar with a word (through reading or listening), but cannot apply it in speaking or writing appropriately. This relies on active training in vocabulary use, not just passive recognition (Basori, 2024).

The main problems in vocabulary learning among Indonesian EFL students involve:

- Personal factors: low motivation, interest and laziness.
- Social factors: passive learning and monotonous media.
- Illusion of vocabulary mastery: students feel they know but fail to apply it practically.
- Technical difficulties: pronunciation, spelling, and context understanding.
- Disinterest in traditional media, indicating the need for interactive methods, such as apps and digital games.

B. Duolingo

1. Definition of Duolingo

In the context of language learning, digital media-such as computers and smartphones-serve as facilitators for interactive and engaging learning experiences. Shelly (2010) defines digital media as computer-based presentations or applications that integrate multimedia elements to effectively transmit information. This conception is in line with recent findings from Li and Bonk (2023), who emphasize that adaptive and gamified systems such as Duolingo use short lessons and multimedia elements to increase learner engagement and personalize the learning path.

Duolingo, launched in June 2012 by Luis von Ahn and Severin Hacker, is a free language learning app that integrates gamification mechanisms-such as point awarding, scribbling, and adaptive feedback-to motivate learners and maintain engagement. A recent mixed methods study involving grade 10 students in Palangka Raya showed that Duolingo significantly improved vocabulary

acquisition, with post-test scores increasing from an average of 51.86 to 80.71 after implementation. In addition, Nurhayati and Suryaman (2023) found that using Duolingo as part of mobile-assisted language learning coupled with gamification resulted in higher vocabulary gains compared to traditional instruction. Overall, Duolingo is an example of modern digital media in education: Duolingo combines text, audio, images, and interactive elements in a game-like smartphone app. This design encourages active participation, supports cognitive engagement, and has been empirically proven to improve vocabulary acquisition in a variety of educational environments.

2. Advantages of Duolingo

There are several advantages of using Duolingo as a means of learning:

- a) One of Duolingo's most cited advantages is its effective use of gamification. The platform incorporates a points system, streak tracking, badges, and competitive leaderboards that motivate students to consistently engage with language learning materials. This approach increases students' intrinsic motivation and makes the learning process more enjoyable. According to Bader et al. (2022), gamification in Duolingo encourages repeated exposure and practice, which is important for vocabulary retention and learner engagement.
- b) Duolingo allows learners to study at their own pace and schedule, which promotes autonomy in language learning. Its mobile-accessible platform allows students to review vocabulary, grammar, and pronunciation through interactive exercises outside of class hours. Rahayu et al. (2023) found that students who used Duolingo for homework showed higher vocabulary gains than those who

used traditional exercises, demonstrating the potential of this app to support independent language acquisition.

3. Disadvantages of Duolingo

There are several Disadvantages of using Duolingo as a means of learning:

- a) **Limited Depth and Lack of Contextual Nuance**, While Duolingo is effective for beginners, it often lacks in-depth explanations of grammar and vocabulary in real-life contexts. According to Bader et al. (2022), the app prioritizes surfacelevel learning through gamified repetition, which may not support long-term language retention for intermediate or advanced learners.
- b) **Inconsistent Course Quality and Disruptive Updates** Duolingo frequently updates and changes its course structure, sometimes removing lessons without notice. This can confuse learners and disrupt learning continuity. Profolus (2025) notes that less popular language courses are often underdeveloped, which reduces the effectiveness of the learning experience for users pursuing the language.

C. Flashcard

1. Definition of Flashcard

Flashcards are learning aids in the form of small cards that display a question on one side and the answer or explanation on the other. Their main purpose is to support active recall and spaced repetition, both of which improve long-term retention of vocabulary (Chew, 2021). For vocabulary learning, flashcards provide an efficient method to reinforce word knowledge - semantics, pronunciation, and usage - through repeated exposure and retrieval practice. As shown by Wang et al. (2023), flashcards significantly improved students' active vocabulary retention.

2. Advantages of Flashcard

There are several Advantages of using Flashcard as a means of learning:

- a) Flashcards significantly improve long-term memory as they encourage students to activate memory at regular intervals. The principles of active recall and spaced repetition work synergistically to strengthen neural connections and reduce information forgetfulness (Chew, 2021).
- b) The use of physical flashcards increases student engagement and focus during the learning process. Studies in Indonesia and Malaysia showed that 39% of students reported improved concentration when using flashcards, and 44% felt more interested and encouraged to be active in vocabulary learning (Feranty et al., 2024).

3. Disadvantages of Flashcard

There are several Disadvantages of using Flashcard as a means of learning:

- a) One of the major drawbacks of non-digital flashcards is the absence of automatic feedback and adaptation features based on student performance. Physical cards do not provide the reinforcement necessary for adaptive learning. This can hinder real-time error detection and reduce the effectiveness of repetition (Sarani & Mahmoodi, 2020).
- b) Physical flashcards are also prone to organizational issues-such as cards being lost, mixed up, or difficult to carry in large quantities. In a study by Cahyani and Rohmah (2021), students reported difficulty storing and categorizing cards, as well as difficulty in monitoring learning progress. In addition, the absence of tracking or learning history features made it difficult for students to evaluate their progress.

D. Previous Studies

Several previous studies have examined the use of Duolingo in improving students' vocabulary mastery, and their findings serve as valuable references for this current research. One study was conducted by Kusuma Dewi and Widyastuti (2018), who investigated "*The Effect of Duolingo Toward Students' Vocabulary Mastery*" using a true-experimental design involving eighth-grade students at the Omega Science Institute. Their study revealed a significant difference between the experimental group, who used the Duolingo app, and the control group, who followed conventional methods. The average post-test score of the experimental group was 73.33, while the control group achieved an average of 56.33, indicating that Duolingo had a strong positive effect on vocabulary learning outcomes.

Another relevant study was carried out by Silmi (2019), titled "*Student Perception of Duolingo as a Media for Learning English.*" Using a mixed method approach, with questionnaires and interviews conducted among students from the English Education Program at Universitas Brawijaya, this study found that students perceived Duolingo positively. The participants reported that the app was enjoyable and helpful, particularly for vocabulary learning, and they expressed a willingness to continue using it in their personal study routines.

Ajisoko (2020) conducted research titled "*The Use of Duolingo Apps to Improve English Vocabulary Learning,*" involving second-semester students at Borneo University of Tarakan. The research adopted a pre-experimental design with pre-test and post-test procedures. The findings showed that the mean post-test score (79.15) was significantly higher than the pre-test score (57.45),

suggesting that Duolingo effectively enhanced students' vocabulary acquisition. Moreover, learners reported increased motivation and engagement in vocabulary learning.

A more general investigation into Duolingo's classroom applicability was conducted by Pilar Munday (2016) in a study titled "*The Case for Using Duolingo as Part of the Language Classroom Experience.*" This qualitative research, involving interviews and surveys, was focused on Spanish learners. Although not centered on English learning, it demonstrated that 43.8% of participants were highly satisfied with Duolingo, while 87.6% perceived it as equally effective as traditional homework, confirming the app's pedagogical value.

Lastly, Habibie (2020) explored the motivational impact of Duolingo in English language learning among fourth-year students at IAIN Sultan Amai Gorontalo. The study employed both quantitative and qualitative methods and found that Duolingo significantly enhanced students' motivation to learn, particularly in writing and vocabulary-related tasks. Most of the previous studies showed that Duolingo can help students improve their vocabulary mastery and increase their motivation in learning English. The application also makes learning more interesting because it uses games and interactive activities. However, many previous researchers only discussed the use of Duolingo without comparing it with other learning media. Besides that, several studies used pre-experimental and mixed-method designs, while this research uses a quasi-experimental design with experimental and control groups. Therefore, this study

tries to find out the difference between students who learn vocabulary using Duolingo and those who learn using flashcards at MTsN 2 Kediri.

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