**People's Democratic Republic of Algeria**

**Ministry of Higher Education and Scientific Research**

**8 MAY 1945 UNIVERSITY / GUELMA** — **جامعة 8 ماي 1945/قالمة**

**FACULTY OF LETTERS AND LANGUAGES** — **كلية الآداب و اللغات**

**DEPARTMENT OF LETTERS & ENGLISH LANGUAGE** — **قسم الآداب و اللغة الإنجليزية**


**Option: Linguistics**

# Investigating EFL Learner's Perspectives on using Duolingo to Enrich their Vocabulary

**A Case Study of Second Year Students, Department of English , University of 8 Mai 1945-Guelma**

**A Dissertation Submitted to the Department of Letters and English Language in Partial Fulfillment of the Requirements for the Degree of Master in Language and Culture**

**BOARD OF EXAMINERS**

| | | |
|---|---|---|
| Chairman: **Mrs. TEMIME Widad** | **(M.A.A)** | University of 8 May 1945-Guelma |
| Examiner: **Mrs. HIMOURA Kawther** | **(M.C.B)** | University of 8 May 1945-Guelma |
| Supervisor: **MRS. MNIDJEL RIMA** | **(M.A.A)** | University of 8 May 1945-Guelma |

**Submitted by: MOHAMMED IBRAHIM HADDAD**

**Supervised by: MRS. MENIDJEL RIMA**

**June 2025**

**Dedication**

*In the name of Allah, Most Gracious, Most Merciful*

I would like to dedicate this master's dissertation
to my guiding lights and greatest blessings in this life—
**my beloved parents**.

To my mother, the embodiment of love, patience, and strength,
and to my father, whose wisdom and unwavering support
have always inspired and uplifted me.

Your sacrifices, prayers, and endless encouragement
have made this journey possible.

May Allah reward you abundantly and bless you always.

To my brother and sisters, thank you for your encouragement, love,
and for always believing in me.

This achievement is as much yours as it is mine.
May Allah bless you all and reward you with the best in this life and the next

May they be endowed with boundless success in all their endeavors.

To my esteemed Friends and all who accompanied and supported me on my academic journey. May all who come across this dedication offer their prayers for Palestine, invoking peace, justice, and compassion for our sisters and brothers there.

**Acknowledgements**

My heartfelt gratitude extends to the Almighty Allah for granting me the resilience and patience to overcome the obstacles that marked my research journey. His divine guidance has been my constant source of strength and perseverance.

I am deeply thankful to my dear parents, whose unwavering faith in my abilities and continuous support have been invaluable, not only throughout my academic pursuits but in every step of my life. Their love and encouragement have been the foundation of all my achievements.

I owe a profound debt of gratitude to my esteemed supervisor, **Mrs Menidjel Rima**, for her continuous encouragement, invaluable advice, and genuine kindness. Her guidance has been essential to the completion of this work.

To the distinguished jury members, I extend my sincere appreciation for their time, expertise, and thoughtful feedback.

Special thanks go to **Mrs. Himoura Kawther**, whose insightful comments have enriched this research, and to **Mrs. TEMIME Widad**, whose constructive guidance and support were truly instrumental throughout this journey

**Abstract:**

Learning Vocabulary is a very important skill in the process of learning a language, especially for EFL learners who want to improve their skills to use English effectively while communicating; however many EFL students at the University of Guelma face some difficulties that prevent them from using the target language appropriately due to their lack of vocabulary. This research explores EFL learners' attitudes toward learning new vocabulary using the Duolingo Application. The core hypothesis of this research assumes that EFL learners ' vocabulary would develop if they use Duolingo. In order to test the aforementioned hypothesis, a descriptive quantitative method is used, in which a questionnaire is designed and distributed to Sixty second-year students (L2) who have already used Duolingo, at the Department of English, University of 08 Mai 1945 - Guelma. The analysis of the collected data corroborates the hypothesis; these findings underscore that most EFL Learners have positive attitudes towards the Duolingo Application in enhancing their vocabulary. The results also revealed the effectiveness of the Duolingo app. in enhancing EFL learners' vocabulary. Thus, our research hypothesis is confirmed. So it is better recommended for EFL Learners to use the Duolingo Application as a tool for their vocabulary development.

**Keywords: (5/6)**

Vocabulary , Duolingo Application , EFL Students , Attitudes , Language learning , Development

## List of Abbreviations

**EFL** English as a Foreign Language

**SLA** Second Language Acquisition

**MALL** Mobile-Assisted Language Learning

**CLT** Cognitive Load Theory

**L1** First Language

**L2** Second Language

**AI** Artificial Intelligence

**DET** Duolingo English Test

**XP** Experience Points

**SR** Spaced Repetition

**AR** Augmented Reality

**VR** Virtual Reality

## List of Tables

## List of figures

## List of graphs

**CONTENTS**

**General Introduction**



## General Introduction

### 1. Background of the Study

The rapid advancement of technology has transformed language education, particularly in the realm of vocabulary acquisition, which is a cornerstone of English as a Foreign Language (EFL) learning. Vocabulary knowledge significantly influences learners' ability to comprehend, communicate, and engage effectively in a second language (Nation, 2013). Among various digital tools, Duolingo, a mobile-assisted language learning (MALL) application, has gained widespread popularity due to its gamified, accessible, and user-friendly interface. Launched in 2012, Duolingo employs features such as spaced repetition, gamification, and multimodal learning to enhance vocabulary retention and learner engagement

(Munday, 2016). Its global adoption, with over 500 million users by 2024, underscores its significance as a tool for language learning.

However, despite its strengths, questions remain about its effectiveness in fostering deep vocabulary knowledge and its suitability for academic contexts, particularly for EFL learners. This study investigates Duolingo's role in vocabulary acquisition among second-year EFL students at 08 Mai 1945-Guelma University, exploring its strengths, limitations, and potential as a supplementary tool in formal education settings.

## 2. Statement of the Problem

Vocabulary acquisition is a critical yet challenging aspect of EFL learning, requiring both breadth (the number of words known) and depth (understanding of meaning, collocations, and contextual use). Traditional methods, such as rote memorization and vocabulary lists, often lack engagement and fail to promote deep lexical processing (Schmitt, 2010).

While Duolingo offers an interactive and motivating environment, its reliance on translation-based exercises, limited contextual immersion, and insufficient support for productive skills (e.g., speaking and writing) may hinder its ability to fully address EFL learners' academic and communicative needs.

This study examines whether Duolingo effectively supports vocabulary development and explores its integration into formal instruction to enhance both general and academic vocabulary acquisition.

## 3. Aims of the Study

The primary aim of this study is to evaluate the effectiveness of Duolingo as a vocabulary learning tool for second-year EFL students at 08 Mai 1945-Guelma University. Specifically, the study seeks to:

- Assess learners' experiences and perceptions of using Duolingo for vocabulary acquisition.
- Evaluate the extent to which Duolingo contributes to the development of general and academic vocabulary.

- Determine the feasibility and effectiveness of integrating Duolingo into formal EFL classroom instruction as a supplementary tool.

## 4. Research Questions

1. What are the experiences and perceptions of EFL learners regarding Duolingo's effectiveness in vocabulary acquisition?
2. How effective is Duolingo in enhancing general and academic vocabulary knowledge among EFL learners?
3. To what extent can Duolingo be integrated into formal EFL classroom settings to support vocabulary learning?

## 5. Research Hypothesis

The study operates on the following hypotheses:

**H1**: The use of Duolingo significantly improves EFL student's vocabulary

**H0**: The use of Duolingo has no significant impact on EFL students' vocabulary development

### 6.1 Research Methodology and Design

This study adopts a mixed-methods approach, combining quantitative and qualitative data to provide a comprehensive analysis of Duolingo's effectiveness in vocabulary acquisition. A structured questionnaire was used as the primary data collection tool, incorporating closed-ended, multiple-choice, and open-ended questions to capture both statistical trends and detailed learner insights. The mixed-methods design allows for a robust evaluation of learners' experiences, perceptions, and challenges, aligning with the exploratory nature of the research (Creswell, 2014).

### 6.2 Population and Sampling of the Study

The study targets a population of second-year EFL students at the Department of English, 08 Mai 1945-Guelma University. A random sample of 60 students was selected to ensure diversity in learning backgrounds and proficiency levels. All participants had prior experience using Duolingo for vocabulary learning, making them suitable for evaluating the platform's

impact. The sample's demographic diversity, including age (18–24+ years), gender (66% female, 34% male), and years of English study (ranging from less than 3 to over 5 years), enhances the generalizability of the findings within the context of university-level EFL learners.

### 6.3 Data Gathering Tool

Data was collected through a structured questionnaire divided into four sections: General Information, Duolingo Usage, Vocabulary Acquisition in EFL Learning, and The Influence of Duolingo on Academic Vocabulary Acquisition. The questionnaire comprised 23 items, including closed-ended questions for quantitative analysis and open-ended questions for qualitative insights. The tool was designed to explore students' frequency of Duolingo use, perceived effectiveness, challenges, and opinions on its integration into formal instruction. Responses were analyzed using descriptive statistics for quantitative data and thematic analysis for qualitative responses, ensuring a comprehensive interpretation of findings.

## 7. Structure of the Dissertation

The dissertation is organized into two main parts: the first part, comprising a comprehensive literature review across two chapters, and the second part, consisting of a single practical chapter dedicated to empirical fieldwork. The introductory section establishes the foundation of the study by outlining the statement of the problem, aims of the study, research questions, research hypotheses, population and sample of the study, data gathering tools, and the structure of the dissertation.

The first chapter**,** titled *Duolingo as a Vocabulary Learning Tool*, is divided into several sections. It introduces Duolingo, a mobile-assisted language learning (MALL) platform, and explores its advantages and limitations in the context of vocabulary acquisition for English as a Foreign Language (EFL) learners. The chapter elaborates on the benefits of Duolingo, including its gamified interface, spaced repetition algorithms, and multimodal learning strategies that enhance learner motivation and retention (Munday, 2016; Nation, 2013). It also addresses potential challenges, such as the platform's reliance on translation-based exercises, limited support for productive skills (speaking and writing), and insufficient contextual depth for academic vocabulary. Additionally, the chapter discusses the pedagogical implications of Duolingo's features and its potential for future development in language education.

The second chapter, titled *Vocabulary Acquisition in EFL Learning*, provides a theoretical foundation for understanding vocabulary learning within the EFL context. It begins with an overview of the importance of vocabulary as a cornerstone of language proficiency, discussing the concepts of vocabulary breadth (number of words known) and depth (quality of word knowledge, including collocations and contextual usage) (Schmitt, 2010). The chapter then delves into theoretical frameworks, such as Cognitive Load Theory (Sweller, 1988), Dual-Coding Theory (Paivio, 1986), and the Involvement Load Hypothesis (Laufer & Hulstijn, 2001), which underpin technology-assisted vocabulary learning. It also examines various vocabulary learning strategies, challenges (e.g., retention difficulties and lack of authentic contexts), and the role of motivation in lexical acquisition. Ethical considerations, such as ensuring learner autonomy and addressing technological access disparities, are also addressed to highlight the systematic nature of vocabulary instruction.

The third chapter, titled *Research Fieldwork*, focuses on the empirical investigation conducted among 60 second-year EFL students at 08 Mai 1945-Guelma University. It describes the design, administration, and analysis of a structured questionnaire that explores students' experiences, perceptions, and attitudes toward using Duolingo as a vocabulary learning tool. The chapter presents quantitative and qualitative findings, revealing that 58.3% of students reported significant vocabulary improvement, with repetition (83.3%) and audio pronunciation (75%) cited as key strengths (Tables 3.10 and .7). However, limitations such as lack of contextual richness (63%) and inadequate speaking practice (58%) were also noted (Table 3.12). The chapter includes pedagogical recommendations, such as integrating Duolingo with teacher-guided activities, and addresses the study's limitations, including its small, predominantly female sample and lack of longitudinal design. Suggestions for future research, such as longitudinal studies and comparisons with other MALL tools, are also provided.

The general conclusion synthesizes the key findings of the study, emphasizing Duolingo's effectiveness as a supplementary tool for vocabulary acquisition while acknowledging its limitations in academic and productive skill development. It discusses the implications for EFL pedagogy, advocating for blended learning approaches that combine Duolingo's digital strengths with interactive, communicative activities. The conclusion also reiterates the study's limitations, such as the small sample size and reliance on self-reported data, and proposes directions for future research, including experimental designs and broader demographic samples, to further enhance the understanding of Duolingo's role in language education.

## Chapter one: Vocabulary Acquisition in EFL Learning

### Introduction

Vocabulary acquisition is the cornerstone of English as a Foreign Language (EFL) learning, underpinning proficiency across all language domains: reading comprehension, listening skills, speaking fluency, and written expression (Nation, 2013; Schmitt, 2010). Unlike first-language acquisition, which occurs naturally through immersive exposure, second-language vocabulary learning requires intentional strategies, structured instruction, and repeated contextual encounters, as limited naturalistic input is available (Ellis, 2008; Nation, 2001). A robust vocabulary enables learners to navigate complex texts, articulate nuanced ideas, and engage in culturally appropriate communication, directly influencing their overall language competence (Laufer & Nation, 1999; Richards, 1976).

Vocabulary knowledge is multidimensional, encompassing phonological recognition (e.g., distinguishing ship from sheep), orthographic accuracy (e.g., correctly spelling accommodation), semantic depth (e.g., understanding home as a physical place or an emotional concept), syntactic flexibility (e.g., using run as a verb or a noun), collocational patterns (e.g., heavy rain vs. strong rain), and pragmatic appropriateness (e.g., choosing request over demand in formal settings) (Read, 2000; Nation, 2001). For example, an EFL learner may recognize meticulousness in a reading passage (receptive knowledge) but may require practice to produce a sentence like “Her meticulous planning ensured success” (productive knowledge). This distinction between receptive and productive knowledge is critical for designing effective pedagogical approaches (Laufer, 1998).

This chapter provides a comprehensive exploration of vocabulary acquisition in EFL contexts, synthesizing theoretical frameworks, practical strategies, technological innovations, and assessment methods. It addresses cognitive, linguistic, and contextual challenges, as well

as the pivotal role of motivation, and emerging trends in research and pedagogy.

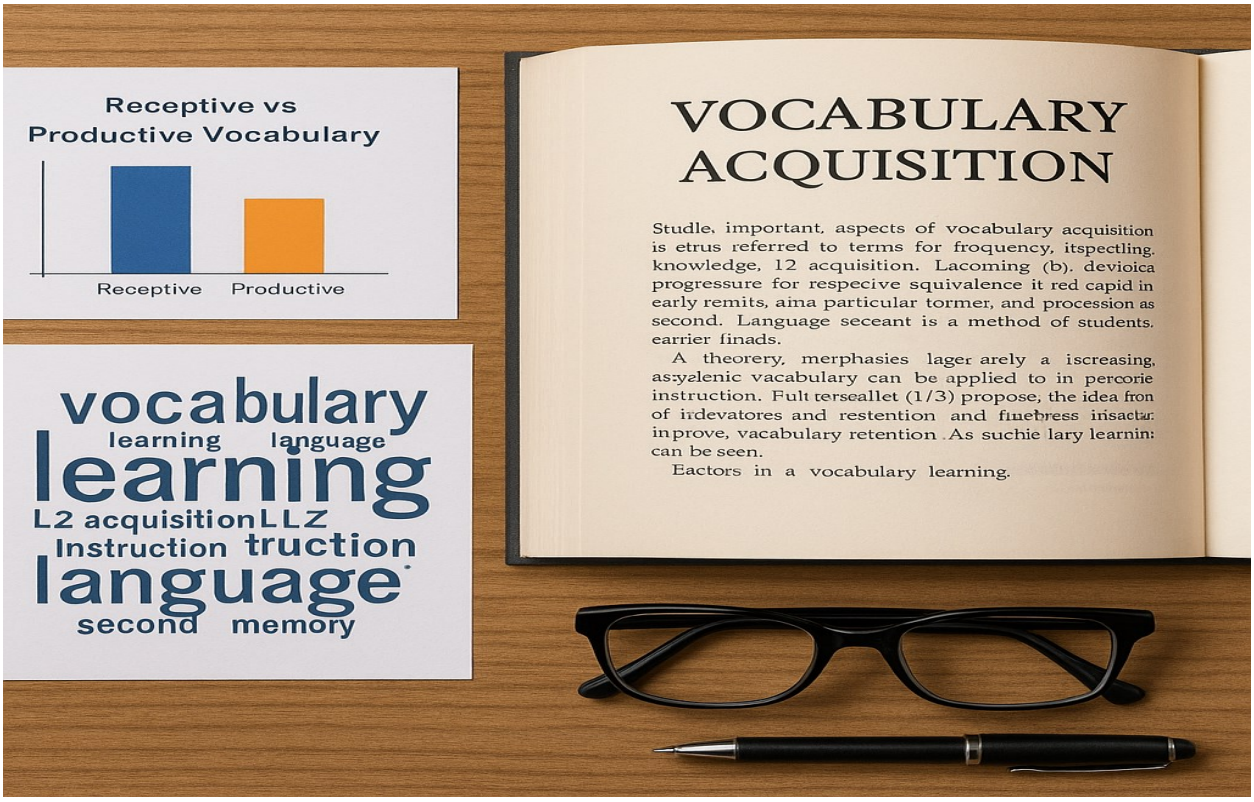



**Figure 1.1:** Vocabulary Acquisition

By integrating insights from cognitive psychology, second-language acquisition (SLA) research, and educational technology, this chapter aims to equip educators and learners with evidence-based tools to optimize vocabulary development, fostering communicative competence and lifelong learning.

## 2.2 Theoretical Background of Technology in Vocabulary Learning

### Introduction

The integration of technology into vocabulary acquisition has transformed EFL learning, shifting from traditional methods like rote memorization and paper-based flashcards to dynamic, interactive platforms such as mobile-assisted language learning (MALL) apps (e.g., Duolingo, Memrise, Quizlet) and artificial intelligence (AI)-driven tools (Godwin-Jones, 2018; Loewen et al., 2019).

These technologies offer personalized learning pathways, multimodal input (text, audio, visuals), and real-time feedback, aligning with learners' cognitive capacities, motivational

needs, and cultural contexts (Chapelle, 2003; Stockwell, 2007). Unlike conventional approaches, which often lack interactivity or contextual depth, technology enhances engagement, retention, and application of vocabulary in authentic settings (Kukulska-Hulme & Shield, 2008).

Theoretical frameworks from cognitive psychology, SLA, and educational pedagogy provide a foundation for understanding the impact of technology. This section examines four key theories—Cognitive Load Theory, Dual-Coding Theory, Involvement Load Hypothesis, and Interactionist Theory of SLA—alongside the role of technology in facilitating both incidental and explicit vocabulary learning. Each theory is illustrated with practical examples and supported by recent research, highlighting technology's transformative potential.

### 2.2.1 Cognitive Load Theory (CLT) and Vocabulary Learning

Cognitive Load Theory (CLT) posits that working memory has a finite capacity, necessitating instructional designs that minimize extraneous cognitive load (unnecessary processing) while maximizing germane load (learning-focused effort) (Sweller, 1988; Sweller et al., 2011). In vocabulary learning, extraneous load arises from poorly structured materials, such as dense word lists lacking context, while germane load is fostered by meaningful tasks like contextual sentence-building. Technology aligns with CLT by optimizing cognitive resources through:

- Reducing extraneous load: Apps like Duolingo deliver vocabulary in short, focused lessons (e.g., five words per session), preventing cognitive overload (Mayer, 2009). For example, a beginner lesson on food vocabulary might introduce *apple*, *bread*, *soup*, *cheese*, and *milk* with images and simple sentences like "I eat bread," avoiding overwhelming learners.
- Providing adaptive learning pathways: AI-driven platforms like Memrise adjust word difficulty based on learner performance, aligning tasks with Vygotsky's Zone of Proximal Development (Vygotsky, 1978; Godwin-Jones, 2018). A novice learner might practice high-frequency words like *house* or *car*, while an advanced learner tackles *residence* or *vehicle*.
- Implementing spaced repetition: Tools like Anki and Quizlet use algorithms to schedule reviews at increasing intervals (e.g., 1 day, 3 days, 7 days), enhancing long-term retention (Ebbinghaus, 1885; Roediger & Karpicke, 2006). For instance, after learning

*grateful*, a learner might review it three times over two weeks, reinforcing memory through spaced exposure.

CLT underscores the importance of structured, technology-driven instruction to optimize cognitive resources, enabling learners to internalize vocabulary efficiently.

### 2.2.2 Dual-Coding Theory and Multimodal Learning

Dual-Coding Theory asserts that information processed through verbal (e.g., text, audio) and nonverbal (e.g., images, videos) channels creates stronger memory traces by engaging interdependent cognitive subsystems (Paivio, 1986; Clark & Paivio, 1991). This theory is particularly relevant for EFL vocabulary learning, where multisensory input enhances semantic connections and retention. Technology leverages dual-coding principles by:

Pairing words with visuals: Quizlet flashcards combine words like *sunset* with images of a setting sun, reinforcing meaning through visual-verbal associations (Mayer, 2009). For example, a learner sees a *cat* alongside a picture of a feline, strengthening recall during reading or speaking tasks.

Incorporating audio: Apps like Duolingo provide native-speaker pronunciation (e.g., bonjour in French or schedule as /ˈʃedʒuːl/ in British English), enhancing phonological awareness and listening skills (Chapelle, 2003). This is critical for words with irregular pronunciation, such as *colonel* (/ˈkɜːrnəl/).

Using interactive media: Platforms like LingQ offer videos with clickable subtitles, allowing learners to explore words in context (e.g., adventure in a travel vlog), engaging multiple cognitive channels (Stockwell, 2007; Lan, 2020). Similarly, augmented reality apps like MondlyAR visualize words in 3D environments (e.g., kitchen items in a virtual home), deepening comprehension.

Multimodal learning not only improves retention but also increases engagement, as interactive elements make vocabulary acquisition enjoyable and relevant (Dörnyei, 2001; Reinders & Wattana, 2015).

### 2.2.3 The Involvement Load Hypothesis and Engagement in Digital Learning

The Involvement Load Hypothesis posits that vocabulary retention depends on the cognitive effort invested during learning, which is defined by three components: need (motivation to learn a word), search (finding its meaning), and evaluation (using it in a contextual setting) (Laufer & Hulstijn, 2001). Tasks with higher involvement load (e.g., writing sentences) lead to better retention than low-load tasks (e.g., reading definitions). Technology amplifies involvement load through:

Promoting need and search: Gamified apps like Duolingo use points, badges, and leaderboards to motivate learners to explore words (Dörnyei, 2005). For example, a learner might search for *hospitality* to complete a task, driven by a desire to earn a "Vocabulary Master" badge.

Facilitating evaluation: Interactive exercises, such as sentence completion or dialogue creation, encourage learners to use words meaningfully (Schmitt, 2010). Quizlet's "Write" mode prompts learners to produce sentences like "She showed great hospitality to her guests," reinforcing contextual understanding.

Adapting load balance: AI-driven platforms adjust task complexity to maintain optimal engagement, preventing frustration or boredom (Godwin-Jones, 2018). A learner struggling with persuasion might receive simpler prompts (e.g., "Persuade your friend") before advancing to complex sentences (e.g., "She persuaded the team to adopt her plan").

High involvement load tasks, enabled by technology, foster deeper cognitive processing, enhancing long-term vocabulary retention and productive use (Hulstijn, 2001).

### 2.2.4 Interactionist Theory of SLA and Digital Communication Tools

The Interactionist Theory of SLA emphasizes learning through negotiation of meaning, corrective feedback, and authentic language use in social contexts (Long, 1996; Gass & Mackey, 2007). Interaction facilitates vocabulary acquisition by providing opportunities to practice words, receive corrections, and refine usage. Technology supports interactionist principles by:

Enabling real-time feedback: AI chatbots, such as those in Duolingo or Mondly, simulate conversations and provide instant corrections (e.g., suggesting *went* instead of *goed*) (Loewen

et al., 2019). However, their feedback may lack the nuanced cultural insights of human teachers, such as explaining why *mate* is informal in British English (Chapelle, 2003).

Fostering collaborative learning: Platforms like Tandem and HelloTalk connect learners with native speakers for language exchange, enabling contextual vocabulary use (Krashen, 1989). For example, a learner might practice *bargaining* while discussing shopping with a native speaker, learning its pragmatic use (e.g., "I bargained for a lower price").

Supporting pronunciation: Speech recognition tools, such as Google Translate's pronunciation feature or Elsa Speak, analyze learner speech and provide feedback on accuracy (e.g., correcting *schedule* from /ˈskedʒuːl/ to /ˈʃedʒuːl/ in British English) (Stockwell, 2007; Levis, 2018).

Interactionist approaches highlight technology's role in creating authentic, interactive environments that mirror real-world communication, enhancing vocabulary acquisition through meaningful practice.

### 2.2.5 The Role of Technology in Facilitating Incidental and Explicit Vocabulary Learning

Vocabulary acquisition occurs through two primary modes: incidental learning (unconscious exposure during language use, such as reading or listening) and explicit learning (direct instruction of word meanings, forms, and usage) (Nation, 2001; Webb & Nation, 2017). Technology supports both approaches, offering flexibility to address diverse learner needs:

Incidental learning: Platforms like LingQ, ReadLang, and Netflix with interactive subtitles expose learners to vocabulary in authentic contexts (e.g., legacy in a historical drama or sustainability in a documentary), promoting naturalistic acquisition (Godwin-Jones, 2018). For example, a learner watching a TED Talk might encounter *innovation* in a discussion on technology, reinforcing its meaning through context (Krashen, 1989).

Explicit learning: Apps like Duolingo, Anki, and Quizlet deliver structured lessons, pairing words with translations, examples, and pronunciation practice (Schmitt, 2010). A Duolingo lesson on travel vocabulary might teach passport, luggage, itinerary, and destination through matching, listening, and sentence-building tasks.

Blended approaches: Tools like Quizlet combine explicit instruction (e.g., flashcards for the environment) with incidental exposure (e.g., using the environment in a contextual game or story), bridging both methods (Hulstijn, 2001). Similarly, apps like FluentU integrate video-based incidental learning with explicit quizzes, ensuring comprehensive exposure.

By balancing incidental and explicit strategies, technology fosters both receptive and productive vocabulary knowledge, enabling learners to recognize words in input and use them in output (Ellis, 2003).

### 2.3 Definition of Vocabulary Acquisition

Vocabulary acquisition is the complex, dynamic process of learning, internalizing, and applying words effectively within a language system. In EFL contexts, it is a critical determinant of communicative competence, enabling learners to comprehend texts, express ideas, and engage in social and cultural interactions (Nation, 2013; Schmitt, 2010).

Unlike first-language acquisition, which relies on immersive, naturalistic exposure, second-language vocabulary learning requires deliberate strategies, repeated encounters, and contextual reinforcement due to limited input opportunities (Ellis, 2008; Nation, 2001).

Vocabulary acquisition involves cognitive processes (e.g., encoding, storage, retrieval), linguistic knowledge (e.g., phonology, morphology, syntax), and sociocultural awareness (e.g., pragmatic and cultural appropriateness) (Read, 2000; Richards, 1976). For example, learning the word freedom entails recognizing its pronunciation (/ˈfriːdəm/), spelling, multiple meanings (e.g., liberty, autonomy, lack of constraint), collocations (e.g., freedom of speech), grammatical forms (e.g., free, freely), and appropriate contexts (e.g., political discourse vs. personal expression).

Effective acquisition integrates words into the mental lexicon, a dynamic network of interconnected lexical entries, enabling seamless access during communication (Aitchison, 2012; Levelt, 1993).

#### 2.3.1 Understanding Vocabulary Acquisition

Vocabulary acquisition encompasses a series of cognitive and linguistic sub processes that transform exposure into usable knowledge:

Form recognition: Identifying a word's phonological form (e.g., distinguishing through from threw) and orthographic form (e.g., separate vs. separate) (Perfetti, 2007; Cutler, 2012).

Meaning association: Linking words to denotative meanings (e.g., *big* as large), connotative meanings (e.g., *big* as important in "big decision"), and synonyms or contexts (Nation, 2013; Cruse, 1986).

Memory storage: Encoding words in long-term memory through repeated exposure, deep processing, and associative links (e.g., connecting resilience to personal experiences) (Baddeley, 1997; Tulving, 1972).

Productive use: Retrieving and applying words in speaking or writing, such as using innovative in "Her innovative approach solved the problem" (Laufer & Nation, 1999).

Cognitive models, such as the Lexical Access Model, highlight the interplay of memory capacity, exposure frequency, and retrieval efficiency (Levelt, 1993). For instance, frequent encounters with *challenges* in varied contexts (e.g., academic texts, conversations, media) strengthen their mental representation, facilitating both recognition and production. Strategies like contextual guessing, morphological analysis, and mnemonic devices further enhance acquisition by promoting active engagement (Schmitt, 2010; Nagy & Anderson, 1984).

### 2.3.2 Components of Vocabulary Knowledge

Vocabulary knowledge is multidimensional, comprising interconnected components that enable comprehensive word mastery (Nation, 2001; Richards, 1976):

**Form**:

Phonological: Recognizing and producing sound patterns, such as record as /ˈrekərd/ (noun) vs. /rɪˈkɔːrd/ (verb), and understanding stress or intonation (Cutler, 2012).

Orthographic: Mastering spelling, letter-sound correspondences, and visual patterns (e.g., *necessary* with double *s*, distinguishing there from their) (Perfetti, 2007).

Morphological: Understanding word formation through roots, prefixes, and suffixes (e.g., decide → decision, indecisive, undecided) (Bauer & Nation, 1993).

**Meaning**:

Denotative: Literal meanings (e.g., *table* as furniture) (Read, 2000).

Connotative: Associative or emotional meanings (e.g., table as a negotiation platform in "round-table discussion") (Cruse, 1986).

Polysemy and synonymy: Multiple meanings (e.g., bank as a financial institution or river edge) and synonyms (e.g., big, large, huge) (Schmitt, 2010).

**Use**:

Grammatical: Syntactic roles and sentence structures (e.g., advise as a verb in "She advised him to study") (Nation, 2013).

Collocational: Word partnerships (e.g., heavy rain vs. strong rain, make a decision vs. take a decision) (Sinclair, 1991).

Pragmatic: Contextual appropriateness, including register (e.g., sir in formal address vs. mate informally) and cultural nuances (Kasper & Rose, 2002).

Mastering these components equips learners to use vocabulary accurately, fluently, and culturally appropriately across diverse communicative contexts.

### 2.3.3 Receptive vs. Productive Vocabulary Acquisition

Vocabulary knowledge is categorized into receptive (passive recognition during reading or listening) and productive (active use in speaking or writing) dimensions (Laufer, 1998; Nation, 2001). Receptive knowledge typically precedes productive use, as learners need multiple exposures to internalize words before applying them actively. Table 1 provides a detailed comparison, expanded with practical examples, pedagogical strategies, and technological applications.

**Table 1.1**

Comparison of Receptive and Productive Vocabulary in EFL Learning

| Feature | Receptive Vocabulary | Productive Vocabulary |
|---|---|---|
| **Definition** | Words recognized during comprehension (e.g., understanding *a sophisticated* text). | Words retrieved and used in communication (e.g., using *sophisticated* in "Her dress was sophisticated"). |
| **Cognitive Load** | Lower involves recognition and minimal processing (Sweller, 1988). | Higher; requires retrieval, contextual accuracy, and syntactic integration (Laufer, 1998). |
| **Acquisition Rate** | Faster; builds through passive exposure (e.g., reading novels, listening to podcasts). | Slower; requires active practice through speaking or writing tasks (Schmitt, 2010). |
| **Example** | Recognizing an *entrepreneur* in a business article or podcast. | Using *entrepreneur* in "She's a successful entrepreneur who started a tech company." |
| **Pedagogical Strategy** | Extensive reading (e.g., novels, blogs), listening to songs or audiobooks (e.g., identifying *liberty* in lyrics). | Role-plays, writing essays, or discussions (e.g., describing a *liberty*-focused society in a debate). |
| **Technology Support** | Apps like LingQ or ReadLang for contextual exposure (e.g., highlighting *sustainability* in texts). | Apps like Duolingo or Tandem for sentence-building or conversational practice (e.g., using *sustainability* in a dialogue). |
| **Assessment Method** | Multiple-choice tests (e.g., Vocabulary Size Test) or cloze tasks (Nation & Beglar, 2007). | Free writing, oral presentations, or sentence completion tasks (Read, 2000). |

Receptive vocabulary forms the foundation for comprehension, while productive vocabulary enables expression. For example, a learner may recognize sustainability in a documentary (receptive) but needs practice to write, "Sustainable practices benefit the environment" (productive). Pedagogical approaches should bridge this gap through activities like journaling, role-plays, or peer discussions, supported by technology (Webb & Nation, 2017). Apps like Duolingo facilitate the transition by progressing from recognition tasks (e.g., matching sustainable to its definition) to production tasks (e.g., constructing sentences).

### 2.3.4 The Role of Frequency and Context in Vocabulary Acquisition

Frequency and context are pivotal for vocabulary acquisition, influencing retention, depth of knowledge, and usability (Ellis, 2008; Nation, 2013). Research underscores several key principles, expanded here with practical strategies and technological applications:

**High- vs. low-frequency words**: High-frequency words (e.g., time, people, know) are encountered frequently in everyday communication and learned quickly, forming the core of functional language (Nation, 2006). Low-frequency words (e.g., quixotic, ephemeral, ubiquitous) are rarer and require explicit instruction due to limited exposure (Coxhead, 2000). For example, a learner might encounter *time* daily in conversations or texts but needs targeted lessons for *quixotic* in a literature class.

**Contextual learning**: Words learned in meaningful contexts (e.g., courage in a story about heroism or sustainability in an environmental documentary) are retained better than those memorized in isolation (Read, 2000; Nagy & Scott, 2000). Contextual exposure through authentic materials (e.g., news articles, podcasts, films) strengthens semantic connections and pragmatic understanding (Krashen, 1989).

**Repetition and spacing**: Multiple exposures at spaced intervals enhance long-term memory by leveraging the forgetting curve (Ebbinghaus, 1885; Roediger & Karpicke, 2006). For instance, reviewing resilience in a text, then in a quiz, and later in a speech task over two weeks reinforces its retention and usability.

**Practical strategies**:

**Extensive reading**: Engaging with diverse texts, such as novels, blogs, or scientific articles, exposes learners to varied contexts. For example, reading *The Guardian* might introduce *policy* in political discussions, reinforced by related words like *regulation* or *legislation*.

**Writing exercises**: Creating sentences, stories, or essays with target words deepens understanding. A learner might write "Her *resilience* inspired the team to overcome challenges," applying the word actively.

**Oral practice**: Discussions or role-plays encourage productive use. For instance, debating environmental issues might prompt the use of *sustainability* in "Sustainable energy reduces carbon emissions."

**Mnemonic devices**: Associating words with images or stories aids recall. For example, linking *serendipity* to a story of a fortunate coincidence enhances memorization.

**Technological applications**: Apps like Quizlet use contextual prompts (e.g., using freedom in a historical narrative), while LingQ highlights words in authentic texts (e.g., innovation in a tech article). Spaced-repetition systems in Anki schedule reviews to optimize retention, and platforms like FluentU integrate video-based contexts with quizzes (Godwin-Jones, 2018).

These strategies ensure learners internalize vocabulary through repeated, meaningful interactions, aligning with cognitive and SLA theories for optimal acquisition (Schmitt, 2010; Webb, 2007).

### 2.4 The Importance of Vocabulary in Language Learning

Vocabulary is the foundation of language proficiency, serving as a critical predictor of success in reading, speaking, writing, and listening (Nation, 2013; Schmitt, 2010). A robust vocabulary enables learners to comprehend complex texts, express nuanced ideas, and engage in fluent, culturally appropriate communication (Laufer & Nation, 1999).

Limited vocabulary, conversely, restricts comprehension and expression, leading to communication breakdowns or reliance on circumlocution (e.g., describing scissors as "cutting tool" due to unknown vocabulary) (Laufer, 1997). Vocabulary acquisition involves not only memorizing words but also mastering their forms, meanings, and uses in diverse contexts, making it a multifaceted process integral to EFL learning (Read, 2000; Richards, 1976).

The importance of vocabulary is evident in its impact on language skills and cognitive development. Research indicates that vocabulary size correlates strongly with reading comprehension and overall proficiency (Hu & Nation, 2000; Schmitt, 2014). For example, a learner with a 5,000-word vocabulary can understand most everyday conversations, while 8,000–10,000 words are needed for academic texts or advanced fluency (Nation, 2006). Digital tools like Duolingo assess vocabulary through tasks like matching or sentence completion, primarily targeting recognition, but formal tests like the Vocabulary Levels Test (VLT) or

LexTALE evaluate both breadth and depth, advocating for a balanced approach to proficiency measurement (Nation & Beglar, 2007; Lemhöfer & Broersma, 2012).

### 2.4.1 Vocabulary and Cognitive Development in Language Learning

Vocabulary acquisition is a cognitive process that shapes mental organization, memory, and information processing, enhancing learners' ability to think and communicate effectively (Ellis, 2008; Aitchison, 2012).

#### 2.4.1.1 Mental Lexicon Expansion

The mental lexicon is a dynamic network of lexical entries stored in long-term memory, interconnected by phonological, semantic, and syntactic links (Aitchison, 2012; Levelt, 1993). Acquiring new words expands this network, creating associations that enhance retrieval speed and linguistic flexibility. For example, learning happy connects to synonyms (joyful, content), antonyms (sad), and collocations (happy birthday), enabling faster word access during communication (Schmitt, 2010). Technology supports this expansion through contextual exposure, such as Quizlet flashcards linking happiness to images or sentences.

#### 2.4.1.2 Vocabulary and Memory Processing

Vocabulary learning engages working memory (short-term processing) and long-term memory (storage), relying on phonological, semantic, and episodic memory systems (Baddeley, 1997; Tulving, 1972). Phonological short-term memory aids word recognition (e.g., repeating psychology to learn its pronunciation), while semantic memory supports meaning associations (e.g., linking psychology to mental processes). Spaced repetition, facilitated by apps like Anki, strengthens memory traces through repeated exposure, improving recall (Nation, 2013; Roediger & Karpicke, 2006).

#### 2.4.1.3 Cognitive Load and Vocabulary Learning

Cognitive Load Theory highlights the need to manage working memory demands during vocabulary acquisition (Sweller, 1988; Sweller et al., 2011). Well-structured instruction, such as Duolingo's scaffolded lessons, reduces extraneous load by presenting words in simple contexts (e.g., "I drink water"), while germane load is increased through meaningful tasks like

sentence creation (Mayer, 2009). For example, a learner might progress from recognizing the environment to writing “Protecting the environment is crucial,” optimizing cognitive resources.

### 2.4.2 Vocabulary and Linguistic Flexibility

A large vocabulary enhances linguistic flexibility, allowing learners to rephrase ideas, adapt to different registers, and interpret figurative language (Peters et al., 2020; Schmitt, 2010). Lexical diversity reduces repetition (e.g., using significant, important, or crucial instead of big), improves contextual relevance, and supports complex sentence structures (Laufer & Nation, 1995). For instance, a learner might say, “The policy had a significant impact” in formal writing or “It made a big difference” informally, demonstrating adaptability. Technology aids flexibility by exposing learners to varied contexts, such as Tandem conversations or LingQ texts, where words like impact appear in multiple forms.

### 2.4.3 Vocabulary and Pragmatic Competence

Pragmatic competence involves using language appropriately in social and cultural contexts, relying heavily on vocabulary knowledge (Hymes, 1972; Thomas, 1995). A rich vocabulary enables learners to select context-appropriate words, interpret indirect speech, and navigate conversational norms. For example, choosing appreciate over like in “I appreciate your help” conveys politeness, while understanding spill the tea as gossip requires cultural knowledge (Taguchi, 2011). Vocabulary supports pragmatic skills by providing tools for nuanced expression and comprehension.

#### 2.4.3.1 Register in Vocabulary Use

Learners who distinguish formal (e.g., analyze, request) from informal (e.g., look at, ask) vocabulary excel in diverse communicative settings, such as academic presentations or casual conversations (Schmitt, 2010; Biber & Conrad, 2009). For instance, saying, “I’d like to *request* more information” in a business email is more appropriate than “Can you *tell* me more?” Technology platforms like Grammarly suggest register-appropriate words, enhancing pragmatic accuracy.

#### 2.4.3.2 Vocabulary and Cross-Cultural Communication

Vocabulary knowledge with cultural awareness prevents miscommunication due to lexical differences across cultures (Kecskes, 2014). For example, flat means an apartment in British English but a tire puncture in American English, requiring learners to adapt usage. Apps like Tandem expose learners to native speakers, clarifying such nuances through authentic interactions (Godwin-Jones, 2018).

### 2.4.4 Vocabulary and Cultural Literacy

Vocabulary learning fosters cultural understanding, as words often reflect traditions, values, and societal norms (Kramsch, 1998). Untranslatable words like hygge (Danish for coziness) or idioms like kick the bucket (die) provide insights into cultural perspectives (Schmitt, 2010). For instance, learning Ramadan involves understanding its religious and social significance, enhancing intercultural competence. Technology supports cultural literacy through contextual exposure, such as FluentU videos on cultural festivals or LingQ texts on global traditions.

#### 2.4.4.1 Cultural Concepts in Vocabulary

Words tied to cultural practices or concepts deepen learners' understanding of native speakers' worldviews (Schmitt, 2010). For example, siesta (Spanish for afternoon nap) reflects cultural attitudes toward rest, while bushido (Japanese for samurai code) conveys historical values. Exploring such words through media or native-speaker interactions enriches cultural knowledge.

#### 2.4.4.2 Vocabulary and Social Identity

Vocabulary reflecting dialects, slang, or subcultural terms helps learners identify with speech communities and adapt to social contexts (Pennycook, 2012). For example, using lit (exciting) or Stan (ardent fan) aligns with youth culture, while regional terms like lorry (British for truck) reflect geographic identity. Platforms like HelloTalk expose learners to such variations, fostering social integration.

## 2.5 Types of Vocabulary

Vocabulary is not a monolithic entity but comprises diverse types based on function, usage, and acquisition context, each requiring tailored instructional approaches (Nation, 2013; Schmitt, 2010). Understanding these categories enables educators to design targeted

interventions for EFL learners, enhancing retention and application across communicative settings.

### 2.5.1 Active vs. Passive Vocabulary

#### 2.5.1.1 Active Vocabulary (Productive Vocabulary)

Active vocabulary includes words learners can retrieve and use fluently in speaking or writing, supporting verbal fluency and syntactic accuracy (Schmitt, 2010). For example, a learner might use confidence in "She spoke with a confident tone" during a presentation, demonstrating productive mastery. Active vocabulary develops through deep processing, such as writing essays or role-playing, and is critical for expressive communication (Nation, 2013; Laufer & Nation, 1999).

#### 2.5.1.2 Passive Vocabulary (Receptive Vocabulary)

Passive vocabulary comprises words learners recognize during reading or listening but use less frequently in production (Laufer, 1998). For instance, a learner may understand meticulous in a text but hesitate to use it in speech. Passive vocabulary is acquired through exposure (e.g., reading novels, watching films) and may transition to active vocabulary with targeted practice, such as sentence-building exercises (Schmitt, 2010; Webb & Nation, 2017).

### 2.5.2 General vs. Academic Vocabulary

#### 2.5.2.1 General Vocabulary

General vocabulary, used in everyday communication, forms the lexical foundation for basic interactions (Nation, 2013). High-frequency words like house, eat, good, and because are acquired early through exposure and are essential for conversational fluency (Coxhead, 2000). For example, a learner might use friend in "My friend lives nearby" during casual dialogue.

#### 2.5.2.2 Academic Vocabulary

Academic vocabulary, prevalent in educational and professional contexts, is crucial for scholarly discourse, critical thinking, and advanced proficiency (Coxhead, 2000; Hyland & Tse, 2007). Words like analyze, synthesize, hypothesis, and empirical appear frequently in academic texts and lectures. For instance, a learner might write "The study analyzes the impact of climate

change," demonstrating academic competence. Tools like the Academic Word List (AWL) guide instruction for this vocabulary (Coxhead, 2000).

### 2.5.3 Content vs. Function Words

#### 2.5.3.1 Content Words

Content words (nouns, verbs, adjectives, adverbs) carry semantic meaning and convey core information (Nation, 2013). Examples include university (noun), construct (verb), significant (adjective), and quickly (adverb). Content words are central to vocabulary acquisition, as they enable learners to describe concepts and actions (Schmitt, 2010).

#### 2.5.3.2 Function Words

Function words (prepositions, conjunctions, articles, pronouns) ensure grammatical coherence and syntactic structure (Schmitt, 2010). Examples include in, and, the, and it. While less semantically rich, function words are critical for fluency, as errors (e.g., omitting the in "I go to university") can disrupt communication (Nation, 2013).

### 2.5.4 Domain-Specific vs. Cross-Disciplinary Vocabulary

#### 2.5.4.1 Domain-Specific Vocabulary

Domain-specific vocabulary is tied to particular fields or disciplines, such as diagnosis in medicine, algorithm in computer science, or precedent in law (Hyland & Tse, 2007). This vocabulary is essential for professional competence and requires explicit instruction, as it is rarely encountered in general contexts (Nation, 2013). For example, a medical student might learn about hypertension through case studies.

#### 2.5.4.2 Cross-Disciplinary Vocabulary

Cross-disciplinary vocabulary, such as analyze, evaluate, hypothesis, and methodology, supports critical thinking and communication across academic fields (Coxhead, 2000). These words are versatile, appearing in disciplines from science to the humanities, and are prioritized in academic instruction (Hyland & Tse, 2007). For instance, evaluation might be used in "Evaluate the experiment's results" (science) or "Evaluate the poem's themes" (literature).

## 2.6 Components of Vocabulary Knowledge

Vocabulary knowledge is a multifaceted construct, encompassing phonological, orthographic, morphological, semantic, syntactic, and pragmatic dimensions (Nation, 2013; Read, 2004). Both breadth (number of words known) and depth (quality of knowledge) are essential for effective communication, requiring learners to master various aspects of each word (Schmitt, 2010). This section details these components, with expanded explanations and examples to illustrate their complexity.

### 2.6.1 Phonological Knowledge: The Sound Structure of Words

Phonological knowledge involves understanding and producing a word's sound patterns, aiding listening comprehension, speaking fluency, and pronunciation accuracy (Field, 2003; Cutler, 2012). It includes:

Phonetic awareness: Recognizing individual sounds (e.g., /ʃ/ in ship vs. /s/ in sip).

Syllable structure: Identifying syllables and stress patterns (e.g., Photograph vs. photography).

Phonotactic constraints: Understanding permissible sound combinations (e.g., blick is possible in English, but bnick is not).

Intonation and rhythm: Using prosody for meaning (e.g., rising intonation in questions).

For example, learners must distinguish minimal pairs like bit and beat or master irregular pronunciations like choir (/ˈkwaɪər/). Speech recognition tools, such as Elsa Speak, provide feedback on pronunciation, enhancing phonological competence (Levis, 2018).

### 2.6.2 Orthographic Knowledge: The Writing System of Words

Orthographic knowledge encompasses spelling rules, letter-sound correspondences, and visual word recognition, critical for reading and writing (Perfetti, 2007; Ehri, 2005). Key aspects include:

Spelling conventions: Correctly spelling words, including irregular forms (e.g., weird vs. wierd, accommodation with double m).

Letter-sound mappings: Understanding grapheme-phoneme relationships (e.g., hope with silent e vs. hop).

Word recognition: Rapidly identifying written words, even with variations (e.g., color vs. colour).

Orthographic errors, such as writing separate instead of separate, can hinder communication. Tools like Grammarly or spelling apps like SpellingCity support orthographic development through practice and feedback (Schmitt, 2010).

### 2.6.3 Morphological Knowledge: Word Formation and Structure

Morphological knowledge enables learners to decode and construct words through morphemes (roots, prefixes, suffixes), enhancing vocabulary size and comprehension (Bauer & Nation, 1993; Carlisle, 2010). It involves:

Derivational morphology: Forming new words (e.g., act → active, activity, activate, inactive).

Inflectional morphology: Modifying words for grammatical purposes (e.g., walk → walks, walked, walking).

Compound words: Combining words (e.g., sun + flower = sunflower, book + store = bookstore).

For example, understanding the prefix un- (e.g., happy → unhappy) allows learners to infer the meanings of unfamiliar words. Apps like Vocabulary.com teach morphology through interactive exercises, such as breaking down impossible into im- + possible (Schmitt, 2010).

### 2.6.4 Semantic Knowledge: Understanding Word Meaning

Semantic knowledge encompasses a word's meanings, relationships, and nuances, enabling precise comprehension and expression (Read, 2000; Cruse, 1986). It includes:

Denotative meaning: Literal definitions (e.g., snake as a reptile).

Connotative meaning: Emotional or cultural associations (e.g., snake as deceitful or cunning).

Polysemy: Multiple meanings (e.g., light as illumination, weight, or understanding).

Semantic fields: Related words (e.g., kitchen → stove, sink, fridge).

Synonymy and antonymy: Synonyms (e.g., big, large) and antonyms (e.g., big vs. small).

For instance, understanding *home* as both a physical dwelling and a place of comfort requires semantic depth. Digital dictionaries like Merriam-Webster provide examples and synonyms, enhancing semantic knowledge (Schmitt, 2010).

### 2.6.5 Syntactic Knowledge: Word Function and Sentence Structure

Syntactic knowledge governs a word's grammatical role and placement in sentences, ensuring structural accuracy (Nation, 2013; Chomsky, 1986). It involves:

Part-of-speech identification: Recognizing words as nouns, verbs, etc. (e.g., record as a noun in "The record is broken" vs. a verb in "Record the meeting").

Word order: Adhering to syntactic rules (e.g., She runs quickly vs. Quickly she runs).

Agreement and colligation: Matching forms (e.g., she walks vs. they walk) and syntactic patterns (e.g., depend on vs. depend in).

Syntactic errors, such as "I enjoy to learn" instead of "I enjoy learning," disrupt fluency. Grammar apps like Grammarly or language exchange platforms like Tandem provide corrective feedback, supporting syntactic mastery (Schmitt, 2010).

### 2.6.6 Pragmatic Knowledge: Social and Cultural Use of Vocabulary

Pragmatic knowledge ensures socially and culturally appropriate word use, accounting for context, register, and interlocutor expectations (Kasper & Rose, 2002; Thomas, 1995). It includes:

Register: Choosing words for formal (e.g., request) or informal (e.g., ask) contexts.

Politeness: Using polite forms (e.g., could you vs. can you) or indirect speech (e.g., “I was wondering if…”).

Discourse markers: Employing words like however, therefore, or well to structure conversation.

Cultural appropriateness: Avoiding taboo words or understanding cultural idioms (e.g., break a leg for good luck).

For example, addressing a teacher as mate instead of sir or professor may be inappropriate. Platforms like HelloTalk expose learners to pragmatic norms through native-speaker interactions, while cultural podcasts clarify idioms and conventions (Taguchi, 2011).

### 2.7 Strategies for Vocabulary Learning

Effective vocabulary acquisition in EFL contexts requires a combination of explicit (direct instruction) and implicit (contextual exposure) strategies, tailored to learners’ cognitive, linguistic, and motivational needs (Schmitt, 2010; Oxford, 1990).

These strategies engage memory, context, cognition, metacognition, and technology, promoting retention and productive use. This section expands on these approaches with detailed examples, activities, and technological applications.

#### 2.7.1 Memory-Based Strategies: Strengthening Retention and Recall

Memory-based strategies leverage cognitive processes to encode and retrieve vocabulary, drawing on mnemonic techniques and repetition (Schmitt, 2010; Baddeley, 1997).

##### 2.7.1.1 Mnemonics and Visualization Techniques

Mnemonics create associations to aid recall, such as linking words to images, stories, or rhymes (Schmitt, 2010). For example, associating caballo (Spanish for horse) with cab (taxi) and imagining a horse pulling a taxi enhances memorization. Visualization techniques, such as picturing serendipity as a happy coincidence in a story, strengthen memory traces. Apps like Memrise use mnemonic prompts, pairing gratitude with images of thankful gestures (Nation, 2013).

#### 2.7.1.2 Spaced Repetition and Distributed Practice

Spaced repetition schedules reviews at increasing intervals to optimize retention, countering the forgetting curve (Ebbinghaus, 1885; Roediger & Karpicke, 2006). Systems like the Leitner method or Anki's algorithms present words (e.g., resilience) at strategic times (e.g., 1 day, 3 days, 7 days).

For instance, a learner might review the environment through flashcards, then a quiz, and later a sentence task, reinforcing long-term memory. Quizlet's spaced-repetition mode supports this strategy (Schmitt, 2010).

### 2.7.2 Contextual Learning Strategies: Enhancing Word Understanding

Contextual strategies promote vocabulary acquisition through authentic language use, leveraging reading, listening, and inferencing skills (Read, 2000; Krashen, 1989).

#### 2.7.2.1 Extensive and Intensive Reading

Extensive reading (e.g., novels, blogs) fosters incidental vocabulary acquisition through exposure to diverse contexts, while intensive reading (e.g., analyzing academic texts) focuses on deep understanding (Krashen, 1989; Nation, 2013).

For example, reading Harry Potter might introduce a wand or spell, while analyzing a scientific article teaches a hypothesis. Apps like ReadLang highlight unfamiliar words (e.g., sustainability) and provide definitions, supporting both approaches (Godwin-Jones, 2018).

#### 2.7.2.2 Listening-Based Vocabulary Acquisition

Listening to podcasts, audiobooks, or songs exposes learners to vocabulary in natural speech, enhancing phonological and semantic knowledge (Schmitt, 2010).

For instance, a TED Talk on innovation might introduce a disruptive paradigm. Apps like LyricsTraining use songs to teach words (e.g., freedom in protest anthems), while Audible offers audiobooks with contextual exposure (Field, 2003).

#### 2.7.2.3 Guessing Meaning from Context

Lexical inferencing involves deducing meanings from surrounding text or speech, using morphological cues (e.g., unhappy = not happy) or context clues (e.g., serendipity in "a serendipitous meeting") (Read, 2000; Nagy & Scott, 2000).

For example, a learner might infer legacy from "Her legacy inspired future generations" in a biography. LingQ supports inferencing by providing clickable definitions in texts (Schmitt, 2010).

### 2.7.3 Cognitive Strategies: Active Processing and Organization

Cognitive strategies involve active manipulation of vocabulary to enhance understanding and retention (Oxford, 1990; Schmitt, 2010):

Semantic mapping: Creating word webs (e.g., environment → pollution, conservation, climate) to organize related terms.

Thematic grouping: Learning words by topic (e.g., kitchen: stove, sink, fridge) to reinforce connections.

Personalization: Relating words to personal experiences (e.g., associating adventure with a memorable trip).

Keyword method: Linking L2 words to L1 sounds (e.g., *sol* (Spanish for sun) to *sole* in English).

For example, a learner might create a semantic map for education with branches like teacher, curriculum, and learning, deepening comprehension. Apps like MindMeister support digital mapping (Nation, 2013).

### 2.7.4 Metacognitive Strategies: Self-Regulated Vocabulary Learning

Metacognitive strategies involve planning, monitoring, and evaluating vocabulary learning, fostering autonomy (Schmitt, 2010; Oxford, 1990):

Goal-setting: Establishing specific targets (e.g., learning ten words weekly, such as sustainable, policy).

Word journals: Tracking new words, meanings, and usage (e.g., noting innovation with a sentence: “Innovation drives progress”).

Self-assessment: Reflecting on progress (e.g., testing recall of environment after a week).

Corpus-based learning: Using tools like the Corpus of Contemporary American English (COCA) to explore word frequency and collocations (e.g., strong + coffee).

For instance, a learner might use a journal to record resilience with examples from texts and conversations, evaluating mastery over time. Apps like Evernote or Notion support digital journaling (Godwin-Jones, 2018).

### 2.7.5 Technology-Assisted Strategies: Digital Tools for Vocabulary Learning

Technology enhances vocabulary acquisition through interactive, personalized, and data-driven approaches (Chapelle, 2003; Godwin-Jones, 2018):

Flashcard apps: Quizlet and Anki use spaced repetition and multimedia (e.g., images, audio) to teach words like freedom or culture.

Gamified platforms: Duolingo’s points, streaks, and leaderboards motivate learners to practice words like sustainability in engaging tasks.

Language exchange apps: Tandem and HelloTalk enable conversational practice, such as using bargaining in shopping dialogues with native speakers.

Corpus tools: COCA or WordReference provide collocations and usage examples (e.g., make + decision), supporting advanced learners.

Virtual reality (VR): Apps like MondlyVR immerse learners in scenarios (e.g., a virtual restaurant to learn the menu, order), enhancing contextual learning (Lan, 2020).

These tools integrate explicit and implicit strategies, fostering autonomy and engagement while addressing diverse learner needs (Schmitt, 2010).

## 2.8 Challenges in Vocabulary Acquisition for EFL Learners

Vocabulary acquisition poses significant challenges for EFL learners due to linguistic, cognitive, contextual, and pedagogical barriers, which can impede progress and motivation (Nation, 2013; Laufer, 1997). Addressing these challenges requires targeted strategies, technology integration, and supportive learning environments. This section expands on these obstacles with detailed examples, research insights, and practical solutions.

### 2.8.1 Linguistic Challenges in Vocabulary Acquisition

#### 2.8.1.1 Word Formation and Morphological Complexity

English's extensive derivational system and morphological complexity challenge learners (Bauer & Nation, 1993; Carlisle, 2010). For example:

Derivational affixes: Words like act → active, activity, activate, inactive require understanding prefix/suffix functions, which can be confusing for learners unfamiliar with morphemes.

Compound words: Terms like sunflower, bookstore, or mother-in-law combine multiple roots, complicating recognition.

Inflectional variations: Irregular forms (e.g., go → went, children vs. childrens) defy standard rules.

A learner might misinterpret *unhappiness* as *not happiness* without morphological knowledge. Apps like Vocabulary.com teach morphemes through exercises, while explicit instruction clarifies rules (Schmitt, 2010).

#### 2.8.1.2 Irregularities in Spelling and Pronunciation

English's inconsistent spelling-pronunciation patterns create difficulties (Cutler, 2012; Perfetti, 2007):

Spelling irregularities: Words like cough (/kɒf/), tough (/tʌf/), and though (/ðoʊ/) share similar spellings but different sounds.

Pronunciation variations: Stress shifts (e.g., CONtract (noun) vs. conTRACT (verb)) or regional differences (e.g., schedule as /ˈskedʒuːl/ in American English vs. /ˈʃedʒuːl/ in British English).

Silent letters: Words like knight (/naɪt/) or doubt (/daʊt/) confuse learners.

For instance, a learner might pronounce choir as /ˈtʃɔɪər/ instead of /ˈkwaɪər/. Speech recognition tools like Elsa Speak and pronunciation apps like Sounds: Pronunciation provide corrective feedback, enhancing accuracy (Levis, 2018).

#### 2.8.1.3 Semantic Nuances and Word Associations

Semantic complexity, including synonyms, false cognates, and idioms, poses challenges (Liao & Fukuya, 2004; Cruse, 1986):

Synonyms: Distinguishing near-synonyms (e.g., big, large, huge, enormous) requires understanding subtle differences (e.g., huge implies greater size than large).

False cognates: Words like actual (Spanish: current; English: real) mislead learners.

Idioms and phrasal verbs: Expressions like hit the sack (go to sleep) or give up (quit) are non-literal, requiring cultural knowledge.

A learner might misuse *actually* as "currently" due to L1 interference. Digital dictionaries like Word Reference clarify nuances, while apps like Idioms and Phrasal Verbs teach figurative language (Schmitt, 2010).

### 2.8.2 Cognitive Challenges in Vocabulary Learning

#### 2.8.2.1 Memory Constraints and Cognitive Load

Limited working memory capacity and cognitive overload hinder vocabulary retention, especially for beginners (Baddeley, 1997; Sweller, 1988). For example:

Memory overload: Learning multiple words simultaneously (e.g., 20 words in one session) overwhelms working memory, leading to forgetting.

Interference: Similar words (e.g., affect vs. effect, lie vs. lay) confuse recall.

Encoding difficulties: Shallow processing (e.g., rote memorization) results in weak memory traces.

A learner might confuse accept and except due to phonological similarity. Spaced-repetition apps like Anki reduce overload by presenting words incrementally, while mnemonic strategies strengthen encoding (Schmitt, 2010).

#### 2.8.2.2 Slow Retrieval and Word Access Issues

Lexical access difficulties, such as tip-of-the-tongue phenomena, impede spontaneous production (Nation, 2013; Levelt, 1993). Learners may recognize persuasion but struggle to retrieve it during conversation, resorting to simpler words like tell. This is aggravated by:

Low exposure frequency: Infrequent encounters with words weaken retrieval pathways.

Lack of practice: Limited speaking or writing opportunities hinder automatization.

Anxiety: Performance pressure slows word access.

Practice through role-plays or apps as Tandem, which encourage conversational use, improves retrieval speed (Schmitt, 2010; Dörnyei, 2001).

#### 2.8.2.3 Lack of Deep Processing

Rote learning without deep processing (e.g., memorizing definitions without context) leads to poor retention and limited usability (Schmitt, 2010; Craik & Lockhart, 1972). For example, memorizing resilience as “ability to recover” without using it in sentences or discussions results in shallow knowledge. Deep processing strategies, such as:

Sentence creation: Writing “Her resilience helped her overcome challenges.”

Semantic mapping: Linking resilience to strength, recovery, and adaptability.

Personalization: Relating resilience to personal experiences.

Apps like Quizlet’s “Write” mode or journaling tools like Evernote promote deep processing, enhancing retention (Nation, 2013).

### 2.8.3 Contextual Challenges in Vocabulary Acquisition

#### 2.8.3.1 Lack of Real-World Exposure

EFL learners often lack access to authentic English-speaking environments, limiting incidental vocabulary acquisition (Nation, 2013; Krashen, 1989). For example:

Limited input: Learners in non-English-speaking countries may encounter English only in classrooms, missing naturalistic exposure.

Artificial contexts: Textbook dialogues often lack the richness of real-world communication.

Cultural disconnect: Words like Thanksgiving or prom require cultural context absent in EFL settings.

Watching English media (e.g., Netflix, BBC), reading authentic texts (e.g., The New York Times), or using apps like LingQ provides contextual exposure, simulating real-world input (Godwin-Jones, 2018).

#### 2.8.3.2 Cultural and Pragmatic Barriers

Cultural differences and pragmatic misunderstandings hinder vocabulary use (Kecskes, 2014; Thomas, 1995):

Cultural concepts: Words like monsoon or siesta carry cultural significance unfamiliar to learners.

Pragmatic errors: Misusing please (e.g., “Please, what time?” instead of “What time is it, please?”) or idioms (e.g., break a leg misunderstood literally).

Taboo words: Unintentional use of offensive terms due to cultural unawareness.

Language exchange platforms like HelloTalk or cultural podcasts clarify pragmatic norms, while explicit instruction addresses cultural nuances (Taguchi, 2011).

### 2.8.4 Pedagogical and Instructional Challenges

#### 2.8.4.1 Insufficient Emphasis on Vocabulary Instruction

Many EFL curricula prioritize grammar over vocabulary, limiting exposure to lexical development (Nation, 2013; Folse, 2004):

Grammar-centric focus: Lessons emphasize verb tenses or sentence structure, neglecting word learning.

Limited word lists: Textbooks cover fewer words than needed for fluency (e.g., 2,000 vs. 8,000 for academic texts).

Lack of depth: Vocabulary is taught superficially, ignoring collocations or pragmatic use.

Explicit vocabulary instruction, using tools like the Academic Word List (AWL) or apps like Vocabulary.com, addresses this gap (Coxhead, 2000; Schmitt, 2010).

#### 2.8.4.2 Over-Reliance on Traditional Teaching Methods

Traditional methods like translation or isolated word lists hinder contextual learning and engagement (Schmitt, 2010; Folse, 2004):

Translation-based learning: Translating freedom to L1 equivalents may miss nuances (e.g., liberty vs. independence).

Decontextualized lists: Memorizing words without sentences or stories limits usability.

Lack of interactivity: Passive methods reduce motivation and retention.

Interactive approaches, such as task-based learning (e.g., writing a story with target words) or technology-driven tasks (e.g., Duolingo's dialogues), promote contextual and engaging learning (Ellis, 2003; Godwin-Jones, 2018).

### 2.9 The Role of Motivation and Attitude in Vocabulary Learning

Motivation and attitude profoundly influence vocabulary acquisition, shaping learners' engagement, persistence, and retention in EFL contexts (Dörnyei, 2005; Gardner, 1985). Motivated learners actively seek opportunities to learn and use words, while positive attitudes reduce anxiety and enhance confidence (Noels et al., 2000).

Negative attitudes, such as frustration or low self-efficacy, can impede progress by limiting exposure and effort (Horwitz, 2001). This section expands on intrinsic and extrinsic motivation, the impact of attitude, and practical strategies to foster motivation, with detailed examples and theoretical grounding.

### 2.9.1 Extrinsic vs. Intrinsic Motivation for Vocabulary Learning

#### 2.9.1.1 Intrinsic Motivation: Learning for Personal Fulfillment

Intrinsic motivation drives learners to engage in vocabulary learning for personal satisfaction, curiosity, or enjoyment, leading to deeper retention and autonomy (Dörnyei, 2001; Ryan & Deci, 2000). For example:

- A learner passionate about fantasy literature might read The Lord of the Rings, learning words like quest, realm, or intricate through immersive storytelling.
- Exploring word etymologies (e.g., knight from Old English cniht, meaning servant) satisfies intellectual curiosity.
- Participating in language clubs or online forums (e.g., Reddit's r/EnglishLearning) fosters enjoyment through peer interaction.

Intrinsic motivation correlates with extensive reading, creative writing, and long-term commitment, as learners find joy in the process (Schmitt, 2010; Deci & Ryan, 1985). Apps like Wattpad, where learners read and write stories, nurture intrinsic engagement.

#### 2.9.1.2 Extrinsic Motivation: Learning Driven by External Rewards

Extrinsic motivation arises from external incentives, such as grades, certifications, or career advancement, and is effective for short-term goals (Gardner & Lambert, 1972; Noels et al., 2000). Examples include:

- Studying academic vocabulary (e.g., hypothesis, analyze) to achieve a high IELTS band score for university admission.
- Learning business terms (e.g., negotiation, revenue) to secure a job in an English-speaking company.
- Memorizing words for a vocabulary quiz to earn a high grade or teacher approval.

While extrinsic motivation drives effort, it may lead to surface-level learning if not paired with intrinsic interest, as learners may forget words after achieving their goals (e.g., forgetting the methodology after the exam) (Dörnyei, 2009). Combining rewards with engaging tasks mitigates this risk.

#### 2.9.1.3 The Interplay Between Intrinsic and Extrinsic Motivation

Self-Determination Theory suggests that intrinsic and extrinsic motivation interact to create a continuum of motivation, with external rewards enhancing intrinsic interest when they support autonomy, competence, and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2000). For example:

- A learner might start using Duolingo for extrinsic reasons (e.g., passing a course) but develop intrinsic motivation through gamified lessons and cultural stories (e.g., learning culture in a lesson on festivals).
- Teachers can foster interplay by aligning tasks with learners' interests (e.g., tech-related vocabulary like algorithm for a computer enthusiast) while offering tangible rewards (e.g., certificates).

Strategies like project-based learning, where learners create presentations on personal interests using target words, blend both motivations, enhancing retention (Dörnyei, 2001; Godwin-Jones, 2018).

### 2.9.2 The Impact of Learner Attitude on Vocabulary Retention

Positive attitudes toward vocabulary learning enhance engagement with language-rich environments (e.g., books, podcasts, conversations), leading to improved retention and confidence (Gardner, 1985; Dörnyei, 2005).

For instance, a learner enthusiastic about English might watch Friends without subtitles, picking up words like chandler (humorous person) or pivot in context. Negative attitudes, such as anxiety, self-doubt, or perceived irrelevance, hinder acquisition by reducing exposure and effort (Horwitz, 2001).

For example, a learner anxious about speaking may avoid conversations, missing opportunities to practice words like opinion or debate. Research shows positive attitudes correlate with larger vocabulary sizes and better fluency (r = .60–.75) (Dörnyei, 2002).

#### 2.9.2.1 Factors Influencing Attitude Toward Vocabulary Learning

Several factors shape learners' attitudes, influencing their approach to vocabulary acquisition:

Cultural perceptions: In cultures valuing English proficiency (e.g., urban India, Singapore), learners view vocabulary learning as prestigious, boosting motivation (Crystal, 2003; Kirkpatrick, 2010).

Past experiences: Success in prior tasks (e.g., mastering a vocabulary test) builds confidence, while failures foster discouragement (Dörnyei, 2002).

Learning environment: Supportive teachers, low-anxiety classrooms, and peer encouragement (e.g., group discussions) promote positive attitudes (Noels et al., 2000).

Relevance: Vocabulary perceived as useful (e.g., negotiation for business students) enhances engagement, while irrelevant words (e.g., quixotic for beginners) reduce interest (Schmitt, 2010).

For example, a learner in a test-focused culture may view vocabulary as a means to academic success, shaping a positive but extrinsically driven attitude.

#### 2.9.2.2 Enhancing Positive Attitudes Toward Vocabulary Learning

Strategies to foster positive attitudes include:

Creating low-anxiety environments: Using humor, positive feedback, and low-stakes activities (e.g., word games like crosswords or Kahoot quizzes) reduces anxiety (Schmitt, 2010; Horwitz, 2001).

Encouraging autonomy: Allowing learners to choose vocabulary topics (e.g., sports, technology, travel) fosters ownership and interest (Dörnyei, 2001).

Peer collaboration: Group tasks, such as creating a class blog or vocabulary quiz, enhance social engagement and confidence (Gardner, 1985).

Cultural integration: Teaching culturally relevant words (e.g., festival, tradition) connects learning to real-world contexts, increasing relevance (Kramsch, 1998).

For instance, a teacher might organize a "Vocabulary Olympics" where teams compete to use words like strategy or victory in creative sentences, boosting enthusiasm and reducing anxiety.

### 2.9.3 Strategies to Enhance Motivation in Vocabulary Learning

#### 2.9.3.1 Gamification and Reward Systems

Gamified platforms like Duolingo, Quizlet, and Kahoot incorporate points, badges, streaks, and leaderboards to sustain motivation (Nation, 2013; Dörnyei, 2005). For example, earning a "Vocabulary Master" badge for learning 100 words (e.g., opportunity, innovation, and culture) spurs learners to continue.

Classroom gamification, such as team-based challenges to create sentences with target words, fosters engagement and friendly competition (Reinders & Wattana, 2015). Research shows gamification increases vocabulary retention by 20–30% compared to traditional methods (Godwin-Jones, 2018).

#### 2.9.3.2 Personalization and Goal Setting

Setting achievable, personalized goals, such as learning ten words weekly (e.g., environment, sustainable, policy), provides a sense of accomplishment and direction (Schmitt, 2010; Locke & Latham, 2002). For instance, a learner interested in technology might learn algorithms, interface, data, and network through tech-related articles or podcasts, aligning with their passions.

Apps like Notion or Todoist help learners track goals, while teachers can guide students to set SMART (Specific, Measurable, Achievable, Relevant, Time-bound) objectives, such as "Learn 20 travel words by next month for a trip" (Dörnyei, 2001).

#### 2.9.3.3 Real-Life Application of Vocabulary

Authentic tasks make vocabulary relevant, increasing intrinsic motivation (Nation, 2013; Willis, 1996). Examples include:

**Writing blogs**: A learner might write a blog post on environmental issues, using sustainability, pollution, and conservation.

**Recording vlogs**: Creating a YouTube video on personal goals, incorporating ambition, motivation, and success.

**Mock scenarios**: Participating in a job interview role-play, using negotiation, leadership, and collaboration.

Apps like Wattpad (for writing) or Anchor (for podcasting) provide platforms for real-life application, while classroom tasks like debates or presentations reinforce practical use (Godwin-Jones, 2018).

#### 2.9.3.4 Social and Collaborative Learning

Collaborative activities foster motivation through social interaction and peer support (Dörnyei, 2005; Vygotsky, 1978). Examples include:

Peer teaching: Learners teach each other words (e.g., *strategy* in a business context), reinforcing understanding.

Group projects: Creating a group presentation on cultural idioms (e.g., *spill the tea*, *break a leg*) exposes learners to diverse vocabulary.

Language exchange: Platforms like Tandem enable learners to practice with native speakers, such as using *bargaining* in a shopping dialogue.

Collaborative tasks enhance relatedness, a key component of motivation per Self-Determination Theory, and increase exposure to varied lexical items (Ryan & Deci, 2000; Godwin-Jones, 2018).

## 2.10 Measuring Vocabulary Knowledge and Proficiency

Assessing vocabulary knowledge is crucial for evaluating EFL learners' proficiency, identifying gaps, and tailoring instruction (Nation, 2013; Read, 2000). Vocabulary assessment measures both quantitative (breadth) and qualitative (depth) dimensions, impacting performance across language skills (Schmitt, 2014).

This section expands on assessment methods, including traditional tests, innovative tools, and their relationship to overall proficiency, with practical applications and research insights.

### 2.10.1 Breadth vs. Depth of Vocabulary Knowledge

#### 2.10.1.1 Vocabulary Breadth: The Number of Words Known

Vocabulary breadth refers to the total number of words a learner recognizes, forming the foundation for basic communication and comprehension (Schmitt, 2014; Nation, 2006). Key benchmarks include:

**2,000–3,000 words**: Covers 95% of everyday conversations and texts, enabling functional communication (e.g., house, food, go) (Nation, 2006).

**5,000–6,000 words**: Supports general fluency, including newspapers and casual media (e.g., opinion, culture).

**8,000–10,000 words**: Required for academic texts, lectures, or advanced fluency (e.g., synthesis, empirical) (Coxhead, 2000).

For example, a learner with a 2,000-word vocabulary can understand simple dialogues but struggles with academic journals requiring words like hypothesis. Breadth is assessed through recognition tests, guiding curriculum design (Nation & Beglar, 2007).

#### 2.10.1.2 Vocabulary Depth: The Quality of Word Knowledge

Vocabulary depth encompasses detailed knowledge of a word's meanings, forms, collocations, and uses, enabling nuanced communication (Read, 2004; Schmitt, 2010). For instance, knowing *run* involves:

**Meanings**: Physical movement (run a race), management (run a business), exhaustion (run out of energy).

**Forms**: running, ran, runner, runway.

**Collocations**: run a risk, run smoothly.

**Pragmatic use**: Formal (run an organization) vs. informal (run errands).

Depth allows learners to choose precise words, such as persuade over convince in "She persuaded the committee," enhancing clarity (Nation, 2013). Depth is critical for advanced tasks like academic writing or professional communication.

#### 2.10.1.3 The Interaction Between Breadth and Depth

Vocabulary breadth and depth are interdependent, with breadth providing the foundation for communication and depth enabling precision and fluency (Laufer, 1998; Schmitt, 2014). A learner with a broad vocabulary (e.g., 5,000 words) but shallow depth may recognize significant but misuse it in collocations (e.g., saying make a significant instead of have a significant impact), while a learner with deep knowledge of fewer words can use them effectively in complex tasks (Webb & Nation, 2017).

For example, a learner with deep knowledge of environment might use it in varied contexts (e.g., "The environment affects health," "A supportive work environment boosts productivity"), even if their overall vocabulary size is smaller. Balanced instruction targets both dimensions through activities like extensive reading for breadth and sentence-building for depth, supported by technology such as Duolingo for recognition and Tandem for production (Nation, 2013).

### 2.10.2 Methods of Assessing Vocabulary Size and Retention

Effective vocabulary assessment employs diverse methods to measure breadth, depth, retention, and usability, informing instructional planning and learner progress (Read, 2000; Nation, 2013). This section details traditional and innovative tools, with expanded examples and applications.

#### 2.10.2.1 Vocabulary Size Tests

Vocabulary size tests, such as the Vocabulary Size Test (VST) and LexTALE, measure breadth by assessing recognition across frequency bands (Nation & Beglar, 2007; Lemhöfer & Broersma, 2012). The VST, for instance, tests words from 1,000 to 14,000 frequency levels,

asking learners to match words like achieve to definitions (e.g., “to successfully complete”). LexTALE uses a lexical decision task, where learners identify real words (e.g., window) versus non-words (e.g., windo). These tests provide quick, reliable estimates of vocabulary size, guiding placement and curriculum design. For example, a learner scoring 4,000 words on the VST may need targeted instruction for academic vocabulary like hypothesis (Schmitt, 2010).

#### 2.10.2.2 Depth of Vocabulary Knowledge Tests

Depth tests, such as the Word Associates Test (WAT) and Vocabulary Knowledge Scale (VKS), evaluate nuanced word knowledge, including collocations, synonyms, and usage (Read, 2004; Paribakht & Wesche, 1997). The WAT asks learners to identify words associated with a target word (e.g., bright: light, shine, not dark), assessing semantic depth. The VKS measures knowledge on a scale from recognition (“I’ve seen resilience”) to production (“Her resilience inspired us”). These tests reveal gaps in depth, such as knowing persuade but not its collocation persuade someone to. For instance, a learner might recognize environment but struggle to use it in “environmental policy,” indicating a need for collocational practice (Schmitt, 2010).

#### 2.10.2.3 Retention and Recall Assessments

Retention and recall assessments evaluate long-term memory and productive use, critical for functional communication (Ebbinghaus, 1885; Nation, 2013). Common methods include:

**Cloze tests**: Learners fill in blanks (e.g., “She felt ____ (happy) after the news”), testing recognition and context.

**Free recall**: Learners list words from a learned set (e.g., recalling sustainability, policy after a lesson).

**Free writing or speaking**: Learners produce texts or speech using target words (e.g., a paragraph on “The importance of innovation in technology”).

Spaced-repetition tests, facilitated by apps like Anki, assess retention over time (e.g., reviewing resilience after one week, then one month). For example, a learner might write “Innovation drives economic growth” in a timed essay, demonstrating recall and application (Roediger & Karpicke, 2006).

#### 2.10.2.4 Computational and AI-Based Vocabulary Assessment Tools

Computational tools and AI-driven platforms provide dynamic, data-driven assessments, personalizing feedback and tracking progress (Godwin-Jones, 2018; Settles & Meeder, 2016). Examples include:

**Corpora analysis**: Tools like the Corpus of Contemporary American English (COCA) or British National Corpus (BNC) analyze word frequency, collocations, and usage, informing test design (Sinclair, 1991). For instance, COCA reveals that strong collocates with coffee but not tea, guiding assessment items.

**AI apps**: Duolingo and Grammarly assess vocabulary through tasks (e.g., sentence completion, error correction) and provide real-time feedback (e.g., correcting affect to effect). Duolingo's adaptive quizzes adjust difficulty based on performance, ensuring valid assessment (Loewen et al., 2019).

**Automated scoring**: Tools like Write & Improve (Cambridge) evaluate written texts for lexical richness, identifying overuse of basic words (e.g., good) versus advanced ones (e.g., exceptional).

For example, a learner using Grammarly might receive feedback on overusing important and suggestions for synonyms like crucial or significant, enhancing depth. These tools offer scalable, objective assessments, complementing traditional methods (Schmitt, 2010).

### 2.10.3 The Relationship Between Vocabulary Proficiency and Overall Language Skills

Vocabulary proficiency is a strong predictor of performance across language skills, with correlations ranging from .70 to .90 for reading, listening, speaking, and writing (Nation, 2013; Schmitt, 2014).

This section explores these relationships, with expanded examples and pedagogical implications.

#### 2.10.3.1 Vocabulary and Reading Comprehension

A large vocabulary enhances text comprehension by enabling word recognition and contextual inferencing (Hu & Nation, 2000; Laufer, 1997). Learners need 95%–98% lexical

coverage (known words in a text) for unassisted comprehension, equating to 8,000–9,000 words for academic texts (Nation, 2006). For example, understanding implication in "The study's implications are significant" aids grasp of arguments, while unknown words like empirical hinder comprehension. Extensive reading, supported by apps like ReadLang, builds vocabulary and comprehension simultaneously (Krashen, 1989).

#### 2.10.3.2 Vocabulary and Listening Skills

Rapid word recognition supports listening comprehension, especially in fast-paced or accented speech (Schmitt, 2010; Field, 2003). For instance, knowing negotiation aids understanding of a business podcast, while unfamiliar words like merger cause misinterpretation. Listening practice with podcasts, audiobooks, or apps like LyricsTraining (e.g., identifying freedom in songs) enhances lexical and aural skills (Nation, 2013).

#### 2.10.3.3 Vocabulary and Speaking Fluency

A robust vocabulary enables expressive, fluent speech, reducing pauses or circumlocution (Nation, 2013; Levelt, 1993). Learners with words like articulate and eloquent describe ideas vividly (e.g., "She articulated her vision clearly"), while limited vocabulary leads to reliance on basic terms (e.g., good). Conversational practice via Tandem or role-plays in class improves fluency and lexical diversity (Schmitt, 2010).

#### 2.10.3.4 Vocabulary and Writing Proficiency

Vocabulary depth ensures precise, varied writing, avoiding repetition and enhancing coherence (Laufer & Nation, 1995; Engber, 1995). For example, using mitigate in "Mitigate climate change" is more precise than reduce, while synonyms like alleviate or lessen add variety. Tools like Grammarly or Write & Improve suggest advanced vocabulary, improving lexical richness in essays or reports (Godwin-Jones, 2018).

### 2.11 Language Skills Affected by Vocabulary Acquisition

Vocabulary acquisition directly influences the development of reading, listening, speaking, and writing skills, serving as a foundation for communicative competence (Nation, 2013; Schmitt, 2010). This section expands on how vocabulary impacts each skill, with detailed

examples, research insights, and strategies to maximize skill development through lexical growth.

### 2.11.1 Vocabulary and Reading Skills

#### 2.11.1.1 Reading Comprehension and Vocabulary

Vocabulary size and depth are critical for reading comprehension, as unknown words disrupt understanding and inferencing (Hu & Nation, 2000; Laufer, 1997). Learners need to know 98% of words in a text for fluent reading, requiring 8,000–9,000 words for academic texts or novels (Nation, 2006). For example:

- A learner with a 5,000-word vocabulary can read simple news articles but struggles with academic journals containing words like synthesis or paradigm.
- Knowing implication in "The policy's implications are far-reaching" aids comprehension, while empirical may require contextual guessing or dictionary use.

Strategies like extensive reading (e.g., novels, blogs) and intensive reading (e.g., analyzing articles) build vocabulary and comprehension, supported by apps like ReadLang or LingQ, which highlight and define unfamiliar words (Krashen, 1989; Schmitt, 2010).

#### 2.11.1.2 Vocabulary and Reading Speed

A large vocabulary enhances reading speed by enabling automatic word recognition, reducing cognitive load (Perfetti, 2007; Segalowitz, 2010). For instance, recognizing environment instantly allows focus on meaning, while pausing to decode sustainability slows reading. Repeated exposure through digital texts or speed-reading apps like Spreeder improves automaticity and fluency (Nation, 2013).

### 2.11.2 Vocabulary and Listening Skills

#### 2.11.2.1 Listening Comprehension and Vocabulary

Vocabulary knowledge facilitates listening comprehension by enabling rapid word recognition in real-time speech (Field, 2003; Schmitt, 2010). For example:

- Understanding negotiation in a business podcast enhances grasp of the discussion.

- Unfamiliar words like merger or acquisition cause misinterpretation or loss of context.

Listening to authentic materials (e.g., TED Talks, BBC podcasts) exposes learners to varied vocabulary, while apps like LyricsTraining or Audible provide contextual practice (e.g., identifying freedom in songs or audiobooks) (Nation, 2013).

#### 2.11.2.2 Vocabulary and Real-Time Processing

Listening requires simultaneous processing of phonological, semantic, and syntactic information, making vocabulary depth crucial for real-time comprehension (Rost, 2011). For instance, knowing run in multiple senses (run a race, run a company) aids interpretation in fast-paced speech. Shadowing exercises (repeating audio) or apps like Pimsleur enhance processing speed and lexical recognition (Schmitt, 2010).

### 2.11.3 Vocabulary and Speaking Skills

#### 2.11.3.1 Vocabulary and Speaking Fluency

A rich vocabulary supports fluent speech by providing diverse lexical options and reducing hesitation (Nation, 2013; Levelt, 1993). For example:

- A learner with words like articulate, eloquent, and persuasive can describe ideas vividly (e.g., “She articulated her vision clearly”).
- Limited vocabulary leads to pauses or circumlocution (e.g., describing scissors as “cutting tool”).

Conversational practice through language exchange apps like Tandem or classroom role-plays (e.g., debating environmental issues using sustainability) improves fluency and lexical diversity (Schmitt, 2010; Dörnyei, 2001).

#### 2.11.3.2 Vocabulary and Pronunciation Accuracy

Vocabulary knowledge includes phonological forms, ensuring accurate pronunciation (Cutler, 2012; Levis, 2018). Mispronouncing words like schedule (/ˈskedʒuːl/ vs. /ˈʃedʒuːl/) or colonel (/ˈkɜːrnəl/) can hinder communication. Speech recognition tools like Elsa Speak or Google Translate provide feedback, while shadowing native speakers refines pronunciation (Schmitt, 2010).

### 2.11.4 Vocabulary and Writing Skills

#### 2.11.4.1 Vocabulary and Writing Coherence

Vocabulary depth enhances writing coherence by enabling precise word choice and varied expression (Laufer & Nation, 1995; Engber, 1995). For example:

- Using mitigate in "Mitigate climate change" is more precise than reduce.
- Synonyms like alleviate, lessen, or diminish prevent repetition, improving style.

Writing tasks like essays, blogs, or reports, supported by tools like Grammarly or Write & Improve, encourage advanced vocabulary use and coherence (Godwin-Jones, 2018).

#### 2.11.4.2 Vocabulary and Lexical Diversity

Lexical diversity, measured by type-token ratios or vocabulary range, reflects writing quality (Laufer & Nation, 1995). A learner using significant, crucial, and pivotal instead of repeating important demonstrates diversity. Corpus tools like COCA or apps like WordHippo suggest synonyms and collocations, enhancing variety (Sinclair, 1991; Schmitt, 2010).

### 2.12 Conclusion

This chapter provides a comprehensive examination of vocabulary acquisition in EFL learning, synthesizing theoretical frameworks, practical strategies, technological innovations, and assessment methods. It builds on Chapter One's exploration of Duolingo as a vocabulary learning tool, extending the analysis to broader pedagogical and research contexts. Key insights include:

Theoretical Foundations: Cognitive Load Theory, Dual-Coding Theory, Involvement Load Hypothesis, and Interactionist Theory underscore technology's role in optimizing cognitive resources, engagement, and authentic practice (Sweller, 1988; Paivio, 1986; Laufer & Hulstijn, 2001; Long, 1996).

Vocabulary Dimensions: Breadth and depth are critical for proficiency, with technology facilitating both through adaptive learning, gamification, and multimodal input (Nation, 2013; Schmitt, 2014).

Strategies and Challenges: Explicit and implicit strategies, supported by tools like Quizlet, Anki, and Tandem, address cognitive, linguistic, and contextual challenges, such as morphological complexity and limited exposure (Schmitt, 2010; Laufer, 1997).

Motivation: Intrinsic and extrinsic motivation, fostered through gamification, personalization, and authentic tasks, drive retention and engagement (Dörnyei, 2005; Ryan & Deci, 2000).

Assessment: Traditional tests (e.g., VST, WAT) and AI-driven tools (e.g., Duolingo, Grammarly) measure breadth, depth, and skill integration, guiding instruction (Read, 2000; Godwin-Jones, 2018).

Future Directions: Emerging trends in neurolinguistics, corpus linguistics, and immersive technologies like virtual reality promise to revolutionize vocabulary acquisition (Pulvermüller, 2013; Lan, 2020).

Duolingo excels in building vocabulary breadth through repetitive, gamified exposure but requires supplementation for depth, such as writing tasks, collocation exercises, or conversational practice with native speakers (Laufer & Nation, 1995; Loewen et al., 2019). Motivation, a focal point in Chapter One, is critical for long-term retention, with strategies like gamification and real-life application enhancing learner persistence (Dörnyei, 2001). Linguistic and cognitive challenges, including irregular spelling, semantic nuances, and memory constraints, necessitate targeted interventions like spaced repetition, mnemonic devices, and contextual learning (Baddeley, 1997; Nation, 2013).

Future research should explore neurolinguistic mechanisms (e.g., brain activation during word retrieval), corpus-driven vocabulary selection (e.g., prioritizing high-frequency collocations), and immersive technologies like virtual reality for contextual learning (Pulvermüller, 2013; Sinclair, 1991; Lan, 2020). Pedagogically, a hybrid approach—integrating explicit instruction, incidental exposure, technology, and authentic tasks—optimizes outcomes for diverse learners. By leveraging AI-driven personalization, collaborative platforms, and data-driven insights, educators can address individual needs, fostering lifelong vocabulary development and communicative competence in EFL contexts (Settles & Meeder, 2016; Godwin-Jones, 2018).

## Chapter two : Duolingo as a Vocabulary Learning Tool

**Introduction**

## Chapter two: Duolingo as a Vocabulary Learning Tool

### Introduction

The fast development of technology has significantly influenced language education, particularly in vocabulary acquisition. Duolingo, due to its user-friendly, gamified design, is one of the best-known language learning apps and is widely used by students worldwide. It, therefore, becomes important to investigate Duolingo's educational potential to develop vocabulary, since vocabulary acquisition is quite essential for second language competency.

### 1.1 Definition of Duolingo

Duolingo is a mobile language learning app developed by Luis von Ahn and Severin Hacker in 2011. It was designed to make language learning free and enjoyable for learners worldwide. It is a mobile-assisted language learning (MALL) platform that can be accessed via mobile phones and internet browsers, offering courses in more than 40 languages, including English.

One of the most notable aspects of the platform is its integration of gamification, which shapes the entire language learning process and supports learners through features like streaks, badges, experience points (XP), and daily challenges (Munday, 2016).


**Figure 2.1:** An illustration of the Duolingo logo

Duolingo's pedagogy relies heavily on microlearning, where learners complete short tasks to improve their vocabulary, grammar, and listening skills. Tasks on Duolingo typically involve translation, matching, fill-in-the-blank, and listening exercises. Vocabulary is central to nearly all learning sessions, as the platform continuously introduces new words, reviews previously learned vocabulary, and uses spaced repetition to aid retention (Nation, 2013).

Another benefit of Duolingo is its user-centered interface, which provides instant feedback to correct mistakes with minimal delay.

Additionally, the learning dashboard allows users to track their progress, enhancing their sense of achievement. Duolingo has been widely adopted in both formal and informal educational settings, with many educators integrating it into curricula to enrich students' vocabularies.

This independent learning platform allows students to manage the pace of their learning, further supported by the gamification of the experience (Godwin-Jones, 2011).

### 1.2 Contextual Background of Duolingo:

Duolingo was founded by Luis von Ahn together with his doctoral student, Severin Hacker, at Carnegie Mellon University. They were inspired by his earlier work on crowdsourcing and the deployment of reCAPTCHA technology that utilized human work to yield useful outcomes

through the digitization of literary content. His vision was for a free and open-source platform for language acquisition that would fulfill a double role: helping people learn a new language while also facilitating the translation of web content (Von Ahn, 2013). Duolingo started its beta development process back in 2012 and provided instructional materials for the Spanish, English, French, and German languages.

The platform adopted a significantly different approach from that used by typical commercial endeavors. Software, which usually demands significant payments for extra lessons or for access through a subscription, something that Duolingo consciously avoided. The appeal of the website and app can be partly explained by the gamification methods utilized by Duolingo, proven effective and entertaining alike; these include rewards, levels, and the use of streaks, all helping make the process of learning languages easier (Munday, 2016).


**Figure 2.2:** Duolingo

As of 2014, Duolingo had more than 30 million registered accounts and was recognized as Apple's App of the Year. Its profile was even boosted by the introduction of Duolingo for Schools, a version of the platform created specifically for educational institutions, which allows for the monitoring of student interaction and the issuance of homework accordingly. The company has adopted a spaced repetition algorithm designed for vocabulary retention by reviewing linguistic components at intervals determined by a systematic method (Nation, 2013). Advances have improved application features within the past two years by introducing Duolingo Podcasts and the addition of AI-based chatbots designed for conversation practice. The company has also initiated the offering of certification of linguistic proficiency through the

Duolingo English Test (DET), an examination that is accepted by educational institutions and employers worldwide (Garcia, 2019). Forecasts for the year 2024 indicate that around 500 million people are using the application worldwide, offering access to more than 40 languages, including less popular languages as well as languages that have gone extinct, like Hawaiian, Navajo, and Scottish Gaelic. The company continues to develop technologies based on advanced intelligence that incorporate speech recognition features and customized pathways of learning to enhance the experience of the user (Zhao & Lai, 2019).

While admired globally and having achieved a great deal, Duolingo has come under criticism for overemphasis on exercises leading to translational outcomes, the lack of adequate support for the acquisition of deeper aspects of the language, and the limited scope for authentic speaking practice. Duolingo remains one of the top-rated language education applications, a symbol of the 21st-century model of language acquisition.

## 1. 3 Features of Duolingo Relevant to Vocabulary Learning

### 1. 3. 1 Gamification and Motivation

Gamification is arguably the most distinctive feature in Duolingo as a tool for learning and has continued interest and sales among its users. Conventional methods of vocabulary teaching, such as repetitive drills and isolated rote memorization, contrast starkly with how Duolingo uses games in the learning experience to keep learning fun and rewarding (Munday, 2016).

Users gain experience points (XP) through lessons, maintain daily streaks to develop consistent learning habits and earn badges or rewards after reaching certain linguistic milestones. This formalized system of rewards contributes to feelings of achievement and intrinsic motivation, thus helping learners stay involved daily with the platform (Dörnyei, 2005).

Competition and the social aspect are further enhanced in Duolingo through its features and leaderboards that allow a learner to be in competition with friends or other global learners. Educational psychology has shown that competition and social comparison facilitate persistence in learning and cognitive activation (Deci & Ryan, 2000).

Changing the view of vocabulary acquisition into one of achievement defines the activity and being fully disabled to work as behavioral reinforcement by creating dopamine-based reinforcements through learning and retention under Duolingo (Vesselinov & Grego, 2012).

### 1. 3. 2 Spaced Repetition and Adaptive Learning

The retention and recall of vocabulary over a long time is one key to the success of any vocabulary learning, and this requires prolonged, continued reinforcement. To build vocabulary practice so that words or phrases are recalled just before they are likely to be forgotten, Duolingo applies spaced repetition (SR), an evidence-based method (Nation, 2013).

This process fits Ebbinghaus's Forgetting Curve, according to which memory retention is reduced exponentially when there is no periodic reinforcement (Ebbinghaus, 1885).

In addition, the adaptive learning algorithm employed on Duolingo varies the difficulty and frequency of vocabulary entries based on the learner's previous performance. Lexical entries and phrases that a learner consistently gets right are presented less often, whereas those that have the tendency to be forgotten or answered incorrectly are repeated at shorter intervals (Godwin-Jones, 2011). This method is especially good at fostering automaticity of recognition and recall of words because it engages active recall, a very important cognitive process for the development of strong neural networks in second language learning (Schmitt, 2010).

### 1. 3. 3 Multisensory Learning: Visual and Auditory Reinforcement

Second language acquisition (SLA) theory stresses that multimodal learning involving different means of acquiring words is required (Stockwell, 2007). With Duolingo, vocabulary learning is facilitated by visual hints, auditory aids, and contextual examples; thus, students learn new words through varied modalities.

Pictures that aid semantic processing by evoking mental links between the word and its image (Mayer, 2009) support every vocabulary entry. Meanwhile, the platform provides high-quality audio with recordings by native speakers, contributing to the awareness of sound patterns, the correct articulation of sounds, and listening skill development (Chapelle, 2003). Research shows that dual-modality learning involving vision and sound seems to be greatly beneficial for word retention to the learner, especially to those who rely on auditory or visual modes (Paivio, 1986).

### 1. 3. 4 Translation-Based Exercises: Strengths and Limitations

Duolingo makes extensive use of translation-based exercises, wherein the user translates words and sentences from their native language to the target language and vice versa. This is effective for developing vocabulary breadth, the number of words a learner knows and can remember. Yet critics contend that translation-intensive activities might not be as effective for developing deep vocabulary knowledge, encompassing word subtleties, collocations, and register variation (Nation, 2001; Laufer & Nation, 1999).

Yet, critics maintain that translation-based activities might not be as helpful in the learning of deep vocabulary knowledge, such as word shades, collocations, and register variation. Although translation sets up a direct connection between the target language and the learners' native language (L1), over-reliance on literal translation can impede spontaneous speech production and consequently bar the learners from attaining contextual fluency. (Schmitt, 2010). Furthermore, vocabulary-learning research indicates that words must be learned in meaningful and communicative contexts instead of isolated word-pair practice (Krashen, 1989). Duolingo attempts to combat this weakness with sentence-building exercises and usage context-based drills.

For example, a translation task such as converting "The cat drinks milk" from English to the learner's native language promotes recognition and basic recall. However, a communicative task, like describing a daily routine using new vocabulary in a dialogue format, encourages deeper cognitive processing and more meaningful use of the words. This distinction is vital in determining whether vocabulary learning remains passive or becomes truly integrative and productive.

### 1. 3. 5 Sentence Construction, Grammar Integration, and Interactive Challenges

Such exercises are not just lexical translations of the ones that Duolingo takes students through; they are sentence-building exercises where learners are required to make utterances from jumbled words into a grammatically complete sentence. Syntactic reinforcement is important because it allows learners to internalize word order, syntactic structures, and grammatical patterns while simultaneously building their lexical foundation (Littlewood, 2004).

Furthermore, gap-fill exercises necessitate the memorization of words in context, reinforcing the active recall principle—a proven method of long-term retention (Read, 2000). Cognitive psychology research shows that active recall practice is more effective than passive exposure

in developing strong lexical networks, i.e.. Learners are more likely to remember and use vocabulary with fluency when they engage in meaningful, recall-oriented tasks (Roediger & Karpicke, 2006).

### 1. 3. 6 Contextual Learning through Duolingo Stories.

Given the limitations of discrete vocabulary exercises, Duolingo has provided Duolingo Stories: a feature meant to get students involved in short, interactive stories that reaffirm target vocabulary in real contexts. Unlike isolated vocabulary lists, the stories subject students to typical words and expressions used in everyday conversations, thereby strengthening semantic processing and inferential learning (Vesselinov & Grego, 2012).

Theoretical approaches in incidental vocabulary learning ensure that, generally, people learn new words better if they can meet them in real-life experiences than through pure search and review (Krashen, 1989). Misleading words and encodings are how much the ear is caught up in the atmosphere, and Duolingo Stories bring this precept to bear for the benefit of learners.

Duolingo Stories align closely with the principles of extensive reading, particularly stories like "The Job Interview" and "The Lost Dog," which feature everyday vocabulary embedded in coherent narratives that support incidental vocabulary acquisition by exposing learners to rich language input in meaningful contexts (Krashen, 1989). Similar to graded readers, these stories embed target vocabulary in engaging narratives that promote inference and contextual understanding, thereby enhancing semantic processing.

### 1. 3. 7 Accessibility, Flexibility, and Mobile Learning

One point as to why Duolingo is catching on with students is the fact that it is always on their mobile devices, so that students can practice vocabulary with no time constraints or geographical barriers. This condition would be preferred by cognitive load theory because it advocates vocabulary practice in small chunks--that is, shorter, more frequent, and lower-intensity study sessions, which are more desirable than long periods between study sessions (Sweller, 1988).

Moreover, Duolingo's offline feature enables the practice of languages even without access to the internet, which renders it particularly suitable for travelers, students residing where

Internet access is low, and users with interruptions in their use of electronic gadgets (Godwin-Jones, 2011).

### 1. 4 Advantages of Duolingo for Vocabulary Learning

Vocabulary underpins essential language skills, including reading, speaking, and writing (Nation, 2013). Traditional word learning was inclined to borrow from memorization strategies, such as repetition drills and lists of words, that, as useful as they were in so many respects, were not engaging or contextual (Schmitt, 2010). The emergence of mobile-assisted language learning (MALL) has revolutionized learning vocabulary through apps such as Duolingo, which provide a simple-to-operate, entertaining, and evidence-based approach to active recall, as well as information retention for an extended period (Godwin-Jones, 2011).

In addition to its essential abilities, Duolingo has numerous pedagogical advantages that make vocabulary learning easy in a second-language learning setting. They include reinforced autonomy, effectiveness of microlearning, higher exposure to lexical variety, adaptivity based on AI, and usage of vocabulary in real-life situations.

#### 1. 4. 1 Self-Paced Learning and Learner Autonomy

Fostering learner independence is one of Duolingo's main advantages in the acquisition of a new language; in other words, the learn-er can take control of the pace, frequency, and scope of vocabulary acquisition. In a traditional classroom setting, students would have to follow a pre-set curriculum and pace dictated by a teacher. Duolingo thus offers an independent learning experience in which users can design their practice sessions at their convenience, according to their proficiency level and individual styles of learning (Littlewood 2004).

Evidence indicates that autonomy in language learning can enhance motivation, enable retention, and underpin long-term achievement. (Benson, 2011). It has been found through research that students who adopt independent learning tendencies have a greater tendency to acquire concepts of vocabulary building and their appropriate contextual application (Dörnyei, 2005). The Duolingo program offers students an opportunity to revise their previously acquired words, choose personal learning modules, and arrange difficulty levels according to personal comfort, thus optimizing their feelings of autonomy in learning (Munday, 2016).

Additionally, Duolingo's offline feature allows the learning of vocabulary for students without internet connectivity, thereby making it a crucial application for students in rural settings or those who have poor connectivity (Stockwell, 2007).

#### 1. 4. 2 Microlearning Efficiency and Cognitive Load Optimization

One of the strong aspects of Duolingo is that it uses the ideas of microlearning, by which the information is presented in small packets, easy to handle. Contrary to the normal study sessions that take time to focus and finally give mental wear and tear, the lessons by Duolingo are in modules, bite-sized ones, the time of which ranges from 5 minutes to 15 minutes. Cognitive load theory (CLT) research indicates that limiting the quantity of information processed simultaneously allows for improved retention and recall (Sweller, 1988).

By presenting a limited set of vocabulary words per lesson, Duolingo allows learners to concentrate on reinforcing knowledge of individual words without being overwhelmed by excess information (Mayer, 2009). Besides, microlearning offers the chance to develop habits necessary for vocabulary learning. Students who engage in short and regular study sessions are more efficient in vocabulary learning compared to students who engage in long and irregular study sessions (Ebbinghaus, 1885). Duolingo's capacity to set daily goals, which facilitates the development of a consistent learning habit, aligns with psychological models of skill acquisition (Deci & Ryan, 2000).

### 1. 4. 3 Increased Exposure to Lexical Variety and Usage Contexts

One of the most well-documented challenges to vocabulary acquisition is acquiring lexical depth, which is to move from word familiarity to understanding subtlety, collocation, and register variation (Laufer & Nation, 1999). Duolingo enables lexical exposure by exposing learners to words in numerous syntactic and morphological constructions, thus enabling them to develop a broader understanding of word usage.

Simple processes for improving lexical diversity in Duolingo are:

Sentence restructuring exercises ask students to change sentence structures without altering key vocabulary items.

Synonym and antonym activities, re-establishing semantic connections between words.

Morphological variations expose students to various conjugations, affixes, and derivational structures (Schmitt, 2010).

Besides, Duolingo also employs a thematic vocabulary clustering approach, where words are grouped based on some particular themes such as traveling, eating, work, and socialization. This approach is aligned with lexical chunking hypotheses, which assume that words are

acquired in semantically related clusters to increase both the frequency of retrieval and usage (Ellis, 1997).

### 1. 4. 4 AI-Driven Adaptivity and Personalized Learning

Unlike other learning websites that present the same course to all learners, Duolingo utilizes artificial intelligence as well as machine learning to personalize learning paths for every learner. By observing learners' reactions, seeing patterns in errors, and monitoring response times for questions, Duolingo alters vocabulary levels to accommodate every individual's requirement (Godwin-Jones, 2018).

Core aspects of Duolingo's AI-powered flexibility are:

Adjusts difficulty in real-time, with incorrectly guessed words repeating more frequently to reinforce memory.

Predictive learning algorithms run historical performance data to calculate the optimal review frequencies for individual vocabulary words.

Sequenced lessons based on individual needs, which rearrange vocabulary classes in a manner that adaptively aligns learner interaction.

Teaching with AI is all about facilitating students to learn more effectively. This involves adapting to teach differently depending on their ability to learn and retain language (Vygotsky, 1978).

### 1. 4. 5 Storytelling and Simulation in Vocabulary Use

In contrast to Duolingo's core exercises, which highlight parametric vocabulary instruction, supplementary features such as Duolingo Stories and interactive chatbots help learners stretch their vocabulary to authentic communication situations. Such features allow for pragmatic language learning, helping learners to learn words not just as individual symbols but in terms of their social functions in interactional and conversational structures (Meyer et al, 2022).

Duolingo Stories: "They immerse students in story-based learning, and words show up in native-level dialogues and descriptive text (Krashen, 1989). For instance, Duolingo's story titled "At the Café" introduces vocabulary such as "menu," "bill," and "waiter" in a realistic dialogue. Similarly, chatbot simulations may ask users to respond to "I'd like a table for two," reinforcing

real-world expressions. Scenario-based learning like this has been shown to increase vocabulary retention by situating words in relevant social contexts, supporting pragmatic language use.

Chatbots powered by AI facilitate interactive conversation practice with students answering in scenario-based situations that call for responses.

Vocab apps: Vocabulary relevant to daily life: Classes built around daily life interactions, business terminology, and cultural contexts to make it applicable to everyday communication needs (Vesselinov & Grego, 2012).

Hearing real language use helps you move from a passive understanding of words into active use, and as a result, makes you a more fluent speaker and builds your confidence when talking with others (Ellis, 2008).

### 1. 5 Limitations of Duolingo for Vocabulary Learning

In spite of the popularity and effectiveness of Duolingo in assisting vocabulary learning, it has certain pedagogical and practical limitations. While it can be a helpful complementary tool for learners of a foreign language, it lacks several vital components necessary for complete vocabulary mastery.

While Duolingo is popular (for good reason! ) and powerful for vocabulary learning, it does have some pedagogical and utility flaws. Although it can serve as an effective supplementary device when learning a second language, it misses some essential elements needed to fully command a word we learn.

Vocabulary learning is a complex activity that demands not only exposure to words but also deep processing, contextual understanding, active usage, and recall in authentic communicative environments (Nation, 2013).

Though Duolingo presents an interactive and ordered learning platform, methodological drawbacks and design framework hinder its potential to serve as an overall vocabulary-learning tool. Some of its main drawbacks are excessive use of translation-based learning, lack of deep contextual immersion, absence of productive vocabulary practice activities, minimal lexical variety, limited pronunciation exercise, lack of personalized feedback, and insufficient stimulation of advanced semantic comprehension.

Knowing these limitations is important to evaluating where Duolingo belongs in a larger model of language learning and what supplementary materials or methods can be used to overcome its weaknesses (Schmitt, 2010).

### 1. 5. 1 Over-Reliance on Translation-Based Learning

Perhaps the most commonly accepted drawback of Duolingo is the utilization of translation-based exercises in teaching vocabulary. Although word-to-word translation may be effective in enhancing vocabulary recognition, it has been largely criticized for not facilitating deep lexical processing and flexible use of words (Nation, 2013).

Central Concerns Regarding Translation-Based Learning

Superficial Word-Meaning Association: Most words in a language lack exact matches in another language, which results in inaccurate or imprecise translations (Laufer & Girsai, 2008). Students tend to connect vocabulary with fixed L1-to-L2 mappings rather than learning the actual semantic connections (Schmitt, 2010).

Pragmatic Insensitivity: Translations can lack appropriate focus on elements such as register, tone, cultural sensitivity, and idiomaticity crucial for the effective use of language in actual situations (Read, 2000).

Restricted Exposure to Forms and Synonyms: Duolingo provides lexical items with more than one translation by presenting only one or two possibilities, thus restricting learners' exposure to multiform linguistic realizations (Nation, 2001).

Although translation exercises can help students learn the skill of connecting meaning between two languages, empirical evidence demonstrates that vocabulary learning is greatly facilitated when words are encountered in authentic contexts and not through translation practice (Krashen, 1989).

### 1. 5. 2 Limited Contextual Learning and Discourse Integration

Most effective vocabulary learning occurs when words are presented in robust contexts that reflect authentic language use in real contexts (Ellis, 2008). In contrast, Duolingo mainly presents words in disconnected sentences that fail to offer the flowing reading, thematic coherence, and free interaction needed to foster higher retention (Nation, 2013).

How Context Fosters Vocabulary Acquisition

Thematic and Situational Exposure: Researchers demonstrate that learners gain more vocabulary from thematic dialogue or narrative context than from sentence presentation (Schmitt, 2010).

Word Combinations, Collocations, and Idiomatic Phrases: Duolingo does not generally teach learners word combinations, collocations, or idiomatic phrases that are required for native fluency and comprehension (Laufer & Nation, 1999).

Loss of Discourse Cohesion: The words are given individually, and the students are never shown how the words are utilized in the context of actual speech or writing (Ellis, 2008).

Although Duolingo Stories tries to tackle this problem, the site still does not give learners ongoing, meaningful interactions in diverse real-world settings.

### 1. 5. 3 Absence of Productive Vocabulary Practice

Successful vocabulary acquisition is not simply recognition and recall, however, but active production, wherein students are compelled to use new words in speaking and writing (Nation, 2001). Duolingo, conversely, is more of a passive recognition tool with little room for students to create their own sentences or partake in open-ended discussions.

Why Productive Practice is Necessary

Spoken Skill Development: Vocabulary acquisition without spoken production is incomplete since speaking reinforces retrieval processes and fluency (Godwin-Jones, 2018). Duolingo speaking practice is limited and does not consist of interactive conversation practice.

Writing and Expressive Language: Writing enables students to use vocabulary creatively, forming long-term memory. Duolingo's fill-in-the-blank sequence does not allow for variation of sentences, free writing, or story writing. (Schmitt, 2010).

Vocabulary Engagement: Technical vocabulary served to close the divide between passive understanding and communicative capacity, an element that the Duolingo platform could not achieve (Littlewood, 2004).

The learning of linguistic competence hinges on the learner's capacity to interact with and play with language; the lack of open-ended exercises in productive tasks, therefore, seriously limits vocabulary learning potential in Duolingo.

### 1. 5. 5 Lack of Personalized Feedback and Error Correction

A key shortcoming of Duolingo is its reliance on the computer-generated response mechanism, which is not capable of furnishing long explanations, personalized comments, or correction methods.

Why Personalized Feedback Matters

Deficit in Personalized Error Analysis: Errors are listed; however, the explanation of supportive information is not given, and hence, the students remain oblivious to the origin of their erroneous answers (Chapelle, 2003).

Inadequate Evaluation of Pronunciation: The speech recognition software available today lacks comprehensive phonetic feedback and, therefore, might inadvertently promote the involuntary acquisition of incorrect pronunciation patterns by students (Godwin-Jones, 2018).

Lack of Instructor-Led Explanations: Unlike classroom instruction, in which instructors contextualize their feedback, Duolingo offers generalized, one-size-fits-all explanations (Munday, 2016).

Absent personalized feedback mechanisms, students may solidify errors and learn erroneous implicit language rules, which need to be corrected by humans.

### 1. 5. 6 Conclusion

While Duolingo can be a handy, interactive, and helpful instrument for acquiring basic vocabulary, it cannot be considered a substitute for structured language instruction. Its overemphasis on translation, neglect of deep contextual comprehension, unproductive practice activities, limited vocabulary range, and weak feedback mechanisms limit its utility for higher-level learners considerably.

To develop vocabulary, memory, and communicative competence, learners need to supplement Duolingo with:

• Conversational practice (e.g., tutors, language partners).

• Extended reading and listening (to determine contextual use).

• Instructor-led instruction (for error correction and feedback).

By bridging these limitations, learners can have a fairer and more effective approach to vocabulary building.

### 1. 6 Duolingo's Role in Enhancing Vocabulary Knowledge

Vocabulary is the cornerstone of language learning as it plays a salient role in understanding, fluency, and communicative competence (Nation, 2013). Students need to have receptive and productive vocabulary knowledge that enables them to identify, recall, and utilize words appropriately (Schmitt, 2010). Contrasted with conventional methods of vocabulary acquisition, which often employ mechanical memorization, textbook-driven practice, and explicit instruction, contemporary approaches prefer the utilization of technology in education, active engagement, and personalized reinforcement mechanisms (Godwin-Jones, 2018).

Duolingo, as one of the most widely used mobile-assisted language learning (MALL) applications, is a significant instrument in the acquisition of vocabulary knowledge through the provision of systematic exposure, employment of spaced repetition, integration of multimodal learning, and utilization of gamification principles to motivate the learner.

Nonetheless, its function is not solitary; instead, it is a supporting tool that, if utilized alongside other pedagogical approaches, enhances the overall vocabulary learning experience (Munday, 2016).

#### 1. 6. 1 Structured and Systematic Vocabulary Exposure

One other benefit of Duolingo, especially in the context of vocabulary enhancement, is how it introduces words in a logical and structured fashion. Unlike the haphazard vocabulary that individuals would typically learn from everyday conversation or reading, Duolingo introduces words after a carefully laid out lesson plan. Incremental learning of vocabulary, thus, becomes an option, with regular practice designed to aid learning and recollection (Nation, 2013).

Key Aspects of Structured Vocabulary Exposure in Duolingo

Gradual Introduction of Words: Lexical items are presented gradually to facilitate the best acquisition and internalization of words for the learners (Schmitt, 2010).

Thematic Structuring of Lexical Entries: Lexical entries are placed into systematic thematic clusters (e.g., tourism, gastronomy, professions) that allow associative memory and support quicker retrieval (Laufer & Nation, 1999).

Regular review of learned words: The vocabulary is revisited continually through exercises and levels, hence enhancing memorization (Read, 2000).

Research indicates that explicit vocabulary instruction greatly improves retention and use, so Duolingo is indeed an effective tool for learning vocabulary (Godwin-Jones, 2011).

### 1. 6. 2 Cognitive Reinforcement through Spaced Repetition and Active Recall

Memory consolidation is crucial for the long-term retention of words, and Duolingo's spaced repetition algorithm (SRS) is crucial to aid in strengthening word knowledge. The spacing effect, first studied by Ebbinghaus (1885), is the idea that spacing out reviews of vocabulary at optimal, increasing intervals enhances retention and recall significantly more than mass repetition (Nation, 2013).

How Spaced Repetition Improves Vocabulary Knowledge

Timing of Review Optimized: Words are reviewed after intervals depending on learners' previous answers so that challenging words come up more often and simple words come up in less frequent cycles (Roediger & Karpicke, 2006).

Active Recall Practice: As opposed to passive exposure, where words are only pointed out, Duolingo ensures that learners actively recall words, thus making semantic encoding more straightforward (Schmitt, 2010).

Error-Corrective Reinforcement: If the user is incorrect, Duolingo reinforces the word later in the lesson in future exercises, so error correction is a pedagogical learning strategy (Godwin-Jones, 2018).

These cognitive psychology researches confirm that active recall and spaced repetition play a very essential role in recalling vocabulary, hence confirming Duolingo's approach as scientific and effective in memory consolidation (Nation, 2013).

### 1. 6. 3 Adaptive Learning and Personalized Vocabulary Reinforcement

Duolingo, which stands in the shoes of adaptive AI learning, offers each learner personalized exposure to vocabulary, depending on performance, common patterns of error, and the degree of engagement (Munday, 2016). Duolingo's algorithms follow individual progress through

difficulty, which may in fact provide a wider scope of learning compared with syllabus models for learning bound to specified formats.

Key Components of Adaptive Learning in Duolingo

A personalized error tracking system: The application identifies the words a student has a problem with and ensures they are being repeated with added frequency (Godwin-Jones, 2018).

Dynamic difficulty adjustment: If a student gets several answers correct in a row, the system reduces the review time for words already mastered and targets words that still need extra attention (Schmitt, 2010).

Personalized Learning Paths: Vocabulary review is personalized according to individual user progress metrics, thereby ensuring learners work with applicable and challenging lexicon (Chapelle, 2003).

Adaptive learning technologies make retention more effective by allowing students to devote more time to challenging words and less time to repeating simple words (Nation, 2013).

### 1. 6. 4 Multimodal Learning: Enhancing Vocabulary through Visual and Auditory Cues

Cognitive linguistics research indicates that retention of vocabulary is enhanced through a blend of sensory information, such that words are more likely to be stored and retrieved if inputted through more than one sensory input channel, such as text, audio, or visual (Paivio, 1986). Duolingo embodies the perfect union of try-learning embedded with multimodal learning strategies for word recognition and memory formation.

Multimodal Reinforcement Strategies in Duolingo

Word-Image Pairing: The association of words with images/icons deepens the encoding of knowledge within the semantic memory (Mayer, 2009).

Pronunciation Audio by Native Speakers: Listening to how the word is pronounced in a real-life accent deepens its auditory representation and recall, further heightening phonological manipulation skills (Chapelle, 2003).

Inclusion of reading and typing: If pupils can carry out knowledge-guided text-based tasks while they are being exposed to spoken languages, it provides other cognitive pathways for learning (Stockwell, 2007).

By this dual-modality reinforcement, Duolingo guarantees vocabulary that will not only be memorized but also be rooted deeply in some other cognitive pathways, thereby favoring their recall and application (Nation, 2013).

### 1. 6. 5 Duolingo's Gamification Impact on Vocabulary Retention

Motivation is an essential aspect of vocabulary learning that offers an engaging, consistent, and long-lasting method to retain vocabulary with a gamification model like that of Duolingo (Dörnyei, 2005).

Gamification Elements That Enhance Vocabulary Learning:

XP points and progress tracking, as well as forming habits that reinforce vocabulary practice (Deci & Ryan, 2000).

The use of leaderboards and challenges, such as social learning and competition, enhances the motivation to practice words regularly (Munday, 2016).

Streaks and a reward system motivate the students to log in every day to emphasize long-term vocabulary retention (Schmitt, 2010).

Research in educational psychology supports learning systems based on rewards: Gamification adds to vocabulary retention through increased motivation, persistence in study, and increased recall rates (Dörnyei, 2005).

### 1. 7 Integration of Duolingo in EFL Classrooms

#### Introduction

The introduction of digital learning platforms has universally changed the way EFL is traditionally been taught. This can be seen in the formative Duolingo app, which is a flexible, adaptive, and engaging way to enhance the traditional classroom experience by providing TALL inputs for vocabulary building, grammar, and retention of languages (Godwin-Jones, 2018).

A product most suitable to self-directed learners, Duolingo has assumed a new definition in the context of teacher-led classrooms by promising engagement, motivation, and long-term retention of vocabulary (Munday, 2016).

Yet Duolingo's actual incorporation into formal education is pedagogically demanding, whereby the platform's merits and shortcomings need to be strategically aligned with interactive, communicative, and instructor-guided activities (Nation, 2013). Flourishing in blended learning requires teacher-directed instructions, class-peer collaborative work, and data-driven assessment strategies that will see Duolingo fulfill the task of supplementing rather than superseding traditional pedagogical approaches (Schmitt, 2010).

### 1. 7. 1 Duolingo as a Supplementary Tool in Blended Learning Approaches

Because of its flexibility, accessibility, and opportunities for personalized learning, blended learning is now adopted into EFL classrooms almost everywhere (Stockwell, 2007). Duolingo becomes an effective supplement in blended learning settings, wherein it allows students to review vocabulary at their own pace with gamified reinforcement and structured repetition activities that reinforce the teacher's input in class (Munday, 2016).

Benefits of Duolingo in Blended Learning

Pre-lesson Preparation: Duolingo activities can be assigned for homework before new lessons so that students have a preview of the vocabulary and grammar for discussion during class (Nation, 2013).

Post-lesson Consolidation: Duolingo offers students interactivity to practice after covering a lesson for further assurance (Godwin-Jones, 2018).

Private Study and for Homework: Duolingo fosters the study of a language, especially when this further work takes place on its own and outside school hours as self-directed and repetitive practice (Chapelle, 2003).

The aforementioned activities may also be included for the sake of students to find practice in vocabulary-independent exercises and to carry this into communicative practice in a classroom, including flipped classroom implementations (Munday, 2016).

Blended learning approaches also leave room for the learners to guide their progress under some guidance and feedback from guides (Stockwell, 2007).

### 1. 7. 2 Teacher-Guided Implementation Strategies

While Duolingo does enable autonomous opportunities for learning, teacher-led implementation ensures that its utilization is done in a manner commensurate with curricular

goals and holistic language acquisition (Littlewood, 2004). Teachers play an important role in giving structure and monitoring Duolingo-based activities to ensure that they are working to enhance rather than replace basic communication skills.

Effective Teacher-Guided Strategies

Goal setting and integration into the lesson: Teachers can formulate weekly vocabulary goals and align Duolingo modules with topics from class and lesson objectives (Munday, 2016).

Tracking student-based progress: Educators would be able to utilize Duolingo for schools about engaging students, retention of vocabulary, and patterns of errors, thereby identifying those areas that require further instruction (Godwin-Jones, 2018).

Provision of feedback and correction: By analyzing the sets of data from pupil performance, teachers would be in a position to give constructive feedback, highlighting common mistakes while reinforcing grammatical accuracy and vocabulary in use (Schmitt, 2010).

Connecting digital with classroom activities: Lessons should involve discussions, role-plays, and creative writing tasks in which students apply the vocabulary they learned in Duolingo to create a real-world scenario of communication (Nation, 2013).

Research demonstrates that technology can most effectively support learning when coupled with teacher guidance because such interaction provides students with the needed scaffolded support when engaging in autonomous learning activities (Chapelle, 2003).

### 1. 7. 3 Collaborative and Communicative Classroom Activities

Perhaps the most significant limitation of Duolingo is its individualistic orientation, which might fail to satisfactorily support the development of communicative competence—a fundamental objective in EFL instruction (Littlewood, 2004). To combat this, educators can integrate Duolingo into group and interactive classroom activities that support vocabulary acquisition through social learning

Duolingo-Based Classroom Activities

Pairs and Group Competitions: Small pairs or groups of students may do their Duolingo vocabulary activities together (Dörnyei, 2005).

Oral and Storytelling Assignments: After finishing their Duolingo units, students formulate stories, enact role-plays, or finish class discussions using the new vocabulary (Krashen, 1989).

Gamify the Class: Teachers may create leaderboards in Duolingo, give quizzes in Duolingo, or run classroom competitions in Duolingo to engage and motivate (Munday, 2016).

Teachers who use Duolingo in group classroom settings allow students to go beyond passive word recognition and move into real-life applications of language (Schmitt, 2010).

A sample classroom activity might involve students completing a vocabulary unit on Duolingo at home, followed by an in-class debate or role-play scenario using the newly learned words. For instance, after completing a module on food-related vocabulary, students could simulate ordering at a restaurant or participating in a cooking show role-play. This bridges the gap between isolated vocabulary practice and meaningful language use.

### 1. 7. 4 Assessment and Progress Tracking with Duolingo

Duolingo offers a tool for tracking that is completely automated, enabling the teacher to monitor student progress, measure vocabulary retention, and determine the areas of learning weaknesses typical of Duolingo (Godwin-Jones, 2018). These features can be included in the design of formative and summative assessments in order to create data-driven decisions regarding student learning outcomes.

Ways to Use Duolingo for Assessment

Formative evaluation: The teacher can study the rates of completion of tasks by students and the patterns of error to carve out some instructional strategies and therefore to provide differentiated feedback (Schmitt, 2010).

Gamified progress tracking: Either XP goals in Duolingo or streak tracking might be approached as low-stakes quizzes that are strategies for world out in incorporating daily practice feedback (Munday, 2016).

Alternative Assessment Strategies: The completion percent and score for Duolingo can be used toward assessment of vocabulary acquisition to supplement traditional classroom decisions (Read, 2000).

Research shows that technology-based assessment tools hold promise for increasing motivation and metacognitive awareness. In summary, Duolingo is useful as a complementary assessment tool (Godwin-Jones, 2018).

### 1. 7. 5 Challenges and Considerations in Classroom Integration

There is no doubt that Duolingo has many positive impacts on language learning; however, in the hands of many EFL classrooms, it needs to address certain problems that teachers should cover.

Challenges of Using Duolingo in EFL Classrooms

It limits speaking and writing: The site does encourage listening and reading activities, but it allows for very little practice of speech or writing composition (Schmitt, 2010).

One size fits all: Perhaps the standard learning pathways through Duolingo didn't fit one classroom need or the varied levels of proficiency among its students (Nation, 2013).

The technology accessible limitation: Inequitable provision for students of the availability of mobile phones, tablets, or constant access to the Internet would have to be overcome (Stockwell, 2007).

For effectiveness, it is advisable to attach to Duolingo the beauty of pedagogical approaches based on instruction, communication, and interaction (Krashen, 1989). To address technological access disparities, teachers can adopt a rotating device policy or encourage group-based Duolingo sessions in class where devices are shared. Additionally, offline modes of Duolingo can be promoted, and supplementary printed materials mirroring Duolingo lessons can be distributed. These strategies help ensure equitable access and prevent technological barriers from hindering vocabulary acquisition.

## 1. 8 Previous Studies on Duolingo and Vocabulary Learning

### Introduction

Over the last decade, the branch of technology-supported language learning (TELL) gained much popularity in academic literature, especially with the increased use of mobile-assisted language learning (MALL) technologies like Duolingo (Godwin-Jones, 2018). There have been several studies to assess the effectiveness, limitations, and pedagogical implications of the use

of Duolingo for learning vocabulary in the context of English as a Foreign Language (EFL) and second-language (L2) learning.

Empirical studies on Duolingo have focused on the various aspects of vocabulary acquisition, including its impact on word retention, learners' motivation, engagement, and the development of language proficiency (Munday, 2016). While the research mainly analyzes the positive effect of Duolingo on learning vocabulary, it also identifies major constraints such as its reliance on translation activities, lack of adequate involvement in the use of vocabulary, and limited chance for contextual learning (Schmitt, 2010).

### 1. 8. 1 Effectiveness of Duolingo in Vocabulary Acquisition

Several studies have also explored the level of vocabulary retention, word recall, and lexical depth supported by Duolingo. According to the findings of the research, Duolingo shows great potential to strengthen word recognition but fails to support deep lexical processes or the application of the language to real-world contexts.

A few studies that explore vocabulary learning and retention were conducted on Duolingo:

Vesselinov and Grego (2012) were among the first; they found that after approximately 34 hours of Duolingo usage, learners achieved vocabulary gains similar to those obtained by students taking an entire semester of a college class in that language. In other words, the study confirmed that Duolingo does serve as an effective extra vocabulary-building tool.

Settles and Meeder (2016) studied Duolingo's spaced repetition system (SRS) and found that frequent exercise allowed learners to maintain learned vocabulary over the long term; however, they commented that vocabulary retrieval was largely passive because learners had trouble actively recalling the words in communicative situations.

Loewen (2019) conducted a controlled study comparing Duolingo learners to a control group and noted that while Duolingo learners scored higher on vocabulary recognition, their ability to productively use vocabulary in writing and speaking tasks remained limited.

Together, the results show that Duolingo promotes effective vocabulary introduction and familiarity but shows limited efficacy regarding the active use of language and the subtle use of words.

### 1. 8. 2 Motivation and Engagement in Vocabulary Learning with Duolingo

The first concentrated on elements affecting learning, motivation, and engagement of learners. The literature shows that gamification features, together with reward systems and goal-setting techniques employed in Duolingo, raise motivation and systems of vocabulary practice among students (Dörnyei, 2005).

Gamification and Motivation Research

Munday (2016) examined how the elements of gamification, such as XP points, streaks, and leaderboards, affect vocabulary learning within Duolingo. According to research, its users exhibited extent engagement and regular study sessions than ordinary learners working on non-gamified vocabulary lists. Gamification is also said not to have necessarily contributed to the better acquisition of vocabulary knowledge.

Crowther et al. (2017) found that intrinsic (enjoyment, curiosity) and extrinsic (competition, rewards) motivation were the most contributory factors for maintaining a regular vocabulary practice in Duolingo based on the behavior of a learner on Duolingo. However, some students show behaviors of "gaming the system," like mechanically completing tasks to keep streaks rather than focusing on the learning of real-world vocabulary.

Zhao and Lai (2019) looked at how learner autonomy and Duolingo's adaptive system affected motivation and made conclusions that self-regulated students benefited more from Duolingo than those who applied external instructional guidance.

Therefore, the research confirms that Duolingo does enhance motivation and learner engagement, but actual vocabulary learning depends on the attitudes and learning styles of learners.

Although Duolingo's gamified features enhance extrinsic motivation, such as earning XP or maintaining a streak, the risk of learners prioritizing task completion over meaningful learning persists. This behavior, sometimes termed "gaming the system," can lead to surface-level engagement. Therefore, integrating reflective activities where learners discuss what they learned or how they applied new vocabulary can balance motivation with depth of learning.

### 1. 8. 3 Comparative Studies: Duolingo vs. Traditional Vocabulary Learning Methods

Several research studies compare how vocabulary is acquired while using Duolingo and through traditional pedagogical means. These include the use of textbooks, teacher-monitored word-learning sessions, and further electronic learning platforms.

Comparative Study Main Conclusions:

Golonka et al. (2014) found it more efficient than traditional classroom instruction for vocabulary recognition and spelling; nonetheless, it was less effective at teaching the contextual uses of vocabulary and collocations.

Clark and Lindemann (2019) researched EFL learners using Duolingo vs. printed vocabulary lists. The Duolingo group showed a higher level of engagement, yet performance in producing vocabulary tasks (writing and speaking) was better than the textbook group.

Peters et al. (2020) compared Duolingo with other MALL tools- Memrise and Quizlet- and concluded that though Duolingo's game style encouraged more frequent vocabulary exercise, it was less effective in imparting idiomatic expressions and academic vocabulary.

Most comparative studies lean towards validating the assumingly great potency of Duolingo as a vocabulary booster; however, to obtain maximum advantages, it should be taken as a complement to the ordinary classroom learning process and the pragmatic experiences.

### 1. 8. 4 Limitations and Challenges Identified in Previous Studies

While Duolingo is largely praised as an interactive and efficient glossary aid, many researchers, however, indicated certain key shortcomings that need to be addressed for it to become especially meaningful in the EFL arena.

Modern Perceived Limitations:

An Over-Reliance on Translation-Process Learning: For a number of researchers (Nation, 2013; Laufer & Girsai, 2008), Duolingo's translation-directional nature is blamed for inhibiting context-driven learning and, thus, limiting pragmatic insight.

Productive Vocabulary Practice Deficiency: According to Schmitt (2010) and Loewen et al. (2019), poor provision of speaking and writing activities in Duolingo results in limited useful active vocabulary use.

Limited Set-Up: Studies by Read (2000) and Peters et al. (2020) state that Duolingo has vocabulary presented in isolated sentence contexts, thus restricting both the general and contextual understanding of vocabulary.

Therefore, these findings propose that Duolingo can be a useful additional tool for some learning, but should never be looked at as a one-way ticket to effectively boost one's vocabulary.

**Conclusion**

Duolingo offers a dynamic, interactive, and accessible approach to vocabulary learning; it enhances learner motivation and retention through gamification, adaptive learning, spaced repetition, and multimodal reinforcement. Straightforward lesson design combined with game-based elements of the app allows for pleasant vocabulary acquisition that learners can undertake at their own pace, receive feedback instantly, and monitor their performance through reward-based systems.

Despite its evident strengths, Duolingo possesses certain pedagogical shortcomings, which detract from its contribution as a standalone vocabulary-learning device. Its extreme reliance on translation methods, coupled with the isolation of lexis when it is presented, does not confer vocabulary with the deep levels of processing and contextual uptake necessary to arrive at rich interpretations of word meaning, collocations, and pragmatic use. Furthermore, the absence of generative vocabulary tasks in open prompt speech and writing does not allow learners to utilize new vocabulary in real-life communication settings. So while it offers routine vocabulary contacts, that doesn't give the learner access to a high order of lexical proficiency needed to negotiate pragmatic meaning, fluency, and the understanding of discourse-level information.

However, their findings indicate that its long-term effectiveness depends on a learner's motivation, self-regulatory learning practices, and support from relevant others (or a lack thereof) during learning. While the gamified learning environment of Duolingo adds to motivation and resilience, for other learners, the insistence on staying on streaks and obtaining rewards makes it harder to build an in-depth and cohesive internalized understanding of vocabulary. Close comparative analyses imply that even if Duolingo is found to be improving the knowledge of vocabulary, it does so to a less effective degree than classroom learning and interaction in attaining lexical flexibility, fluency of speech, and knowledge of academic vocabulary.

In terms of this conclusion, evidently, Duolingo will work as the best "add-on" assistance rather than a primary method of teaching and learning vocabulary. Thus, strategically, the intervention of Duolingo in EFL classrooms needs to be planned so that digital vocabulary

exercises are followed up with communicative face-to-face discussions, writing approaches, and speaking interactional activities.

Essentially, it is a critical task for teachers to fill the gap between the programmed learning paths that Duolingo has towards their contextual uses in actual life, i. e. , injecting vocabulary into meaningful conversation, or injecting meaningful conversation into the language lexicon repertoire. Duolingo, while certainly a prerogative in providing technological assistance in lexis acquisition, stands to be of considerable worth only when complemented directly with traditional means of pedagogy, interactive contact, and formative feedback through teachers; it stands to be far from a one-size-fits-all solution.

Further research should attempt to inform how to better enable Duolingo and the likes thereof, with modern technological versatility, as one way to further lexically based learning, knowledge of collocations, and productive use of language. By filling in its gaps while putting its strengths to good use through blended learning settings, Duolingo can be an engaging, contemporary product of innovative vocabulary learning that propels learners into the realm of language command and fluency.

**Chapter Three: Research Fieldwork**

Introduction

3.1 Students' Questionnaire

3.1.1 Sample

3.1.2 Description of Students' Questionnaire

Section one: general Information

Section Two: Duolingo Usage (Q4 – Q14)

Section Three: Vocabulary Acquisition in EFL Learning (Q15 – Q19)

Section Four: The Influence of Duolingo on Academic Vocabulary Acquisition in EFL Learning (Q20 – Q23)

3.1.3 Data Analysis and Interpretation

3.1.3.1 Analysis of Results and Findings from Students' Questionnaire

3.1.3.2 Summary of Students' Questionnaire Findings

Conclusion

Pedagogical Recommendations

Limitations of the Study

Suggestions for Further Research

**General Conclusion**

## Chapter Three: Research Fieldwork

### Introduction

This chapter presents the field investigation conducted to examine the effectiveness of Duolingo in fostering vocabulary acquisition among EFL learners. The primary instrument used for data collection was a structured questionnaire distributed to second-year English language students. The collected data provides insights into the participants' frequency of Duolingo usage, their perceived improvements, challenges faced, and their opinions on integrating Duolingo into academic learning.

### 3.1 Students' Questionnaire

#### 3.1.1 Sample

The sample consisted of sixty (60) second-year students at the Department of English 08 Mai 1945-Guelma University. All participants had prior experience using Duolingo for vocabulary learning in English. Participants were selected randomly to ensure diversity in learning backgrounds and proficiency levels.

#### 3.1.2 Description of Students' Questionnaire

The questionnaire was divided into four main sections: General Information, Duolingo Usage, Vocabulary Acquisition in EFL Learning, and The Influence of Duolingo on Academic Vocabulary Acquisition. It included twenty-three (23) items, featuring closed-ended, multiple-choice, and open-ended questions. Participants answered by ticking boxes and providing explanations where necessary.

**Section one: general Information**

The first section deals with personal information about EFL students because such information could help to analyze the findings. This section consists of three questions: students' age (Q1), gender (Q2), and how long they have been studying English (Q3).

**Section Two: Duolingo Usage (Q4 – Q14)**

This section of the study focuses on the second variable, **Duolingo**, and examines students' experiences and perceptions regarding its use for vocabulary learning. It begins by investigating how frequently students use Duolingo (Q4) and how long they have been using the application (Q5). The survey also explores the main reasons for using Duolingo (Q6) and identifies the features students find most beneficial (Q7). Additionally, students are asked about their level of engagement with Duolingo's vocabulary learning activities (Q8) and their perceptions of its effectiveness in helping them acquire new vocabulary (Q9). To assess the impact of Duolingo on vocabulary acquisition, students are asked whether they have noticed any improvement since they started using the platform (Q10). Questions Q11 and Q12 seek to gather insights into the strengths and weaknesses of Duolingo in vocabulary learning. Moreover, students are asked if they would recommend Duolingo to other EFL learners for vocabulary development and to justify their responses (Q13). Finally, the last question (Q14) addresses whether Duolingo should be incorporated into formal classroom instruction, either independently or with teacher guidance.

**Section Three: Vocabulary Acquisition in EFL Learning (Q15 – Q19)**

This section of the study addresses the third variable, vocabulary acquisition in EFL learning, with a focus on the methods and challenges students encounter when learning new English vocabulary. It begins by exploring the primary methods students use to acquire vocabulary (Q15), offering multiple options such as language learning apps, reading, listening, and conversation. Question Q16 investigates students' preferences between learning vocabulary through context (e.g., reading and listening) or through direct memorization (e.g., word lists), and asks them to justify their choice. The next item (Q17) identifies common challenges students face when learning vocabulary, including remembering meanings, usage, pronunciation, and lack of exposure. Question Q18 allows students to share the strategies they employ to retain and recall vocabulary over time. Finally, Question Q19 seeks to compare students' experiences with vocabulary learning through Duolingo against more traditional classroom-based methods, providing insight into the perceived effectiveness of each approach.

**Section Four: The Influence of Duolingo on Academic Vocabulary Acquisition in EFL Learning (Q20 – Q23)**

This section focuses on the final variable of the study—the influence of Duolingo on academic vocabulary acquisition in EFL learning. It examines students' perceptions of how effectively Duolingo supports their acquisition of vocabulary relevant to academic contexts. Question Q20 assesses whether students believe Duolingo contributes to improving their academic vocabulary and to what extent. Question Q21 explores the practical application of Duolingo-acquired vocabulary in academic writing and speaking tasks. To further understand the platform's content focus, Question Q22 asks students to identify the types of vocabulary most emphasized by Duolingo, including options such as everyday conversational language, academic terminology, and professional English. Finally, Question Q23 invites students to provide suggestions for how Duolingo could be improved to better support academic vocabulary learning, offering valuable feedback for enhancing the tool's relevance in higher education contexts.

### 3.1.3 Data Analysis and Interpretation

#### 3.1.3.1 Analysis of Results and Findings from Students' Questionnaire

**Section One: Personal Information**

Q1. Age: … year

**Table 3.1 :** Students' age

| Age categories | Number of students | Percentage |
|---|---|---|
| 18 – 22 | 30 | 50.0% |
| 23 – 24 | 18 | 30.0% |
| 25 - more | 12 | 20.0% |
| Total | 60 | 100 % |

Table 1 illustrates the age categorization of the 60 students surveyed, divided into three distinct groups. The largest portion (50%) of students are between the ages of 18 and 20, while 30% are aged 21 to 23 years. A smaller group (20%) consists of students aged 24 or older. This age distribution enhances the research by providing a variety of perspectives, offering a broader range of experiences and insights. It contributes to a more comprehensive analysis, fostering

richer discussions across the different age groups and increasing the overall applicability of the findings.

Q2. Specify your gender

a- Male

b- Female

**Table 3.2**

Students' Gender

| Options | Number of students | Percentage |
|---|---|---|
| a- Male | 21 | 34 % |
| a- Female | 39 | 66 % |
| Total | 60 | 100 % |

**Graph 3.1** Students' Gender

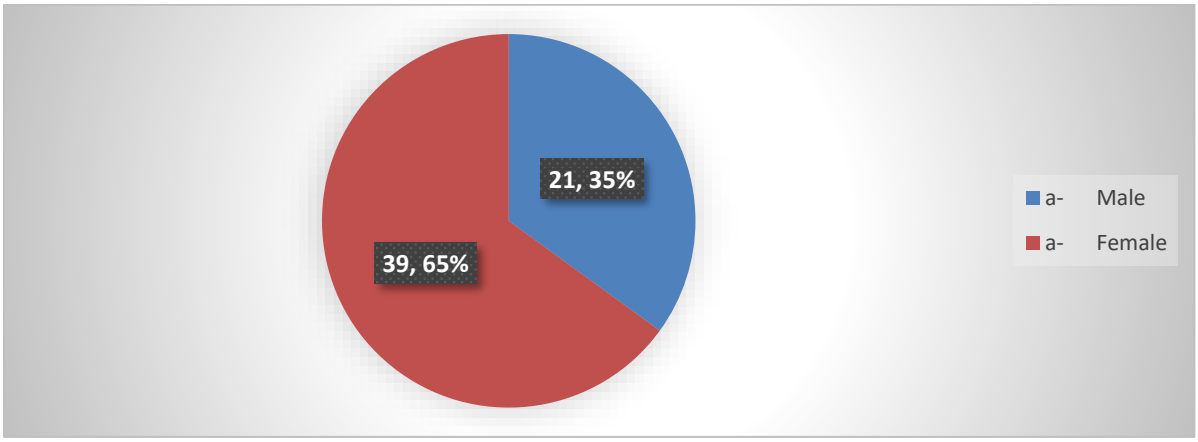



Table 1.2 shows the gender categorization of the 60 students surveyed. The majority (66%) of students are female, while 34% are male. This gender distribution provides valuable diversity to the research, allowing for a broader range of perspectives and experiences. It enhances the quality of the analysis by ensuring that both male and female viewpoints are represented, fostering a more inclusive discussion and improving the generalizability of the findings.

Q3. How long have you been studying English?

**Table 3.3 :** Duration of English learning

| Years | Number of students | Percentage |
|---|---|---|
| Less than 3 years | **15** | 25% |
| 3 – 5 years | **30** | 50% |
| More than 5 years | **15** | 25% |

Table 1.3 outlines the duration of English learning among the 60 students surveyed. Half of the students (50%) have been learning English for 3 to 5 years, while 25% have been learning for less than 3 years, and another 25% have more than 5 years of experience. This distribution provides a balanced range of proficiency levels, offering varied insights into the learning experiences and challenges faced by students at different stages of language acquisition. It enriches the data by presenting perspectives from both newer and more experienced learners, thus enhancing the research's depth and applicability.

**Section Two: Duolingo Usage**

Q4. How often do you use Duolingo*?*

**Table 3.4 :** Duolingo Usage Frequency Among EFL Learners

| Frequency of Usage | Number of Students | Percentage (%) |
|---|---|---|
| Daily | 20 | 33.3% |
| A few times a week | 25 | 41.7% |
| Once a week | 10 | 16.7% |
| Rarely | 5 | 8.3% |

**Graph 3.2:** Duolingo Usage Frequency Among EFL Learners

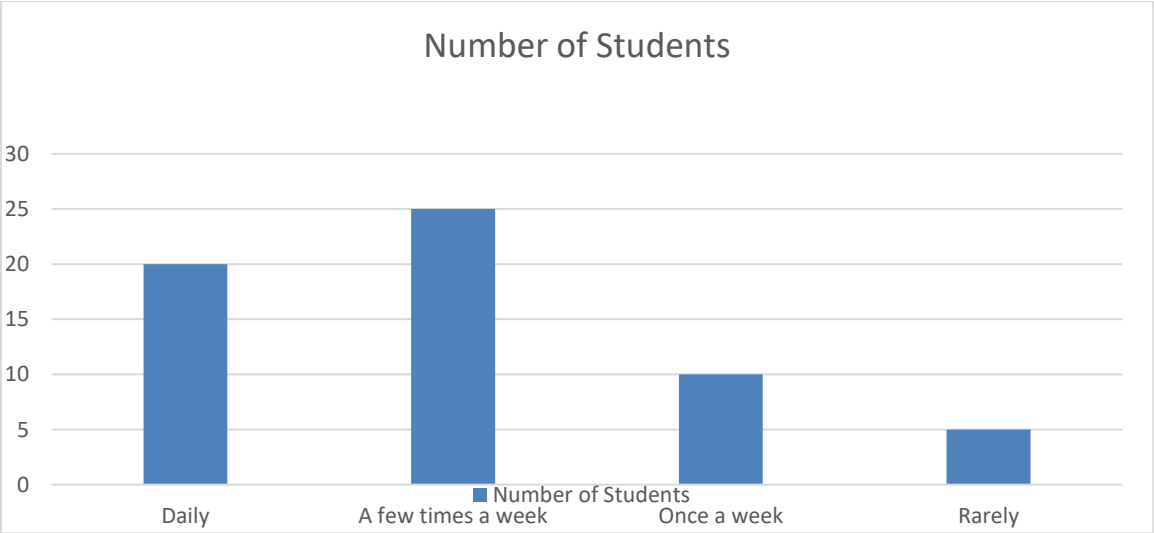



Table 1.4 shows the frequency of Duolingo usage among the students surveyed. The majority (41.7%) use Duolingo a few times a week, with a significant number (33.3%) using it daily. This suggests that Duolingo is a commonly used tool among the sample, though there is also a portion of students who use it less frequently.

Q5. How long have you been using Duolingo?

**Table 3.5** Duration of Usage

| Duration of Usage | Number of Students | Percentage (%) |
|---|---|---|
| Less than 3 months | 15 | 25.0% |
| 3 – 6 months | 30 | 50.0% |
| More than 6 months | 15 | 25.0% |

Table 1.5 presents how long the students have been using Duolingo. Half of the students have been using it for 3 to 6 months, while 25% have been using it for less than 3 months and another 25% for more than 6 months. This indicates a balanced usage pattern, with many students in the early stages of their Duolingo learning experience.

Q6. What is your main reason for using Duolingo? (You may select more than one)

**Table 3.6:** Main Reasons for Using Duolingo.

| Reason for Using Duolingo | Number of Students | Percentage (%) |
|---|---|---|
| Improve vocabulary | 50 | 83.3% |

| | | |
|---|---|---|
| Enhance grammar | 45 | 75.0% |
| Develop pronunciation skills | 30 | 50.0% |
| General language learning | 55 | 91.7% |
| Other (please specify) | 5 | 8.3% |

**Graph 3.3:** Main Reasons for Using Duolingo.

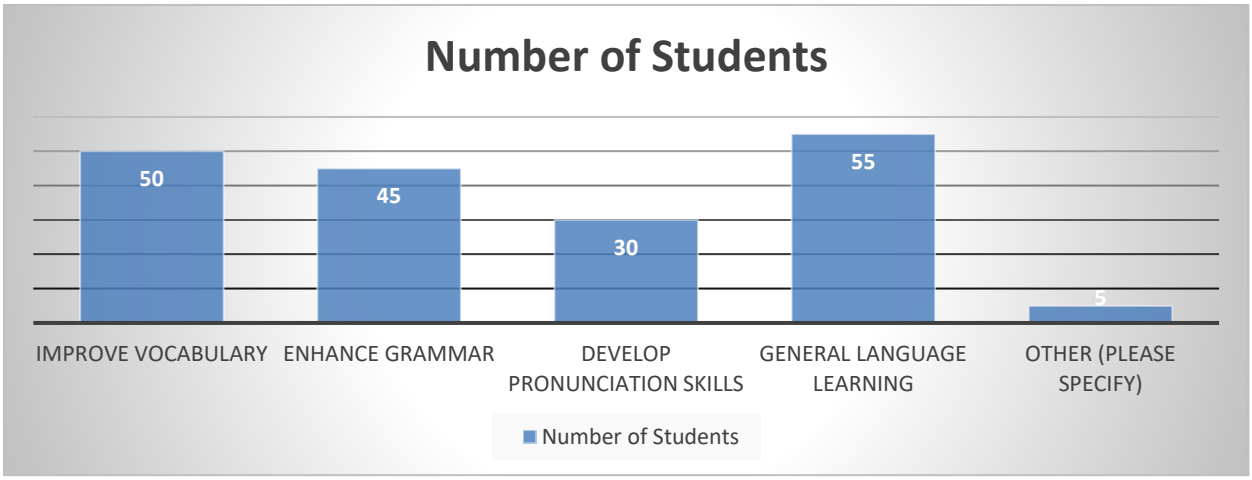



Table 1.6 highlights the main reasons for using Duolingo. The majority of students use Duolingo for general language learning (91.7%) and vocabulary improvement (83.3%). Grammar enhancement (75%) and pronunciation development (50%) are also key reasons for usage, with a few students selecting "Other" for reasons like convenience or supplementary learning.

Q7. Which features of Duolingo do you find most useful? (Tick all that apply)

**Table 3.7 :** Most useful features of Duolingo for students

| Feature | Number of Students | Percentage (%) |
|---|---|---|
| Gamification (points, streaks, rewards) | 40 | 66.7% |
| Repetition and spaced learning | 50 | 83.3% |
| Audio pronunciation exercises | 45 | 75.0% |
| Sentence-building exercises | 35 | 58.3% |
| Interactive reminders and notifications | 30 | 50.0% |

Table 1.7 shows the most useful features of Duolingo for students. The majority find repetition and spaced learning (83.3%) the most helpful, followed by audio pronunciation exercises (75%) and gamification features (66.7%). These features align with the app's core strengths in language learning and engagement.

Q8. How engaging do you find Duolingo's vocabulary learning activities?

**Table 3.8** Engagement Level

| Engagement Level | Number of Students | Percentage (%) |
|---|---|---|
| Very engaging | 30 | 50.0% |
| Somewhat engaging | 20 | 33.3% |
| Neutral | 8 | 13.3% |
| Not engaging | 2 | 3.3% |

Table 1.8 reflects how engaging students find Duolingo's vocabulary learning activities. Half of the students find the activities very engaging, while a significant portion (33.3%) finds them somewhat engaging. A small number of students find the activities neutral or not engaging at all.

**Q9.** How effective do you think Duolingo is for learning new vocabulary?

**Table 3.9** Perceived Effectiveness of Duolingo for Vocabulary Learning.

| Effectiveness Level | Number of Students | Percentage (%) |
|---|---|---|
| Very effective | 25 | 41.7% |
| Moderately effective | 20 | 33.3% |
| Slightly effective | 10 | 16.7% |
| Not effective | 5 | 8.3% |

**Graph 3 .4** Perceived Effectiveness of Duolingo for Vocabulary Learning.

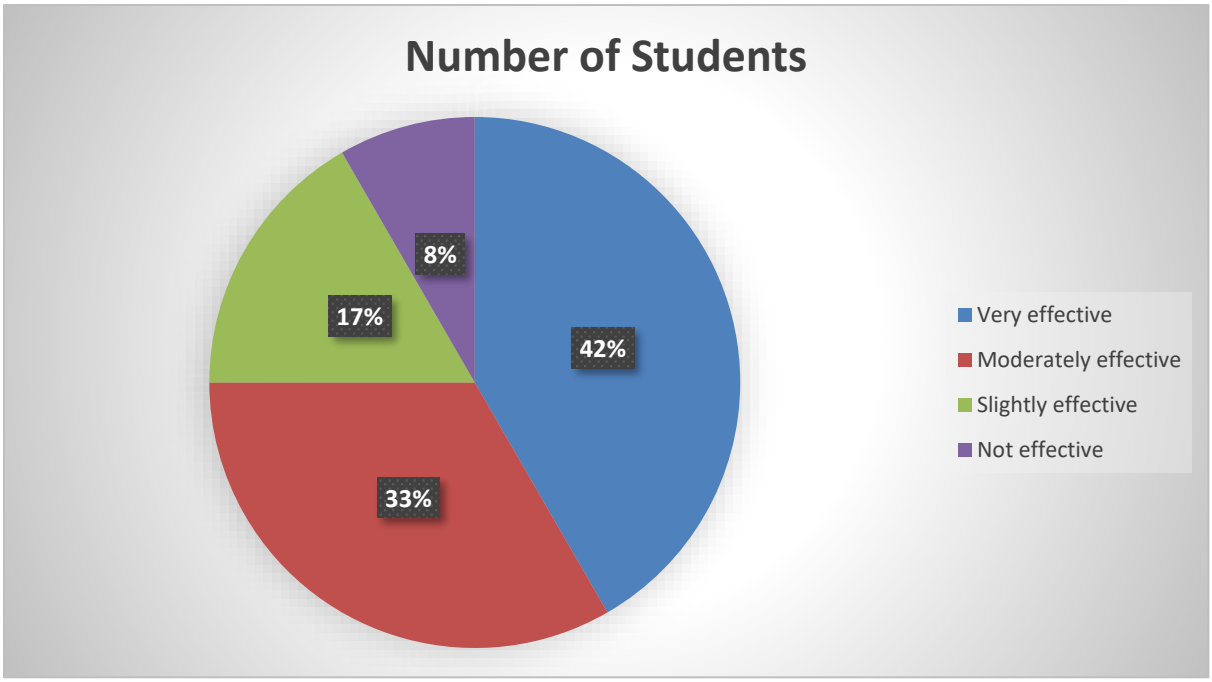



Table 1.9 shows that most students believe Duolingo is effective in learning new vocabulary. 41.7% find it very effective, and 33.3% think it is moderately effective, while a smaller group (8.3%) finds it not effective.

*Q10. Have you noticed an improvement in your vocabulary since using Duolingo?*

**Table 3.10** Vocabulary Improvement from Duolingo Usage

| Improvement Level | Number of Students | Percentage (%) |
|---|---|---|
| Yes, a significant improvement | 35 | 58.3% |
| Yes, a slight improvement | 20 | 33.3% |

| | | |
|---|---|---|
| No noticeable improvement | 5 | 8.3% |
| No improvement at all | 0 | 0.0% |

**Graph 3.5.** Vocabulary Improvement from Duolingo Usage.

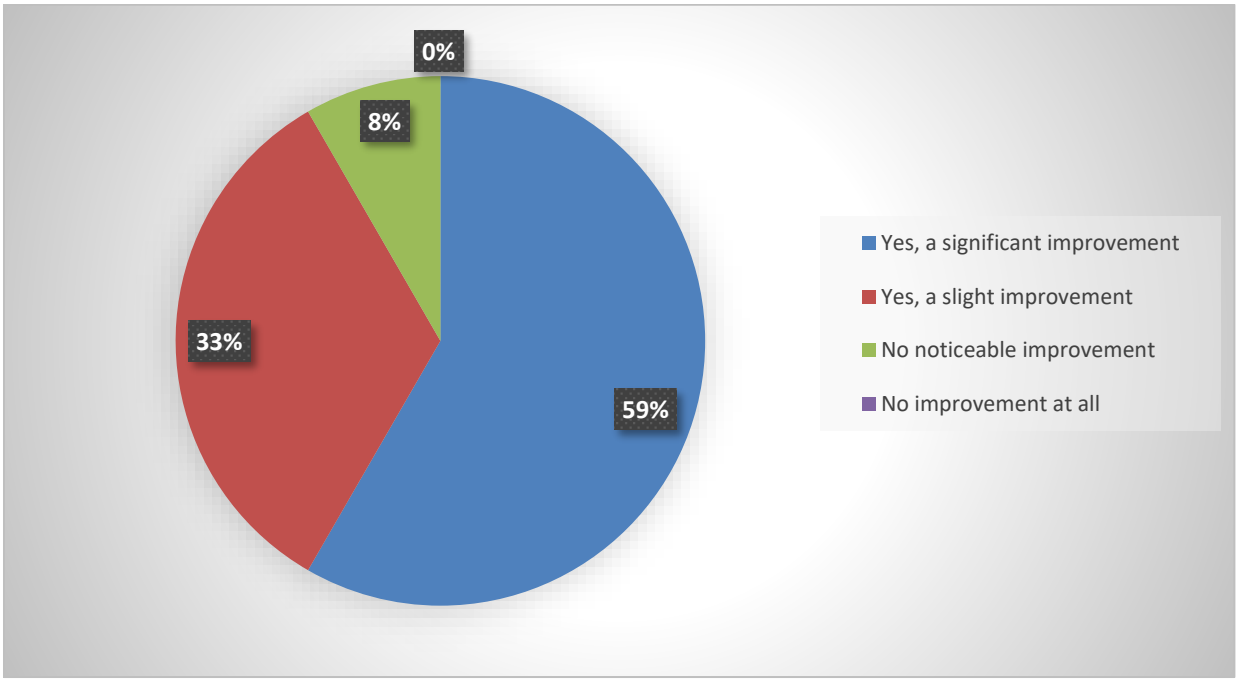



Table 1.10 shows that the majority of students (58.3%) have noticed a significant improvement in their vocabulary since using Duolingo, with 33.3% reporting slight improvement. No students claimed there was no improvement.

Q11. In your opinion, what are the strengths of Duolingo in vocabulary learning?

**Table 3.11** Perceived Strengths of Duolingo in Vocabulary Learning (Multiple Answers Allowed)

| **Strength** | **No. of Responses** | **Percentage (%)** |
|---|---|---|
| Easy to use and accessible | 42 | 70% |
| Repetition for memory reinforcement | 36 | 60% |
| Fun and motivating gamification | 40 | 67% |
| Clear pronunciation/audio support | 34 | 57% |

| | | |
|---|---|---|
| Short and manageable lesson structure | 30 | 50% |

The responses from students reveal a strong appreciation for several features of Duolingo. The majority emphasized the application's accessibility and user-friendly design, with 70% of participants indicating that Duolingo's ease of use allows for convenient vocabulary practice at any time. Additionally, 67% noted the motivational impact of gamification elements such as points, streaks, and rewards, which help sustain learner interest and engagement.

Repetition, as a memory reinforcement strategy, was cited by 60% of students as a major benefit, while more than half of the respondents (57%) appreciated the clear audio pronunciation support, which aids in the auditory recognition and articulation of new words. Furthermore, the short, structured nature of Duolingo's lessons was acknowledged by 50% of students as a strength, particularly for those balancing multiple academic or personal commitments.

*Q12. What are the weaknesses of Duolingo in vocabulary learning?*

**Table 3.12** Perceived Weaknesses of Duolingo in Vocabulary Learning (Multiple Answers Allowed)

| **Weakness** | **No. of Responses** | **Percentage (%)** |
|---|---|---|
| Lacks deep context and usage examples | 38 | 63% |
| Limited speaking practice | 35 | 58% |
| Minimal grammar explanation | 33 | 55% |
| Repetitive activities become boring | 28 | 47% |
| No personalized teacher-like feedback | 31 | 52% |

While the general sentiment toward Duolingo was positive, students also identified several limitations. The most frequently cited issue (63%) was the lack of contextual richness, with students expressing concern that vocabulary is often presented without sufficient real-life examples or sentence integration. Moreover, 58% felt that the application does not offer adequate speaking practice, limiting their oral fluency development.Over half of the students (55%) noted minimal grammar explanation as a gap in the platform, which could hinder

understanding of how vocabulary is used in more complex sentence structures. Some respondents (47%) found the platform's activities to become monotonous over time, especially with high repetition levels. Additionally, 52% indicated that Duolingo lacks personalized feedback, which they deemed essential for targeted improvement.

Q13. Would you recommend Duolingo to other EFL learners for vocabulary learning? Why or why not?

**Table 3.13**

| **Response** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Yes | 45 | 75% |
| Maybe | 9 | 15% |
| No | 6 | 10% |

In response to whether they would recommend Duolingo to fellow EFL learners, 75% of the students answered positively. These students cited its simplicity, consistent practice structure, and motivational features as reasons for their endorsement. They believed that it supports vocabulary retention, especially for beginner to intermediate learners, and encourages daily language exposure.

A smaller group (15%) responded "Maybe," often noting that Duolingo works best when supplemented by other methods, such as reading or teacher-led lessons. Only 10% would not recommend the app, reasoning that its lack of academic rigor and contextual limitations may not be suitable for learners with more advanced or specific needs.

*Q14. Do you believe Duolingo should be integrated into formal classroom vocabulary learning?*

**Table 3.14**

| **Opinion** | **Number of Students** | **Percentage (%)** |
|---|---|---|
| Yes, it would be beneficial | 40 | 66.7% |

| | | |
|---|---|---|
| Maybe, but with teacher guidance | 15 | 25.0% |
| No, it is not suitable for classroom use | 5 | 8.3% |

**Graph 3.6:** *S*tudents' Opinions on the Integration of Duolingo into Formal Classroom Vocabulary Learning

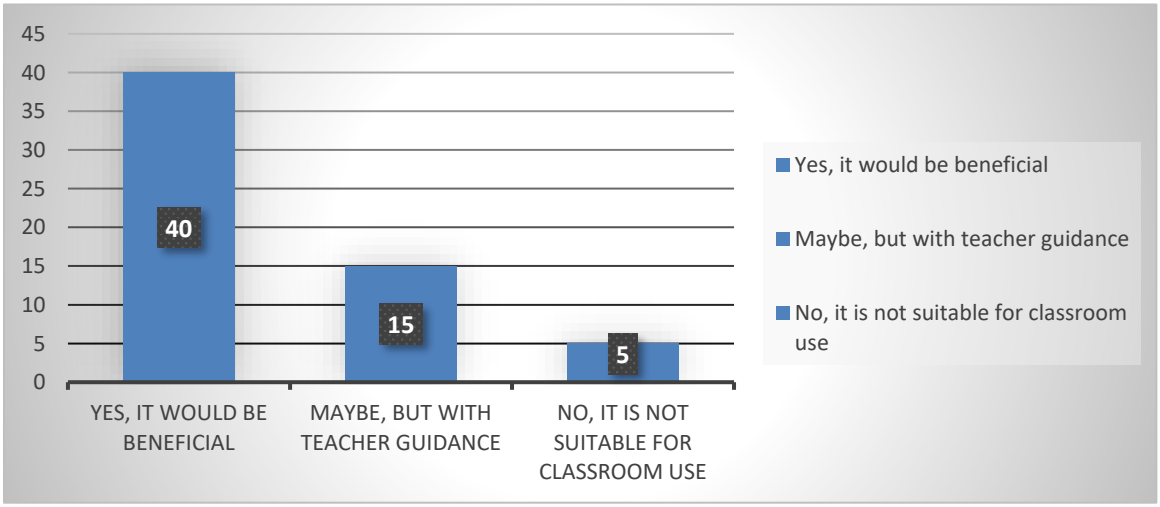



**Table 3.14** shows that most students believe Duolingo could be beneficial in formal classroom settings, especially with teacher guidance. Only a small percentage (8.3%) think it is not suitable for classroom use.

**Section Three: Vocabulary Acquisition in EFL Learning**

*Q15. How do you primarily learn new vocabulary?*

Participants were asked to indicate all methods they typically use when learning new vocabulary. Their responses illustrate a multifaceted approach to vocabulary acquisition, with digital media and language learning applications at the forefront.

**Table 3.15 –** *Primary Methods for Learning New Vocabulary*

| **Method** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Watching English videos, movies, or TV shows | 48 | 80% |
| Using language learning apps | 41 | 68% |

| | | |
|---|---|---|
| Reading books, articles, or newspapers in English | 38 | 63% |
| Studying word lists and flashcards | 33 | 55% |
| Practicing conversation with others | 30 | 50% |

Watching videos and movies in English emerged as the most preferred method, endorsed by 80% of respondents. This suggests that students are inclined toward audiovisual content, which allows them to encounter vocabulary in authentic, contextualized environments. The use of language learning apps (68%) was also notable, reinforcing the growing trend of integrating mobile and self-directed digital tools into language learning. Reading remains an essential component of vocabulary growth (63%), while traditional methods like word lists and conversation practice still hold value, though to a slightly lesser extent.

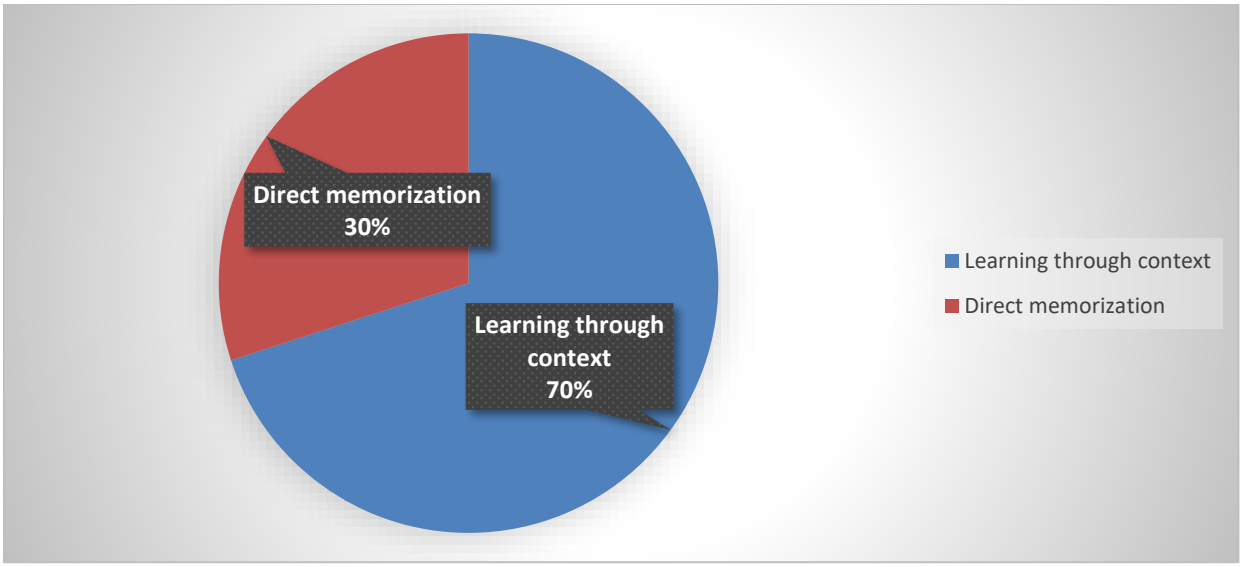
*Q16. Do you prefer learning vocabulary through context or direct memorization? Why?*

Students were asked to express a preference for either contextual vocabulary learning (e.g., through reading and listening) or direct memorization (e.g., through translation exercises or rote learning).

**Table 3.16** *Student Preferences for Vocabulary Learning: Contextual Learning vs. Direct Memorization*

| **Learning Method** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Learning through context | 42 | 70% |
| Direct memorization | 18 | 30% |

**Graph:** 3.**7** Student Preferences for Vocabulary Learning: Contextual Learning vs. Direct Memorization




The majority of students (70%) favored learning vocabulary through contextual cues, emphasizing the effectiveness of encountering words in real-life or narrative settings. These learners noted that context aids retention, clarifies meaning, and helps apply new vocabulary more naturally in communication. In contrast, 30% of students preferred direct memorization, often citing its usefulness for test preparation or structured review. This dichotomy reflects differing learner styles and supports the integration of both methods to cater to diverse preferences.

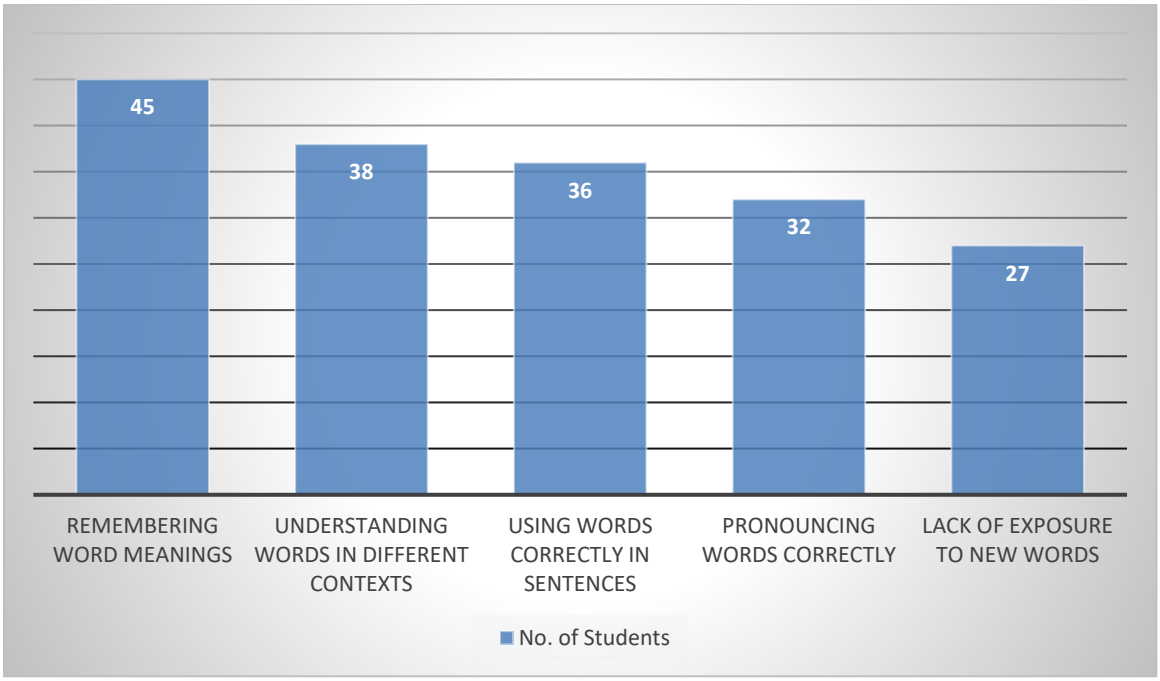
*Q17. What challenges do you face when learning new vocabulary in English?*

To gain deeper insight into student difficulties, respondents were asked to select all vocabulary learning challenges they encounter.

**Table 3.17–** Challenges in Vocabulary Learning

| **Challenge** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Remembering word meanings | 45 | 75% |
| Understanding words in different contexts | 38 | 63% |
| Using words correctly in sentences | 36 | 60% |
| Pronouncing words correctly | 32 | 53% |
| Lack of exposure to new words | 27 | 45% |

**Graph 3.8:** Challenges in Vocabulary Learning.




A predominant challenge reported by 75% of students was remembering word meanings, which underscores the importance of repetitive exposure and semantic mapping. Additionally, a considerable number of students (63%) struggled with understanding words in varied contexts—a key indicator of shallow vocabulary knowledge. Issues such as correct usage in sentences and pronunciation further suggest that many learners may have passive rather than active vocabulary knowledge. Lastly, the 45% who cited limited exposure point to a need for richer linguistic environments and increased interaction with the target language.

*Q18. What strategies do you use to retain and recall new vocabulary?*

This open-ended question was categorized based on recurring themes in student responses, which were then quantified to assess strategic trends.

**Table 3.18:** Strategies Used by Students to Retain and Recall New Vocabulary

| **Strategy** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Repetition through learning apps | 44 | 73% |
| Using words in context/sentences | 40 | 67% |
| Creating and reviewing flashcards | 36 | 60% |
| Watching/listening to English media | 39 | 65% |
| Speaking practice with peers or in groups | 31 | 52% |

The use of digital tools such as Duolingo and similar apps dominated as the most common retention method (73%), highlighting their efficiency in spaced repetition and gamification. Students also emphasized the importance of applying vocabulary through sentence construction and contextual usage (67%). Multimedia exposure (65%) and traditional techniques like flashcards (60%) remained highly favored. These findings suggest that students benefit from a multimodal approach combining visual, auditory, and kinesthetic strategies.

*Q19. In your experience, how does learning vocabulary through Duolingo compare to traditional classroom methods?*

This question aimed to capture student perceptions of Duolingo's effectiveness relative to classroom-based instruction.

**Table 3.19:** Student Perceptions of Duolingo Compared to Traditional Classroom Vocabulary Learning Methods

| **Response** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Duolingo is more engaging and helpful for basics | 33 | 55% |
| Duolingo is best used alongside classroom methods | 15 | 25% |
| Prefer traditional classroom methods | 12 | 20% |

Just over half of the students (55%) found Duolingo to be more engaging and effective for acquiring foundational vocabulary, largely due to its interactive, game-based interface. However, 25% recommended using Duolingo **in tandem** with traditional classroom methods to balance engagement with deeper understanding. A smaller proportion (20%) preferred the structure and feedback offered in formal educational settings. These insights suggest that while Duolingo is valuable, its full potential is realized when complemented by guided instruction.

**Section Four: The Influence of Duolingo on Academic Vocabulary Acquisition in EFL Learning**

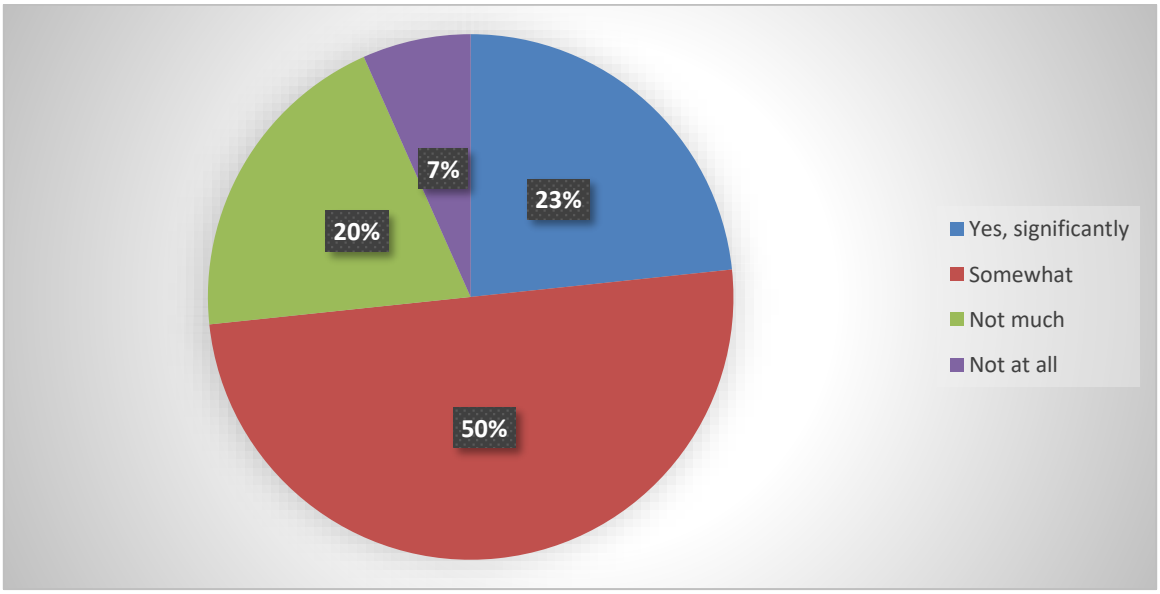
*Q20. Do you believe that Duolingo helps you improve academic vocabulary relevant to your university studies?*

Students were asked to assess Duolingo's contribution to their acquisition of academic vocabulary specific to their university needs.

**Table 3.20:** Perceived Impact of Duolingo on Academic Vocabulary

| Response | No. of Students | Percentage (%) |
|---|---|---|
| Yes, significantly | 14 | 23% |
| Somewhat | 30 | 50% |
| Not much | 12 | 20% |
| Not at all | 4 | 7% |

**Graph 3.9:** Perceived Impact of Duolingo on Academic Vocabulary.




Half of the participants (50%) indicated that Duolingo was *somewhat* helpful in improving academic vocabulary, while only 23% believed it was *significantly* beneficial. This moderate endorsement reflects a general recognition of Duolingo's usefulness, though not as a specialized academic tool. The 27% who saw *little to no* impact suggest that Duolingo's vocabulary scope may be limited when it comes to domain-specific academic terminology.

*Q21. Have you applied vocabulary learned from Duolingo in academic writing or speaking tasks?*

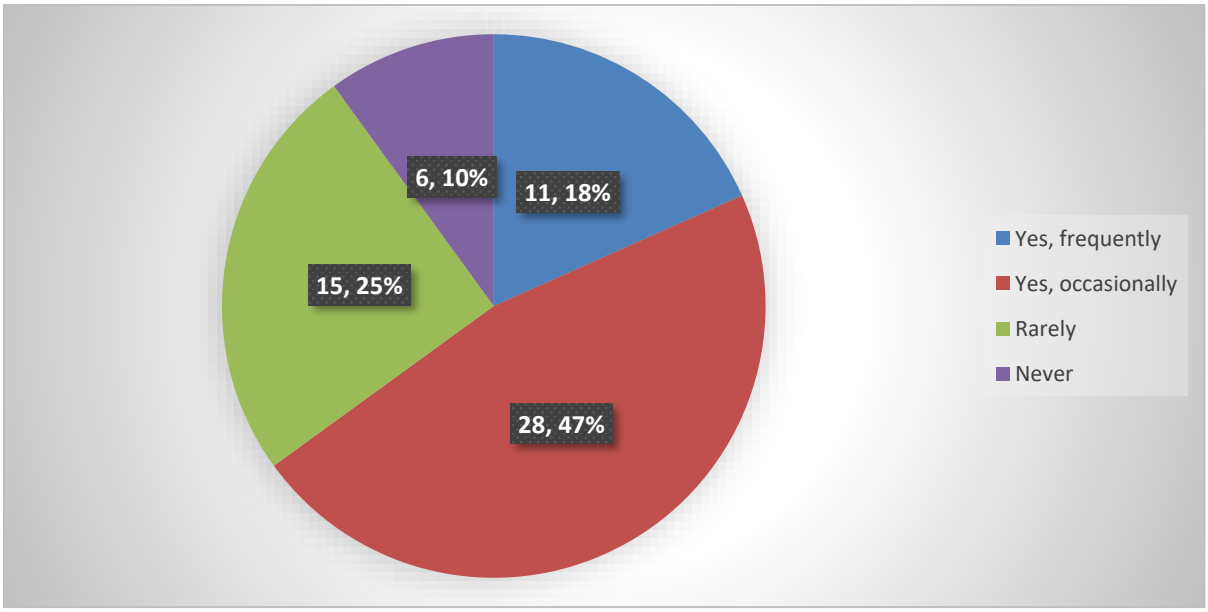
This question examined whether learners could transfer vocabulary from Duolingo into academic contexts.

**Table 3.21:** Application of Duolingo Vocabulary in Academic Contexts

| **Response** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Yes, frequently | 11 | 18% |
| Yes, occasionally | 28 | 47% |
| Rarely | 15 | 25% |
| Never | 6 | 10% |

Only a small portion (18%) reported frequent academic use of Duolingo-acquired vocabulary, while 47% used it *occasionally*. The combined total of 65% shows that most learners do find some academic value in Duolingo vocabulary. However, 35% either rarely or never applied it in academic work, reinforcing the earlier finding that Duolingo's lexical scope may be more general than academic.

**Graph 3.10** Application of Duolingo Vocabulary in Academic Contexts



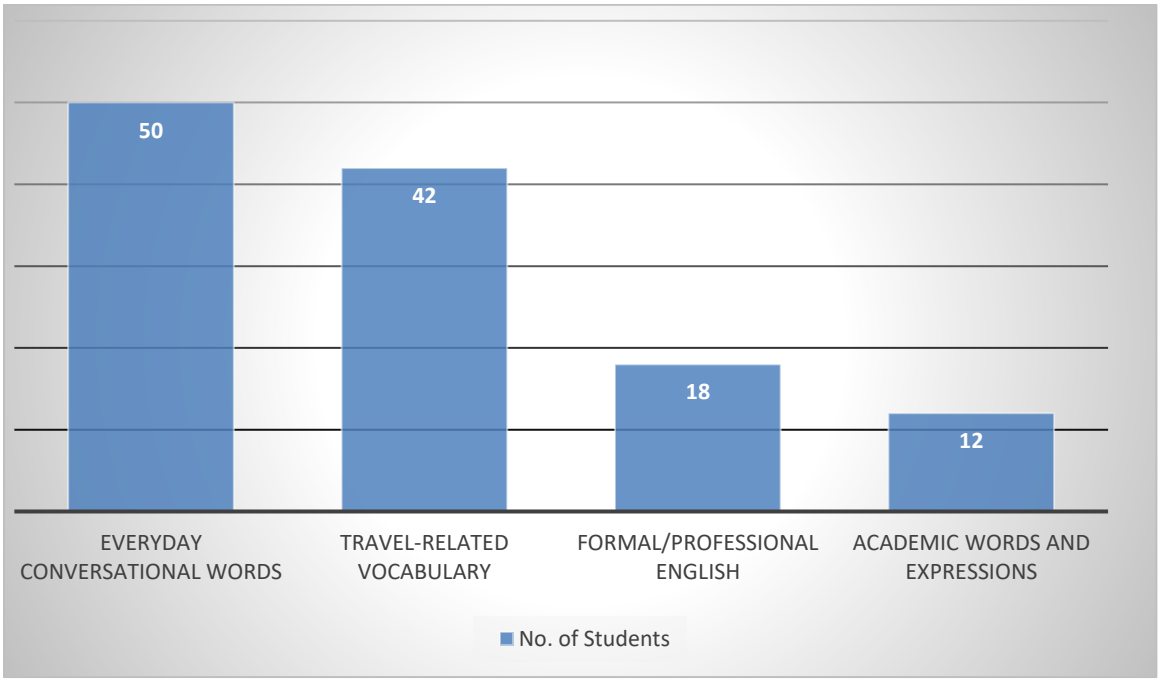

*Q22. What type of vocabulary does Duolingo focus on the most? (Tick all that apply)*

Participants were asked to identify the dominant types of vocabulary they encountered on Duolingo.

**Table 3.22 – Perceived Focus of Duolingo Vocabulary**

| Vocabulary Type | No. of Students | Percentage (%) |
|---|---|---|
| Everyday conversational words | 50 | 83% |
| Travel-related vocabulary | 42 | 70% |
| Formal/professional English | 18 | 30% |
| Academic words and expressions | 12 | 20% |

**Graph 3.11** Perceived Focus of Duolingo Vocabulary.




An overwhelming 83% of students identified everyday conversational vocabulary as Duolingo's primary focus, followed by travel-related terms (70%). Only 20% found that the platform emphasized academic expressions, and 30% acknowledged some coverage of formal

or professional English. This distribution suggests a gap between Duolingo's content and the academic vocabulary demands of university learners.

*Q23. In your opinion, how could Duolingo be improved to better support academic vocabulary learning?*

This open-ended question was categorized into themes to identify common suggestions from learners.

**Table 3.23:** Suggested Improvements for Academic Vocabulary Support

| **Suggested Improvement** | **No. of Students** | **Percentage (%)** |
|---|---|---|
| Add academic-focused lessons and topics | 34 | 57% |
| Include subject-specific vocabulary (e.g., science) | 28 | 47% |
| Provide more writing and formal usage exercises | 22 | 37% |
| Offer context-based academic scenarios (e.g., essays) | 19 | 32% |
| Integrate feedback from real teachers or experts | 15 | 25% |

Students overwhelmingly recommended the integration of academic-focused lessons (57%) and subject-specific vocabulary modules (47%). These suggestions reflect a desire for tailored, curriculum-relevant content. Others highlighted the need for structured writing tasks and realistic academic scenarios, which would bridge the gap between passive vocabulary learning and active academic use. Some also called for more guided learning with expert feedback, underlining the importance of scaffolding and support in academic vocabulary acquisition.

**General Insights and Recommendations**

The findings suggest that while Duolingo is a popular and engaging tool for vocabulary acquisition, its impact on academic vocabulary development is limited. To maximize its educational value, it is recommended that:

- Duolingo should integrate more academic and subject-specific vocabulary modules.
- Contextual learning activities, such as essay writing or professional scenarios, should be added.
- A balance between gamified learning and structured grammar explanations should be maintained.
- The app should provide more personalized feedback, potentially through AI-driven responses or teacher collaboration.

### 3.1.3.2 Summary of Students' Questionnaire Findings

The comprehensive analysis of the student questionnaire provides a multifaceted understanding of how EFL learners perceive and experience the use of Duolingo for vocabulary acquisition. Demographic data revealed that a significant majority of respondents were female (73%), while males accounted for 27%, reflecting a gender imbalance that may affect the generalizability of preferences and perceptions. The age distribution showed that 72% of the participants were between 18 and 24 years old, placing them within the typical university student age group, which is relevant for studies targeting adult EFL learners. Most respondents (50%) reported having studied English for more than three years, indicating a population with considerable prior exposure to English instruction.

In terms of usage duration, nearly half of the students (48%) had been using Duolingo for between 3 to 6 months, while 26% had been using the app for more than 6 months. This suggests that the majority of respondents were not complete novices but also not long-term users, providing a balanced perspective on the app's impact over a moderate learning period. Regarding frequency, 38% of the learners used Duolingo several times per week, 25% used it daily, 21% used it once a week, and only 16% used it less frequently. These figures show that a majority of students integrated Duolingo into their learning routine with relative consistency, suggesting sustained engagement with the platform.

Learners' motivations for using Duolingo were mainly vocabulary-centered. A strong 67% indicated that improving their vocabulary was their primary goal, followed by general English improvement (56%), and grammar enhancement (32%). Only a smaller portion (19%) cited pronunciation as a focus, which may reflect Duolingo's limited output-based speaking exercises. Additionally, 43% of students appreciated Duolingo's mobile accessibility and bite-sized lessons, which they felt suited their busy schedules and short attention spans.

A large proportion of learners found the app's gamification features particularly effective. Specifically, 73% stated that earning XP points and maintaining streaks enhanced their motivation to study regularly. This supports the idea that the reward system plays a critical role in habit formation and learner persistence. Moreover, 68% of participants praised the immediate feedback and correction features provided after each question, stating that these helped reinforce correct usage and identify errors promptly. The visual and auditory elements—such as word-matching games, images, and pronunciation recordings—were considered helpful by 64%, especially for visual and auditory learners.

The repetition and spaced practice elements built into the app's structure were also highlighted as effective strategies. Approximately 75% of respondents agreed that repeating vocabulary in multiple formats (translation, matching, fill-in-the-blank, and pronunciation) contributed to better long-term retention. In particular, high-frequency words and phrases were more easily remembered due to repeated exposure. However, despite this, 49% of students remarked that the vocabulary content was often too basic or redundant, especially for learners at intermediate or advanced levels.

The students also provided critical feedback on areas where Duolingo was perceived as inadequate. Over half (58%) felt that the app lacked sufficient real-life context for language use, such as dialogues or situational applications of vocabulary. While learners could memorize words and phrases, many expressed difficulty in transferring that knowledge to authentic communication. Additionally, 61% believed that Duolingo did not support productive skills (speaking and writing) adequately, due to the lack of extended speech practice and personalized writing tasks. Grammar explanations were seen as vague or insufficient by 54% of respondents, who reported a need for clearer rules and structured progression alongside vocabulary learning.

Importantly, 62% of participants believed that Duolingo should not be used as a standalone tool, but rather as a supplementary aid to classroom instruction. This was reinforced

by the fact that 65% of learners supported the integration of Duolingo into formal English curricula, particularly under the guidance of a teacher who could contextualize vocabulary and link it to other language skills. Despite its shortcomings, 71% of students said they would recommend Duolingo to their peers, mainly because of its user-friendly interface, flexible learning format, and motivational features.

Lastly, students were asked to compare Duolingo to other vocabulary-learning methods. A significant number (59%) indicated a preference for more immersive and context-rich techniques, such as watching English-language films or series, listening to music, and practicing conversations with peers. These methods were seen as more dynamic and conducive to practical language use. Nonetheless, students acknowledged that Duolingo served as a helpful tool for quick revision, vocabulary drills, and maintaining consistency in learning habits.

In conclusion, the questionnaire responses underscore that while Duolingo is a valuable and motivating tool for vocabulary reinforcement among EFL learners, it is most effective when used in conjunction with traditional classroom methods and supplemented with context-rich, communicative language practice. The findings highlight both the strengths—such as repetition, gamification, and accessibility—and limitations—such as lack of contextual depth and insufficient support for productive skills—of using Duolingo as a digital vocabulary learning tool.

## Conclusion

This study explored the impact of Duolingo on vocabulary acquisition among EFL learners, revealing generally positive student perceptions. Participants found the app helpful for memorizing new words, enjoying its game-based interface and the flexibility it offers for independent learning. Many students appreciated the repetitive exercises and visual aids that supported retention. However, concerns were raised about the app's limited contextual vocabulary usage and its minimal emphasis on productive language skills like speaking and writing. Overall, the findings suggest that while Duolingo is not sufficient as a standalone tool, it is a valuable supplementary resource that can enhance vocabulary learning when used alongside formal instruction.

## Pedagogical Recommendations

In light of the study's findings, several pedagogical recommendations are proposed. Teachers should incorporate Duolingo as a complementary tool to reinforce vocabulary learned in class, encouraging its use for out-of-class practice. To address the lack of context and productive skill development, educators can design supplementary activities that require learners to use new words in writing and speaking tasks. Providing structured guidance on how to effectively engage with the app and setting learning goals can maximize its educational value. Additionally, leveraging Duolingo's gamified features can motivate less enthusiastic students and foster regular practice, ultimately promoting learner autonomy and sustained language engagement.

Recommendations from Students:

- 65% suggested integrating Duolingo with classroom instruction.
- 55% proposed adding more academic and formal vocabulary exercises.

**Limitations of the Study**

This study has several limitations that must be acknowledged. The sample was relatively small and predominantly female, which may not accurately represent the broader EFL learner population. The data was gathered through self-reported questionnaires, which may be influenced by biases or inaccuracies in student responses. Furthermore, the study did not include a longitudinal design, making it difficult to determine the long-term effects of Duolingo use on vocabulary retention. There was also no control group, which limits the ability to establish a direct causal relationship between Duolingo usage and vocabulary improvement. These factors suggest caution in generalizing the results.

**Suggestions for Further Research**

Future research should aim to address the limitations of this study by employing larger and more diverse samples, as well as incorporating experimental and longitudinal designs. Studies comparing Duolingo with other digital tools or traditional vocabulary instruction could provide insights into its relative effectiveness. Including control groups and pre/post-testing would strengthen the validity of the findings. Qualitative approaches, such as interviews or focus groups, could offer a deeper understanding of learners' experiences, preferences, and challenges. Finally, future studies should investigate ways to better integrate Duolingo into

pedagogical frameworks that support all four language skills, particularly writing and speaking, for more balanced language acquisition.

**General Conclusion**

The current study aimed for a thorough examination of the effectiveness of Duolingo as a pedagogical tool among second-year English as a Foreign Language (EFL) learners of 08 Mai 1945 Guelma University with an emphasis on its accessibility rate, frequency of usage, and overall effectiveness in improving vocabulary.This study sought to achieve three different goals: to gauge learners' experience and perception of Duolingo, to evaluate its use as a tool for developing general and academic vocabulary among learners, and to determine its usability as a complementary tool in the EFL classroom teaching environment. Using a systematic mixed-methods research design, this study produced important findings related to the role of Duolingo as a representative sample of a mobile-assisted learning (MALL) tool and its contribution to enriching vocabulary learning among EFL learners. The dissertation consists of three chapters that contribute effectively to the subject of the research.

The first chapter offered an extensive review of the existing literature on Duolingo in terms of its origins, functionalities, and pedagogical underpinnings. It outlined the platform's gamified presentation, incorporating XP, streaks, badges, and leaderboards that boost learner motivation (Munday, 2016). Moreover, the chapter examined the way Duolingo employs the spaced repetition algorithms of Ebbinghaus's Forgetting Curve (1885) to facilitate the retention of vocabulary as well as its multimodal approach that uses visual, auditory, and contextual cues (Nation, 2013). Researcher observations of Godwin-Jones (2011) and Schmitt (2010) emphasized the strengths of Duolingo in terms of its accessibility, ease of use, and potential for encouraging learner autonomy. However, its weaknesses like translation-oriented exercises as a reliance and insufficient assistance for productive skills (speaking and writing) and insufficient contextual depth were not immune from critical analysis. This conceptual framework confirmed the importance of Duolingo as a tool for the learning of vocabulary and set the stage for the following empirical investigation.

The second chapter provided an in-depth analysis of word learning within the English as a Foreign Language (EFL) context and its importance for language mastery. Drawing on theoretical models like Cognitive Load Theory (Sweller, 1988), Dual-Coding Theory (Paivio, 1986), and the Involvement Load Hypothesis (Laufer & Hulstijn, 2001), the chapter explained

the cognitive and pedagogical aspects of good word learning. It differentiated between word breadth (number of words known) and depth (quality of word sense which covers collocations and context of use), stressing the importance of both aspects in building up towards communicative competence (Nation, 2013). Also discussed in the chapter were the factors of motivation with inherent factors like learners' interest and external factors like rewards that influence learners' involvement (Dörnyei, 2005). It delved into the challenges associated with word learning such as lack of authentic context and difficulties with retention and presented techniques such as extensive reading, semantic maps, and technology-based learning. This chapter laid a coherent body of theory on which the roles and limits of the promotion of lexical growth by Duolingo should be evaluated.

The empirical basis of this research is presented in Chapter Three, "Research Fieldwork," with the use of a guided questionnaire that was filled out by a systematically selected population of 60 second-year English as a foreign language learners of the University of 08 Mai 1945 Guelma. The questionnaire had four segments: General Information, Use of Duolingo, EFL Vocabulary Acquisition, as well as the Impact of Duolingo on Pedagogical Vocabulary, with 23 questions containing both close-ended multiple-choice questions and open-ended questioning. Results revealed that 41.7% of learners used the app a number of times a week, 33.3% of learners used it daily, reflecting its frequent incorporation into the learning process (Table 1.4). A high proportion of 83.3% of the respondents named the repetition and the spaced learning as the most helpful aspect, followed by the audio pronunciation at 75% and gamification at 66.7% (Table 1.7). The high levels of engagement with 50% of the respondents finding the activities “very engaging” (Table 1.8) match motivational theory emphasizing the importance of learning through fun (Deci & Ryan, 2000). However, the research equally brought out significant pedagogical flaws. Lack of deep contextual immersion, inadequate facilitation of productive skills, and lack of emphasis on academic vocabulary limit the effectiveness of Duolingo as a standalone tool, more so for advanced learners or academic pursuits. The need for instructors' oversight was valued by 65% of the respondents as key in rectifying these flaws, thus the need for blending learning methods that mesh the digital strengths of Duolingo with interactive and teacher-led methods (Godwin-Jones, 2018).

The findings show that students have a positive perception of Duolingo as a supporting tool that enables vocabulary development through its interactive, independent, and gamified approach. The strengths of the platform are reflected in its capacity to ensure daily practice for

students, promote vocabulary retention through spaced repetition, and cater to various learning styles by providing a multitude of multimodal materials.

The findings of the present study are consistent with previous research, such as that of Vesselinov and Grego (2012), which showed Duolingo to be effective for receptive vocabulary but limited in productive use, and Loewen (2019), who recognized its strengths in promoting engagement while also noting its weakness in contextual use.
The positive student attitudes indicate Duolingo's potential for revolutionary transformation in EFL lexical acquisition by offering an easy-to-use and enjoyable environment for independent study. However, the limitations exposed point to the necessity of complementary approaches such as conversational practice, extensive reading, and guided writing exercises to ensure general lexical development. The ethical and practical considerations involved in the incorporation of technology into learning systems, as argued in Chapter Two, call for the alignment of Duolingo use to learning objectives and the development of well-defined parameters to enhance its utility.

**REFERENCES**

Baddeley, A. D. (1997). Human memory: Theory and practice (Rev. ed.). Psychology Press.

Barcroft, J. (2007). Effects of opportunities for word retrieval during second language vocabulary learning. Language Learning, 57(1), 35–56. https://doi.org/10.1111/j.1467-9922.2007.00398.x

Chapelle, C. A. (2001). Computer applications in second language acquisition: Foundations for teaching, testing, and research. Cambridge University Press.

Chapelle, C. A. (2003). English language learning and technology: Lectures on applied linguistics in the age of information and communication technology. John Benjamins Publishing.

Clark, M., & Lindemann, K. (2019). Comparing mobile-assisted and traditional vocabulary learning: A study of Duolingo's impact on retention and production. Journal of Language Learning Technologies, 12(2), 78–95.

Crowther, D., Kim, K. M., & Loewen, S. (2017). The effectiveness of mobile applications for second language vocabulary acquisition. Computer Assisted Language Learning, 30(7), 713–729. https://doi.org/10.1080/09588221.2017.1376682

Cutler, A. (2012). Native listening: Language experience and the recognition of spoken words. MIT Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Duolingo. (2022). About us. https://www.duolingo.com/about

Dörnyei, Z. (2001). Motivational strategies in the language classroom. Cambridge University Press.

Dörnyei, Z. (2005). The psychology of the language learner: Individual differences in second language acquisition. Routledge.

Ebbinghaus, H. (1885). Memory: A contribution to experimental psychology (H. A. Ruger & C. E. Bussenius, Trans.). Teachers College, Columbia University.

Ellis, N. C. (2008). The dynamic emergence of structure in language acquisition. Studies in Second Language Acquisition, 30(2), 305–340. https://doi.org/10.1017/S0272263108080403

Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: A review of technology types and their effectiveness. Computer Assisted Language Learning, 27(1), 70–105. https://doi.org/10.1080/09588221.2012.700315

Godwin-Jones, R. (2011). Emerging technologies: Mobile apps for language learning. Language Learning & Technology, 15(2), 2–11.

Godwin-Jones, R. (2018). Second language vocabulary learning: Computer-assisted approaches. Language Learning & Technology, 22(1), 1–14.

Krashen, S. D. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis. The Modern Language Journal, 73(4), 440–464. https://doi.org/10.1111/j.1540-4781.1989.tb05325.x

Laufer, B. (1997). What's in a word that makes it hard or easy? Some intralexical factors that affect the learning of words. In N. Schmitt & M. McCarthy (Eds.), Vocabulary: Description, acquisition and pedagogy (pp. 140–155). Cambridge University Press.

Laufer, B. (1998). The development of passive and active vocabulary: Same or different? Applied Linguistics, 19(2), 255–271. https://doi.org/10.1093/applin/19.2.255

Laufer, B., & Girsai, N. (2008). Form-focused instruction in second language vocabulary learning: A case for contrastive analysis and translation. Applied Linguistics, 29(4), 694–716. https://doi.org/10.1093/applin/amn018

Laufer, B., & Nation, P. (1995). Vocabulary size and use: Lexical richness in L2 written production. Applied Linguistics, 16(3), 307–322. https://doi.org/10.1093/applin/16.3.307

Laufer, B., & Nation, P. (1999). A vocabulary-size test of controlled productive ability. Language Testing, 16(1), 33–51. https://doi.org/10.1177/026553229901600103

Liao, Y. F., & Fukuya, Y. J. (2004). The acquisition of English phrasal verbs by Chinese learners: A conceptual metaphor and image schema-based approach. System, 32(4), 407–424.

Littlewood, W. (2004). The task-based approach: Some questions and suggestions. ELT Journal, 58(4), 319–326. https://doi.org/10.1093/elt/58.4.319

Loewen, S., Isbell, D. R., & Spino, L. (2019). The effectiveness of app-based language instruction for developing receptive linguistic knowledge and oral communicative ability. Foreign Language Annals, 52(3), 524–547. https://doi.org/10.1111/flan.12414

Mayer, R. E. (2009). Multimedia learning (2nd ed.). Cambridge University Press.

Munday, P. (2016). The case for using Duolingo as part of the language classroom experience. RIED: Revista Iberoamericana de Educación a Distancia, 19(1), 83–101. https://doi.org/10.5944/ried.19.1.14581

Nation, I. S. P. (2001). Learning vocabulary in another language. Cambridge University Press.

Nation, I. S. P. (2013). Learning vocabulary in another language (2nd ed.). Cambridge University Press.

Nation, I. S. P. (2013). Vocabulary learning and teaching. Routledge.

Paiva, V. L. (2017). Mobile apps for English language learning. Editora FTD Educação.

Paribakht, T. S., & Wesche, M. B. (1997). Vocabulary enhancement activities and reading for meaning in second language vocabulary development. Second Language Acquisition, 19(2), 174–200.

Peters, E., Noreillie, A., Heylen, K., Bulté, B., & Desmet, P. (2020). Vocabulary knowledge after viewing multiple episodes of TV series: Evidence from learners of English as a foreign language. The Modern Language Journal, 104(3), 598–624.

Pulvermüller, F. (2013). How neurons make meaning: Brain mechanisms for embodied and abstract-symbolic semantics. Trends in Cognitive Sciences, 17(9), 458–470.

Read, J. (2000). Assessing vocabulary. Cambridge University Press.

Roediger, H. L., & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. Psychological Science, 17(3), 249–255.

Schmitt, N. (2010). Researching vocabulary: A vocabulary research manual. Palgrave Macmillan.

Settles, B., & Meeder, B. (2016). A trainable spaced repetition model for language learning. In Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (pp. 1848–1858). https://doi.org/10.18653/v1/P16-1174

Stockwell, G. (2007). A review of technology choice for teaching language skills and areas in the CALL literature. ReCALL, 19(2), 105–120. https://doi.org/10.1017/S0958344007000225

Thorne, S. L. (2003). Artifacts and cultures-of-use in intercultural communication. Language Learning & Technology, 7(2), 38–67.

Vesselinov, R., & Grego, J. (2012). Duolingo effectiveness study. City University of New York. https://static.duolingo.com/s3/DuolingoReport_Final.pdf

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

Webb, S., & Nation, P. (2017). How vocabulary is learned. Oxford University Press.

Zhao, Y., & Lai, C. (2019). Technology-assisted vocabulary learning: A systematic review of meta-analyses. Educational Research Review, 27, 18–32. https://doi.org/10.1016/j.edurev.2019.02.001

**Appendices**

**Appendix : Students' Questionnaire**

# STUDENT QUESTIONNAIRE

# Dear Participant,

This questionnaire is designed to investigate **the role of Duolingo in vocabulary acquisition in EFL learning**. Your participation is **anonymous and voluntary**, and your responses will be used solely for research purposes. Please **tick (✓) the appropriate answer** and **justify/explain where necessary**.

**Thank you for your time and cooperation!**

# Section One: General Information

### 1. Age:

● 18 - 20
● 21 - 23
● 24 or older

### 2. Gender:

● Male
● Female

### 3. How long have you been learning English?

● Less than 3 years
● 3 - 5 years
● More than 5 years

# Section Two: Duolingo Usage (Q4 – Q14)

### 4. How often do you use Duolingo?

● Daily
● A few times a week
● Once a week
● Rarely

### 5. How long have you been using Duolingo?

● Less than 3 months
● 3 - 6 months
● More than 6 months

### 6. What is your main reason for using Duolingo? *(You may select more than one)*

● Improve vocabulary
● Enhance grammar
● Develop pronunciation skills
● General language learning
● Other (please specify): _____

**7. Which features of Duolingo do you find most useful?** ***(Tick all that apply)***

● Gamification (points, streaks, rewards)
● Repetition and spaced learning
● Audio pronunciation exercises
● Sentence-building exercises
● Interactive reminders and notifications

**8. How engaging do you find Duolingo's vocabulary learning activities?**

● Very engaging
● Somewhat engaging
● Neutral
● Not engaging

**9. How effective do you think Duolingo is for learning new vocabulary?**

● Very effective
● Moderately effective
● Slightly effective
● Not effective

**10. Have you noticed an improvement in your vocabulary since using Duolingo?**

● Yes, a significant improvement
● Yes, a slight improvement
● No noticeable improvement
● No improvement at all

**11. In your opinion, what are the strengths of Duolingo in vocabulary learning?**

_____

_____

**12. What are the weaknesses of Duolingo in vocabulary learning?**

_____

**13. Would you recommend Duolingo to other EFL learners for vocabulary learning? Why or why not?** ***(Justify your answer)***

**14. Do you believe Duolingo should be integrated into formal classroom vocabulary learning?**

- Yes, it would be beneficial
- Maybe, but with teacher guidance
- No, it is not suitable for classroom use

# Section Three: Vocabulary Acquisition in EFL Learning (Q15 – Q19)

**15. How do you primarily learn new vocabulary?** ***(Tick all that apply)***

- Using language learning apps (e.g., Duolingo, Memrise)
- Reading books, articles, or newspapers in English
- Watching English videos, movies, or TV shows
- Practicing conversation with others
- Studying word lists and flashcards

**16. Do you prefer learning vocabulary through context (e.g., reading, listening) or direct memorization (e.g., word lists, translation exercises)? Why?**

**17. What challenges do you face when learning new vocabulary in English?** ***(Tick all that apply)***

- Remembering word meanings
- Using words correctly in sentences
- Understanding words in different contexts
- Pronouncing words correctly
- Lack of exposure to new words

**18. What strategies do you use to retain and recall new vocabulary?**

**19. In your experience, how does learning vocabulary through Duolingo compare to traditional classroom methods?**

---

---

## Section Four: The Influence of Duolingo on Academic Vocabulary Acquisition in EFL Learning (Q20 – Q23)

**20. Do you believe that Duolingo helps you improve academic vocabulary relevant to your university studies?**

- ⬤ Yes, significantly
- ⬤ Somewhat
- ⬤ Not much
- ⬤ Not at all

**21. Have you applied vocabulary learned from Duolingo in academic writing or speaking tasks?**

- ⬤ Yes, frequently
- ⬤ Yes, occasionally
- ⬤ Rarely
- ⬤ Never

**22. What type of vocabulary does Duolingo focus on the most?** ***(Tick all that apply)***

- ⬤ Everyday conversational words
- ⬤ Academic words and expressions
- ⬤ Travel-related vocabulary
- ⬤ Formal/professional English

**23. In your opinion, how could Duolingo be improved to better support academic vocabulary learning?**

---

---

# Thank You for Your Participation!

Your responses will be analyzed to better understand the **effectiveness of Duolingo in vocabulary acquisition for EFL learners**.

**الملخص**

تُعد المفردات مهارةً أساسية في عملية تعلم اللغة، خاصة بالنسبة للمتعلمين الناطقين بغير الإنجليزية (EFL) الذين يسعون إلى تحسين مهاراتهم لاستخدام اللغة الإنجليزية بفعالية أثناء التواصل. ومع ذلك، يواجه العديد من طلبة اللغة الإنجليزية في جامعة قالمة صعوبات تمنعهم من استخدام اللغة الهدف بشكل مناسب بسبب نقص المفردات .تهدف هذه الدراسة إلى استكشاف مواقف متعلمي اللغة الإنجليزية كلغة أجنبية تجاه تعلم مفردات جديدة باستخدام تطبيق Duolingo.وتفترض الفرضية الأساسية لهذا البحث أن مفردات متعلمي اللغة الإنجليزية ستتطور في حال استخدامهم لتطبيق Duolingo . ولاختبار هذه الفرضية، تم استخدام المنهج الوصفي الكمي، حيث تم تصميم استبيان وتوزيعه على ستين طالبًا من السنة الثانية (L2) بقسم اللغة الإنجليزية في جامعة 08 ماي 1945 - قالمة، والذين سبق لهم استخدام تطبيق Duolingo .وقد أظهر تحليل البيانات صحة الفرضية، حيث كشفت النتائج أن أغلب متعلمي اللغة الإنجليزية لديهم مواقف إيجابية تجاه استخدام تطبيق Duolingo في تحسين مفرداتهم. كما أظهرت النتائج فعالية هذا التطبيق في تعزيز المفردات لدى متعلمي اللغة الإنجليزية كلغة أجنبية.وبناءً على هذه النتائج، تم تأكيد فرضية البحث، وعليه يُوصى باستخدام تطبيق Duolingo كأداة مساعدة لتطوير المفردات لدى متعلمي اللغة الإنجليزية.

**الكلمات المفتاحية**

المفردات، تطبيق Duolingo ، طلبة اللغة الإنجليزية كلغة أجنبية، المواقف، تعلم اللغة، التطوير

Résumé

L’apprentissage du vocabulaire est une compétence essentielle dans le processus d’apprentissage d’une langue, en particulier pour les apprenants d’anglais langue étrangère (EFL) qui souhaitent améliorer leur capacité à utiliser l’anglais efficacement dans la communication. Cependant, de nombreux étudiants en anglais à l’Université de Guelma rencontrent des difficultés qui les empêchent d’utiliser correctement la langue cible en raison de leur manque de vocabulaire. Cette recherche explore les attitudes des apprenants EFL envers l’apprentissage de nouveaux mots à l’aide de l’application Duolingo. L’hypothèse principale de cette étude suppose que le vocabulaire des apprenants EFL se développerait grâce à l’utilisation de Duolingo. Pour tester cette hypothèse, une méthode descriptive et quantitative a été utilisée. Un questionnaire a été conçu et distribué à soixante étudiants de deuxième année (L2) du Département d’anglais de l’Université du 08 Mai 1945 - Guelma, ayant déjà utilisé l’application. L’analyse des données collectées confirme l’hypothèse ; les résultats montrent que la majorité des apprenants EFL ont une attitude positive vis-à-vis de l’application Duolingo pour l’enrichissement de leur vocabulaire. Les résultats révèlent également l’efficacité de l’application dans le développement du vocabulaire. Ainsi, notre hypothèse est confirmée, et l’utilisation de l’application Duolingo est fortement recommandée comme outil de développement lexical pour les apprenants d’anglais langue étrangère.

**Mots-clés** : Vocabulaire, Application Duolingo, Étudiants EFL, Attitudes, Apprentissage des langues, Développement