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Gamified English: Investigating the Impact of Duolingo's on Learners Outcomes: Three Case Studies

اللغة الانجليزية المُحَفِزة باللُعب:

دراسة حول أثر تطبيق دوولينغو علي نتائج المتعلمين: دراسة ثلاث حالات

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Abstract

Due to the rapid advancement of technology, it has reshaped every corner of our lives; language teaching and learning are no exception. Thus, this study focuses on the use of **Mobile-Assisted Language Learning (MALL)** to promote foreign language learning. **Duolingo** is one of the most widely used applications that facilitates learning a second or foreign language. Hence, this article aims to confirm the hypothesis that **Duolingo** has an impact on beginners' receptive and productive skills. This is a mixed-method case study that incorporates observation, assessment, and interviews. It involves three participants, aged 14–19, who live in **Benghazi, Libya**, and used **Duolingo** to learn English over a four-month period. Data collection and analysis have displayed that **Duolingo** has a greater impact to those beginners; however, it has limitations and no visible improvement for advanced learners. Thus, it is recommended to employ a few enhancements to the app to accommodate advanced learners.

Keywords: bilingual app, MALL, Duolingo, English, language learning.

الملخص

بسبب التقدم السريع في التكنولوجيا، فقد أعادت تشكيل كل زاوية من زوايا حياتنا؛ وتعليم وتعلم اللغات ليسا استثناءً. لذا، تركز هذه الدراسة على استخدام التعلم اللغوي بمساعدة الهواتف المحمولة (MALL) لتعزيز تعلم اللغات الأجنبية . يُعَدُّ تطبيق دولينجو من أكثر التطبيقات استخدامًا التي تسهّل تعلم لغة ثانية أو أجنبية . لذا، تهدف هذه المقالة إلى تأكيد الفرضية القائلة بأن تطبيق دولينجو له تأثير على مهارات الاستقبال والإنتاج لدى المبتدئين .هذه دراسة حالة مختلطة الأساليب تتضمن الملاحظة، والتقييم، والمقابلات .يشمل ذلك ثلاثة مشاركين تتراوح أعمارهم بين 14 و19 عامًا، يعيشون في بنغازي، ليبيا، واستخدموا تطبيق دولينجو لتعلم اللغة الإنجليزية على مدى فترة أربعة أشهر .أظهرت جمع البيانات وتحليلها أن تطبيق دولينجو له تأثير أكبر على المبتدئين؛ ومع ذلك، فإنه له قيود ولا يظهر تحسن ملحوظ للمستويات المتقدمة .لذا، يُوصى بإجراء بعض التحسينات على التطبيق لاستيعاب المتعلمين المتقدمين.

الكلمات المفتاحية: تطبيق ثنائي اللغة، MALL، Duolingo، الإنجليزية، تعلم اللغة.

1.1 Introduction

Over recent years, information technologies have brought about significant changes in the process of education. This has become an area of particular interest among foreign language educators and learners, as this phenomenon could have a positive impact on their skills. The widespread use of the English language nowadays has led to the need to perfect it in every way; entrance exams and occupational opportunities all demand a certain level of proficiency in both receptive and productive skills. Consequently, statistics have revealed that the number of native speakers has been outnumbered by non-native speakers in the last few years.

The ever-growing need to establish a high level of proficiency in the most used second language (English) has led language teachers and curriculum designers to undergo a myriad of approaches

and methodologies that would ultimately lead to a high level of accuracy and fluency. Additionally, learners have always thought of speaking as the result of a successful language course; hence, the focus of successful communication has recently become the priority of many **EFL** books. Moreover, teachers employ activities that promote oral production more often.

With the invasion of technology into our daily routines, teachers have sought to interrelate these digital tools and platforms for effective learning. Many sites and applications provide innovative and entertaining learning experiences. Furthermore, they have increased learners' linguistic repertoire in a digitally evolved era. Nowadays, most, if not all, of our students own a smartphone. According to data from the report "Worldwide Mobile Phone Users: H1 2014 Forecast and Comparative Estimates," by the end of 2015, almost 66% of the world population will have one of these phones.

These cell phones can be equipped with many applications that can promote learning a foreign language among other uses, such as watching **YouTube** videos, recording voice memos, having online conversations with **FaceTime** or **Google Hangouts**, or even playing with gaming apps like **Trivia Crack** (a game similar to **Trivial Pursuit**) in languages other than your own. But there are also an increasing number of applications that have been created with the sole objective of learning a foreign language. Examples of these apps are **Lingua.Ly** (to augment reading comprehension), **HelloTalk** (to find people with whom to practice languages), **Memrise** (vocabulary acquisition), or **Duolingo**, the app we will be exploring in this article.

1.2 Objective of this Study

The aim of this study is to examine how **MALL** has an impact on **EFL** learners' receptive and productive skills. Will **Duolingo** improve learners' skills or will they remain unchanged?

1.3 Research Questions

1. Will there be any changes in the students' performance by using the **Duolingo** app?
2. Does using the **Duolingo** app increase students' motivation to practice English?
3. How does it differ from regular, book-based homework?
4. Does using **Duolingo** have the same impact on beginners' and advanced learners' skills?

2.1 Literature Review

2.1.1 Technology Promotes EFL Skills

Jalaluddin (2016) stated that there have always been technology formalities in relation to language teaching. All technology provided English language teachers with some tools to better present the content of the lesson, to make it more meaningful for learners and therefore more interesting. Teachers were thrilled to indulge in every opportunity to use the sources provided through the Internet. Jalaluddin (2016) further explains that when organizing activities for the language classroom, teachers take available materials, e.g., videos, video clips, films, music clips, and film trailers, to provide the necessary information and contexts to speak about in practice.

Due to the technological invasion, both **Computer-Assisted Language Learning (CALL)** and **Mobile-Assisted Language Learning (MALL)** had a significant impact on receptive skills (**reading** and **listening**). This invasion was welcomed by classroom teachers due to the authenticity that both offered, not to mention a sufficient exposure to resources that were

addressed by tools like podcasts, **YouTube** videos, and multimedia platforms (Cedillo Llivisaca & Guamán Luna, 2025; Jiang et al., 2024).

Li (2022) confirms that technology does have an immense beneficial impact on listening and reading because of the unlimited advantages it has. Nowadays, learners can listen repetitively to audios with adjusted speed, accommodating their preferred pace and delivering positive feedback, which would result in reducing anxiety. Nonetheless, these advantages may hinder their ability to listen actively in the long term if they become too dependent on cues and subtitles (Audina et al., 2022).

As it has been mentioned, technology offers a visible advancement in reading comprehension as many apps are equipped with tools offering an increase in the linguistic repertoire as well as sufficient assessment means and positive feedback that traditional learning lacks (Jiang et al., 2024; Rintaningrum, 2023). However, some researchers advise that most apps rely on the direct-translation method, which would impair learners' ability to comprehend real-life complex texts (Astarilla, 2018; Nguyen & Dan, 2024).

As for productive skills—writing in this case—**AI** has empowered students all over the world. They have become motivated and confident to participate with audiences both locally and universally through social media and blogs (Rintaningrum, 2023). Tools like **Grammarly** and **Google Docs** have proposed solutions to writing dilemmas like spelling and grammar by peer reviews and group writings (Cedillo Llivisaca & Guamán Luna, 2025). On the other hand, researchers acknowledged that heavy dependence on **AI** tools has impeded the originality of any written work and hindered learners' ability to think critically (Marzuki, 2023).

Technology offers speaking practice opportunities that a conventional educational environment lacks. That is, learners can practice their pronunciation and fluency with real-time feedback through online platforms, mobile apps, and speech recognition software (Li, 2022). This increases self-motivation and reduces anxiety (Ko & Lim, 2022). Aly et al. (2013) have noted that technology has brought an immense beneficial improvement in **EFL** settings because of the increasingly large number of learners wanting to use English freely to communicate. However, a known barrier to acquiring advanced communicative competence is that these technology-mediated interactions frequently lack the spontaneity and nuanced context that in-person authentic conversations seem to possess (Hazar, 2022).

2.1.2 MALL Impact over EFL Outcome

In appreciation of the ubiquity of mobile devices, students have access to their education anywhere and at any time, making **MALL** an appealing adjunct to conventional classroom instruction (Lashari et al., 2023).

Looi and Toh (2014) noted how mobile devices are vastly different, from being a distraction in the classroom to being seen as a crucial educational tool. Mobile devices provide many benefits, including improved learning outcomes, increased student engagement, and improved connection to other students.

Kukulska-Hulme (2020) indicated that mobile learning offers a number of benefits to develop oral language skills. One of the largest benefits is providing access to learning resources whenever and wherever. This ease of access gives learners opportunities to listen to and speak

with people outside of a classroom setting, thereby increasing their opportunities for exposure and practice.

2.1.3 Mobile Language Learning – Learning via Duolingo

The learning process of a language can be greatly enhanced through applications. **Duolingo** was launched in 2012, containing 27 different languages. **Duolingo** is practiced through both web and mobile platforms, making it a **Mobile-Assisted Language Learning** platform. Mobile learning offers a flexible and portable means of learning, allowing for learning in various contexts, at any time, on any topic, while being involved in a larger community of collaborative knowledge construction (Crompton, 2013; Sharples, 2005).

Duolingo exemplifies sound mobile learning due to its presence in various mobile media formats. This application provides translation support for beginners, allowing them to develop as independent language learners. Although the application is free to use, users will be required to view ads or use gems (in-app currency) after reaching a certain number of mistakes. **Duolingo** is organized into sections (skills, skill-learn lessons, vocabulary) and it includes some practice with vocabulary and starting sentence structures. Daily practice incorporates the four skill areas of listening, speaking, reading, and writing through various activities (translation practice, dictation, center picture, word ordering, matching, and pronunciation). As well, in speaking activities, the application has integrated a microphone so that learners are able to record their own speech as well as judge their own pronunciation and assess their own speech against feedback. Learners can also follow peers online who are taking the same courses as they are or ask them questions when necessary. The application also includes gamification features, such as **lingots** for the skills that provide completion and competition in terms of being on a leaderboard, which also provides motivation and inspiration as users are trying to complete courses (Kuşcu, 2019; Munday, 2016; Ratzlaff, 2015).

Users experience progression through levels called leagues, with 50 people in each group, reaching ten leagues in total. Moving to the next level means one must be in the top ten of that league. Coming in at the bottom five will demote the user to a lower league. Users can set personal target daily study goals, and they earn **lingots** when they reach each goal, and then these can be spent on gifts in the app (Kuşcu, 2019). These aspects make **Duolingo** very attractive to children who are academically gifted and often enjoy playing a language game, compete well when the environment is flexible and fosters healthy competition, and they want to use their best effort during their learning and time (Munday, 2016; Rosadah et al., 2009; Yunus et al., 2013a).

3.1 Theoretical Framework

Gamified language learning, exemplified by Duolingo in this analysis, represents a successful practical application of several established theoretical frameworks:

Behaviorism

According to the behaviorist Skinner (1985), children are born with a blank slate of mind that would be gradually filled with verbal habits. In this view, imitation and positive reinforcement would facilitate habit formation. Skinner posited that learning is an observed verbal process rather than a mental one. Children are exposed to repetitive stimuli, and with proper reinforcement, they would acquire a new word. His theory corresponds to **L2 acquisition**.

Cognitive Load Theory

Cognitive Load Theory (CLT), formulated by John Sweller (1988), describes how working memory processes information and categorize it into three types: intrinsic, extraneous, and germane. Each type of cognitive load plays a crucial role in educational technology and instructional design, and by minimizing extraneous cognitive load and promoting germane cognitive load, educators can enhance learning effectiveness. **CLT** has become widely recognized as an influential framework in educational research, guiding instructional practices and fostering continuous improvement in designing effective and engaging learning experiences for students.

Constructivism

Tracing back to Piaget and Dewey, constructivists posit that learning is not a passive process; on the contrary, learners make use of prior knowledge to actively construct a new one. This approach highlights previous experience, self-reflection, and social interaction as key elements to the process. Digital learning tools are driven by those beliefs.

Spaced Repetition

Around the 1880s, Hermann Ebbinghaus first described **spaced repetition**. **Spaced repetition** is a learning technique where you review material at increasing intervals to improve long-term retention. It held a high fashion among language educators, where it helps with memorizing vocabulary and grammar by scheduling reviews at optimal times. This method helps move information from short-term to long-term memory by leveraging the "forgetting curve."

In conclusion, the best framework that would mirror **Duolingo's** underlying process of language learning is a hybrid of psychological and educational theories. The underlying foundation is **behaviorism**, supported by cognitive principles of **spaced repetition** and **cognitive load theory**. Primarily, the app motivates the learners with rewards and positive feedback that reinforce repetitive usage (habit formation) and acquiring new words by moving to new leagues. However, it falls short in providing communicative learning context that is paramount in second language theories.

4.1 Research Design and Methodological Strategy

This study employed various methods to determine the effect **Duolingo** has on cultivating learning outcomes. The quantitative part included assessing users' oral skills with a preliminary evaluation during a **Duolingo** period and a subsequent evaluation afterward, as well as assessing their reading and listening comprehension. In addition to comprehension, grammar and vocabulary were evaluated by their productive skills. The learners' experiences and perceptions regarding the use of **Duolingo** for oral skills development were analyzed in interviews with an open structure, which formed the qualitative aspect of the study. User activity data from **Duolingo** was also analyzed for engagement and progress and supplemented the qualitative data. Such a comprehensive approach was considered necessary in order to evaluate the impact **Duolingo** has on developing proficiency in spoken language.

4.2 Participants

This study adopted three students displaying different linguistic levels: **Amjad**, who is in primary school, aged 15 (beginner); **Maram**, who is in secondary school, aged 17 (pre-intermediate); and finally, **Zakaria**, who is in his second semester in the English Department, aged 19 (upper-

intermediate). The three are native speakers of Arabic and have basic knowledge of English while seeking to improve their skills via **Duolingo**.

4.3 Instruments

The assessment of the learners was based on pre-tests and post-tests collected by the researcher and based on **Duolingo's** content. The participants were presented with four sections of tests that included both receptive and productive skills, as well as grammar; mainly **present simple**, **present progressive**, **plural** and **singular forms**, **pronouns**, **articles**, **adjectives**, and **question forms**.

It's worth noting that the participant had 30–45 minutes of **Duolingo's** exposure time to maintain validity. However, the interviews contained four questions in which the subjects were asked about their overall experience. The first two questions were about **Duolingo** and if they had a positive impact from using it. Then, they were questioned about whether they will seek to learn another language besides English. The final question was about whether or not to rely only on **Duolingo** to acquire a second language.

4.4 Findings

Case Study 1: The Beginner (A1–A2 Level)

Results: A beginner using **Duolingo** consistently for four months is likely to have measurable and significant improvements to their foundational English skills. Research indicates that with **Duolingo**, beginners can reach proficiency levels that, in traditional university contexts, would require several semesters of coursework. It is quite possible that they would progress from A1 to A2 and even B1 in some receptive skills.

Vocabulary and Grammar: The most pronounced impact would be on vocabulary and command of basic grammar with a foundational understanding of the most basic English grammar structures. The spaced repetition and graded exercises of **Duolingo** would reinforce the acquisition of word and sentence structures.

Reading and Listening: There would be significant improvements to enhanced reading and listening skills. Usable context is provided by **Duolingo** stories and podcasts in the form of simple narratives and dialogues, which enable learners to follow simple stories and conversations.

Case Study 2: The Pre-intermediate Learner (B1–B2 Level)

Results: An intermediate learner is likely to experience less effectiveness with a significant proficiency gain from **Duolingo** compared to a beginner. The app's syllabus for many languages aims to bring a learner only to the B1 or B2 level, and the content at advanced levels is more comprehensive. The improvements would be more incremental and would be perceived as less than what was the case during the beginner phase. The learner's progress would be primarily conditioned by the extent to which they use **Duolingo** as a means to solidify knowledge already mastered rather than as a means to acquire new knowledge.

Vocabulary and Grammar: We would correct many of their basic grammar mistakes through **Duolingo's** repetitive structure, thus solidifying the learner's grasp of grammar. Additionally, **Duolingo** would be invaluable for expanding their vocabulary, especially less commonly used phrases and words, to reinforce their grammar.

Reading and Listening: The app would aid and slightly elevate their reading and listening skills through engagement with stories as well as the more nuanced prose from stories, as long as they consider them not to be overly long.

Case Study 3: The Upper-intermediate Learner (C1–C2 Level)

Results: An advanced learner would gain very little overall proficiency from **Duolingo**. It is extremely unlikely that they will reach the near-native or professional fluency levels (C1–C2) that the app's content aims to provide. Completing courses would be too easy for them.

Reinforcement and Maintenance: The advanced learner's most beneficial impact would be as a maintenance tool. **Duolingo** would help them effortlessly retain their language skills (vocabulary and grammar) with minimal time investment, helping stave off language stagnation.

Specific Skill Practice: It might help them to some degree to refresh some topics that are not remembered or specialized terms; however, it lacked the rigor or nuance required to move further.

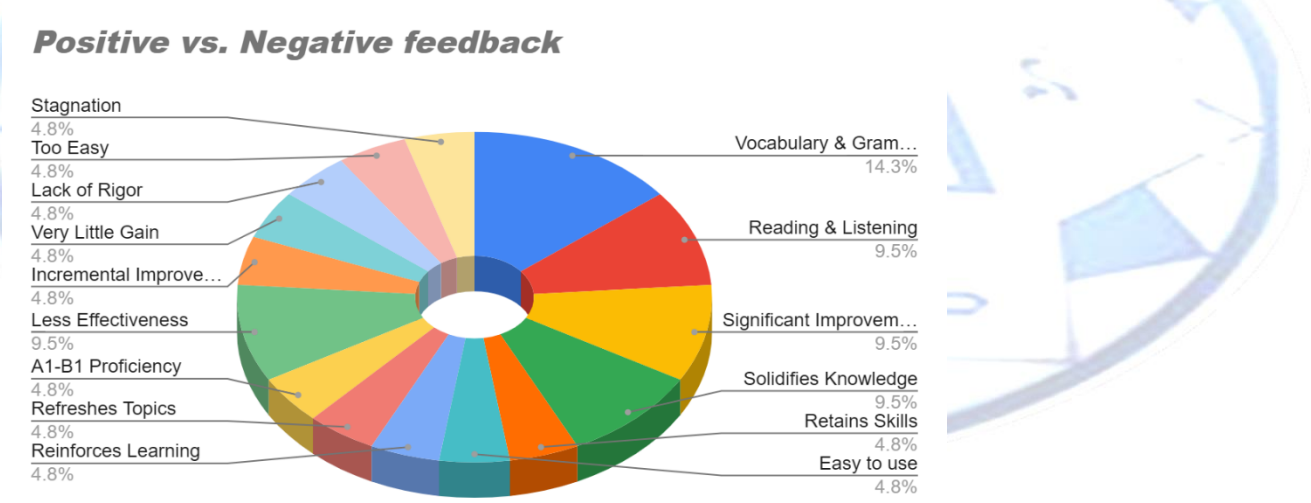


Figure 1: representation of the Duolingo's learning outcome.

4.5 Impact of Duolingo on EFL Learners' Oral Skills

Case 1: Amjad demonstrated weaker speaking/writing progress. Although **Duolingo** offers some pronunciation exercises and writing outlets, it does not provide a real-time conversational aspect, which is essential to gain competency in fluency and communicative competence. The learner would probably understand the language when listening to it passively, but will not be able to create the language during a conversation.

Case 2: This is where the app will be exposed at its worst, just as in the case of the beginner. What is not a replacement for is active, real-world communication. The intermediate learner would still need to be using these resources, of course, and also balancing them out with working with conversation partners, creating writing practice for themselves without the hints of **Duo** sentences or textbook structures in mind. This is **NOT** the role that **Duolingo** should play at this point in their language adventures.

Case 3: Limited Overall Impact: The app would not significantly improve their ability to understand complex texts, participate in nuanced conversations, or write professionally. For an advanced learner, **Duolingo** is best viewed as a supplement for fun and quick practice, not a core learning resource.

4.6 The Analysis of the Interview

The questions of the interview are displayed below:

1. Can you speak about your experience with **Duolingo**?
2. What have you learned in the past four months?
3. Are you planning to continue learning another language and English?
4. If you want to excel in English, will you rely solely on **Duolingo**?

Case 1: The Beginner

Interview Questions	**Semantic Analysis**
1. Can you tell me about your experience with Duolingo?	**Key Concepts:** The user's experience is positive and foundational. The app's features (**gamification, ease of use**) are highlighted as key factors in their learning and motivation
2. What have you learned over the last four months?	**Key Concepts:** The learning is described as basic. The user can apply their knowledge to real-world content (**short stories, simple conversations, films with subtitles**), showing concrete, practical progress.
3.Will you continue to learn another language and English?	**Key Concepts:** The user's initial motivation has evolved into a passion for language learning itself, driven by the app's positive influence.
4. If you want to improve in English, will you put all your faith in Duolingo?	The user identifies the app's limitations (**lack of real-world speaking practice, limited advanced grammar/writing**)

Case 2: The Pre-intermediate Learner

Interview Questions	**Semantic Analysis**
1. Can you tell me about your	The user sees Duolingo as a maintenance

experience with Duolingo?	
2. What have you learned over the last four months?	the skills that have improved (reading, vocabulary, grammar) and the one that has not (speaking), highlighting a perceived limitation of the app
3.Will you continue to learn another language and English?	Duolingo is relegated to a maintenance role for English. However, the app is still considered the ideal tool for starting a completely new language from scratch.
4. If you want to excel in English, will you rely solely on Duolingo?	This response mirrors the sentiment of the previous case.

Case 3: The Upper-intermediate Learner

Interview Questions	**Semantic Analysis**
1. Can you elaborate on your experience using Duolingo?	passive maintenance.
2. What have you learned over the last four months?	The user's learning is a form of reinforcement
3.Will you continue to learn another language and English?	Duolingo occupying a small, non-essential role.
4. If you want to excel in English, will you rely solely on Duolingo?	The concept of "fluency" is explicitly tied to immersion and authentic practice, which the app is perceived as lacking.

5.1 Conclusion and Recommendations

The research investigation has shown that **Duolingo** is a recommended platform to learn a second or foreign language. It has been proven in the early stages of learning a second language—as with the first two cases—to increase self-motivation and eagerness to learn. However, the application has demonstrated a few flaws that could be reprimanded. The third case pinpointed that it does lack in providing a wider range of vocabulary. In addition, it doesn't foster real-life authenticity or complex structures. This may dishearten advanced learners from continuing to use it.

Also, the app doesn't follow the communicative approach as it claims. On the contrary, **Duolingo** relies heavily on the **Direct-Translation Method**, which may limit the depth of engagement by progressive learners.

In conclusion, the integration of **Duolingo** into schools offers a potential opportunity to engage students in learning a second language, as was witnessed with **Amjad** and **Maram**. The app is available to many users, and this study's conclusion and findings show that **Duolingo** has a

visible and a great impact on second/foreign language learning due to its enjoyable experience. Moreover, it is stimulating students' motivation to invest in further language studies.

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