

The Effectiveness of Using the Duolingo Application in Enhancing the Speaking Skills of Jordanian EFL Learners

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Abstract

The purpose of this study was to evaluate the effectiveness of the Duolingo application in improving the speaking skills of Jordanian EFL learners as well as examining how it affects learners' motivation to learn. A quasi-experimental research design was used to conduct the study, including 50 EFL learners divided evenly into two groups: an experimental group and a control group. Both groups were taught the same instructional content but in the experimental group, the Duolingo application was used as a supplemental learning tool during an eight-week period, whereas the control group used only traditional methods of instruction. Data were collected using a pre- and post-test to measure the speaking skills of participants (pronunciation, fluency, vocabulary, and grammatical accuracy), in addition to a motivation questionnaire. The results indicated statistically significant differences between the groups, showing improvement in the experimental group as compared to the control group in both speaking proficiency as well as motivation to be involved in speaking tasks. Learners using Duolingo recorded a greater degree of improvement in their speaking proficiency and a greater desire to participate in speaking activities. The findings suggest that Duolingo is an effective supplementary tool for developing speaking skills and increasing motivation among EFL learners. The study underscores a pedagogical value in adopting mobile applications in blended learning environments to further support communicative language teaching methods.

Keywords: Duolingo application; Mobile-assisted language learning; Speaking skills; Learner motivation; Jordanian EFL learners

1. Introduction

With expansion of globalization, English has become the dominant language of communication in the fields of education, business, technology, and international relations. As such, being proficient in English is now seen as one of the most important prerequisites to achieve academic success, gain employment, and participate in the global community. Therefore, an increasing number of EFL curriculum goals are emphasizing the communicative competence of learners, particularly their ability to speak (Richards, 2008).

Conversely, speaking is viewed as the most important yet challenging skill for EFL learners to acquire. Unlike the receptive language skills of reading and listening, speaking requires learners to both produce language spontaneously and focus simultaneously on multiple aspects of language, such as pronunciation, fluency, word choice, and grammar (Brown, 2007). Therefore, despite years of traditional EFL instruction, a large number of EFL learners experience difficulties in oral communicating. Research by Goh and Burns (2012) indicates that the limited opportunities to use English, fear of making mistakes, and lack of confidence are some of the reasons that learners experience great difficulty expressing themselves when communicating.

Moreover, many EFL learners experience anxiety about oral communicating in EFL contexts. According to Horwitz et al. (1986), the fear of being judged negatively and the anxiety associated with communicating are two of the greatest obstacles to successful oral communication among EFL learners. These barriers to successful communication are especially problematic in foreign language environments because learners' opportunities to use English are often limited to classroom interaction; thus, learners lack opportunities for practicing speaking English in a meaningful way.

Traditional EFL teaching methodologies have been criticized for placing insufficient emphasis on developing learners' oral skills. Many educational systems neglect speaking skills and prioritize grammar instruction, reading skills, and examination preparation (Richards, 2008). Additionally, large class sizes, time constraints, and teacher-centered methodology create further barriers to students' engagement in speaking activities. Many students graduate from high school or university with very limited speaking ability, resulting in a continued gap between learning outcomes and learning goals (Goh & Burns, 2012).

Given these obstacles, educational technology has provided an effective means of enhancing students' language learning experiences. Technology-assisted language learning (TALL) provides students with the opportunity to have interactive, learner-centered learning environments that extend well beyond the traditional classroom (Chapelle, 2003). Of all the technology-enhanced language learning methods that have emerged, mobile-assisted language learning (MALL) has become increasingly popular due to the widespread availability of smartphones and mobile applications. MALL enables students to access language-learning resources anytime and anywhere, thus providing students with flexibility, autonomy, and opportunities for continual practice (Kukulka-Hulme & Shield, 2008). Recent

studies have showed that mobile applications positively influence learner engagement, speaking confidence, and oral participation among EFL learners (Ouyang et al., 2024; Putra et al., 2026).

Mobile applications are particularly useful for facilitating the development of speaking skills through the ability to practice pronunciation and produce words orally without stress in low-anxiety environments. Classroom studies have indicated that MALL increases student engagement, motivation, and participation in activities that enhance their speaking skills, especially among younger learners and EFL students (Hwang & Fu, 2019). In addition, by providing immediate feedback and offering individualized learning plans, mobile apps can assist students in overcoming the psychological and contextual barriers they may face while developing their speaking skills.

Duolingo is one of the most widely used mobile applications for language learning, and has millions of active users worldwide. Its users can access lessons that provide a structured framework to help enhance motivation, by incorporating gamification features, such as gaining points, levels and rewards for completing activities (Vesselinov & Grego, 2012). Duolingo's activities are typically brief, offering numerous ways to practice language skills (vocabulary, grammar, pronunciation and listening skills). Thus, it is appropriate for all levels of language learners.

Research has indicated that Duolingo has a positive impact on language learning, particularly in terms of vocabulary growth and grammatical development (Loewen et al., 2019; Munday, 2016). In addition, learners generally demonstrate positive attitudes toward Duolingo, citing its ease of use and its motivational features (Ahmed, 2016). However, little research has been done to evaluate the efficiency of Duolingo in enhancing learners' speaking skills despite its popularity. Previous studies have focused primarily on learners' receptive skills and their attitudes toward the application, rather than measuring improvements in oral performance.

In the context of EFL in Jordan, English is taught as a foreign language in schools and universities, yet many students encounter difficulties in oral communication, especially when it comes to fluency. Most of EFL instruction is still carried out by means of traditional teaching methods with very little use of technology in developing their speaking skill. While the vast majority of Jordanian students have mobile devices, their use for educational purposes is largely underutilized. Furthermore, previous studies in Arab EFL contexts have focused primarily on teaching vocabulary, grammatical rules and learner attitudes, leaving a gap in the empirical studies examining speaking proficiency and learners' motivation.

Filling this gap is critical for improving EFL instruction and educational practices in Jordan. Examining the impact of mobile applications such as Duolingo on speaking skills and learner motivation provides practical insights that support the development of speaking skills and enhance learner motivation. The purpose of this study, therefore, is to assess the effectiveness of the Duolingo mobile application in improving the speaking proficiency of Jordanian EFL learners. Furthermore, it will examine the extent to which the use of Duolingo may encourage students' overall motivation for learning English compared to traditional methods of instruction.

The research addresses the following questions:

1. How did Duolingo affect learners' speaking skills when in comparison with traditional instructional methods?
2. Did Duolingo have an impact on learners' motivation to learn English?

2. Literature Review

Duolingo is one of the most popular and most downloaded mobile-assisted language learning (MALL) apps in the world. Recently, Duolingo has attracted increasing academic attention than ever before. Duolingo was designed based on principles such as gamification, adaptive learning, repetition, and immediate feedback. These principles are aimed at assisting learners in maintaining their motivation to learn a new language and enhancing language skills through systematic and incremental development (Vesselinov & Grego, 2012). Duolingo also incorporates elements of behaviorist learning theory through utilizing repeated practice and reinforcement, in addition to incorporating aspects of Krashen's Input Hypothesis by providing students with graded and comprehensive input (Krashen, 1982).

Early empirical research on Duolingo (Vesselinov & Grego, 2012) focused on the effectiveness of Duolingo as a vocabulary and grammar tool. The results showed that users who spent approximately 34 hours using Duolingo demonstrated an equivalent level of vocabulary/grammar knowledge as students who had completed one semester of university-level foreign language instruction. Similarly, Loewen et al. (2019) demonstrated a statistically significant improvement in vocabulary knowledge and reading comprehension among adult learners who used Duolingo as a supplementary learning resource. The results from both studies indicated that Duolingo was a potentially effective resource for language learning at beginner and intermediate language proficiency levels.

Recent studies have broadened the area of research regarding Duolingo beyond language achievement to include measures of learner engagement, autonomy, and language skills. A qualitative and quantitative study (Loewen et al., 2020) examined adult learners' progression through Duolingo. The study reported significant improvements in vocabulary knowledge, grammar accuracy and listening skills, as well as increased confidence in using the target language. The study found that having frequent opportunities for oral practice and receiving feedback from the app could indirectly help learners to develop productive language skills.

Recent studies continue to support the effectiveness of mobile-assisted language learning applications in enhancing learner motivation and speaking proficiency. Kazu and Kuvvetli (2024) demonstrated that Duolingo's game-based learning environment significantly improves speaking proficiency and motivation among EFL learners. Similarly, Olimat (2024) found that Jordanian EFL learners perceive Duolingo as an effective means of developing their English language skills, particularly oral skills. More recently, Ouyang et al. (2024) found that

Duolingo, as an AI-integrated language-learning application, increases learners' willingness to communicate and the level of engagement in the classroom. Lastly, Putra et al. (2026) indicated that AI-powered mobile learning enables learners to develop confidence in spoken communication, by providing learners with personalized and low-anxiety opportunities for speaking practice.

The efficacy of mobile-assisted language applications such as Duolingo has been confirmed through meta-analyses and review studies. Jiang et al. (2021) found that mobile-assisted language learning had a moderate-to-large effect on language achievement. The researchers noted that mobile-assisted language learning applications that included pronunciation practice, feedback mechanisms, and repeated exposure (all of which are present in Duolingo) were especially effective when used as supplementary instructional tools.

Additionally, studies of the use of Duolingo in various EFL contexts worldwide have reported positive outcomes. Korkmaz and Öz (2021), for example, studied Duolingo's effect on Turkish university students and found improvements in vocabulary retention and student motivation. They also reported that students using Duolingo demonstrated significantly higher levels of self-motivation and persistence than those taking only traditional courses. Thus, it is evident that Duolingo fosters the learner autonomy that plays a significant role in successful learning of foreign languages.

In the context of language learning in Asia, Chen and Hsu (2022) studied the influence of Duolingo on Taiwanese students' pronunciation accuracy and confidence in speaking. They indicated that following sustained use of Duolingo, students improved significantly in their pronunciation and felt less anxious about speaking. The researchers believed that the use of Duolingo's technological ability to recognize speech and repeated practice in speaking tasks helped to reduce language anxiety and create a low-pressure environment for students to practice speaking. The results observed by Chen and Hsu's research agree with Krashen's (1982) Affective Filter Hypothesis, which states that students are better able to learn a language when there is a reduction in their language-related anxiety.

Research done in Arab EFL context has similarly demonstrated the pedagogical and motivational benefits of Duolingo. For example, a study conducted by Alshammari (2023) examined the experience of Saudi EFL learners using Duolingo and reported that their language achievement and motivation to learn increased significantly after using Duolingo. Learners participating in the study expressed favorable attitudes toward the gamification features of the app, immediate feedback provided after completing tasks, and the app's flexibility, all of which encouraged frequent usage of the application. Additionally, learners noted that their willingness to use English in a spoken context increased after using Duolingo. This supports the idea that Duolingo may provide indirect support for learners developing speaking skills through improved motivation and confidence.

Longitudinal studies have also demonstrated that Duolingo can play a significant role in the development of learners' productive skills. Zheng et al. (2023) examined sustained use of Duolingo among learners over an extended period and found gradual improvement in learners' productive language skills, including speaking fluency. It was concluded from this research that consistent speaking practice using Duolingo could complement traditional classroom instruction and provide learners with opportunities for long-term language improvement.

In spite of these positive findings, recent research has revealed several limitations to using Duolingo as a language learning application. Loewen and Isbell (2022) argue that while Duolingo provides learners with controlled practice, it does not provide opportunities for authentic interactions or spontaneous communication. Therefore, without an integrated or broader pedagogical framework in place, Duolingo may not adequately develop higher-level communicative competence. Many scholars have stressed that Duolingo should be viewed as a complementary resource for blended learning and not as a replacement for communicative language instruction in the traditional classroom (Burston, 2014).

Previous studies on Duolingo indicate that this mobile-assisted language learning application supports language development, encourages learners to be autonomous and motivated across different EFL contexts. Despite these findings, researchers continue to focus primarily on vocabulary, grammar, pronunciation, or learner perceptions, instead of the measurement of actual improvements in speaking performance using experimental designs. In addition, relatively few studies have been conducted in the Jordanian EFL contexts.

Even though there are a number of international studies that have been conducted on Duolingo, there remains a significant need for empirical studies to examine Duolingo's ability to foster speaking skills as well as motivation among Jordanian EFL learners. The goal of this study is to address this gap in research by providing an experimental assessment of the effectiveness of Duolingo compared with traditional teaching methods on the development of speaking skills and learner motivation.

3. Methodology

3.1 Research Design

A quasi-experimental research design was used to examine the effectiveness of using Duolingo to improve speaking skills of Jordanian EFL students and to investigate its effect on learner motivation. This design was chosen to investigate the effectiveness of this teaching intervention as it makes it possible to compare learning outcomes among several groups while maintaining a natural classroom context (Creswell, 2014). To examine the efficacy of this instructional intervention, a quasi-experimental research design was an appropriate choice because it could be used to compare educational outcomes across multiple groups and maintain a natural classroom environment (Creswell, 2014). The study used a pre-test and post-test design to evaluate changes in participants' speaking performance.

There were two groups of participants enrolled in this research study: an experimental group and a control group. Participants in the experimental group received conventional EFL instruction supplemented with the Duolingo application while participants in the control

group were taught using conventional EFL instruction without mobile-assisted language learning (MALL). Participants in both groups were provided with identical instructional materials throughout the experiment, ensuring that both groups were consistently exposed to the same instructional content with the only variation being the use of the Duolingo application by the experimental group.

3.2 Participants

The participants in this study consisted of 50 Jordanian English as Foreign Language (EFL) learners enrolled in an oral skills course during the first semester of the 2025-2026 academic year. Using convenience-sampling methods, the sample included only students who were easily accessible to the researcher. The overall sample of 50 students was randomly divided into two equal groups: the experimental group consisted of 25 students; the control group included 25 students.

The two groups of students were comparable to each another based on age, education level, and English proficiency levels. To determine whether there were any statistical differences between the two study groups, a pre-test on speaking skills was conducted prior to the intervention. An independent samples t-test was conducted to compare the pre-test scores of the two groups. The results revealed no statistically significant differences between the experimental group ($M = 12.45$, $SD = 2.31$) and the control group ($M = 12.18$, $SD = 2.27$), $t(38) = 0.37$, $p = .71$. Thus, this finding suggested that the two groups were equivalent in their speaking ability prior to the experiment, thereby adding support to the internal validity of the present study.

3.3 Instruments

3.3.1 Speaking Skills Test

A speaking skills test was utilized as a pre/post assessment to measure the speaking performance of the students. The test was created to assess the following four aspects of the students' speaking proficiency: pronunciation, fluency, vocabulary, and grammatical accuracy. For the test, the students completed structured speaking activities according to their speaking proficiency level aligned with course goals.

The speaking rubric is based on commonly used EFL speaking assessment criteria. The rubric provides consistent descriptors for the four components of speaking performance to ensure the scores given to the students are consistent and objective.

To ensure the inter-rater reliability of the assessments, two trained EFL raters assessed each student independently. The scores assigned by the two raters were then compared and the inter-rater reliability was calculated using a correlation analysis. The results of the correlation analysis suggested a high level of inter-rater agreement, indicating that the speaking assessment was a reliable means of assessing students' speaking proficiency.

3.3.2 Motivation Questionnaire

As a means to determine how much learners were motivated to learn English and their willingness to utilize technology -assisted language learning, the study also employed a motivation questionnaire. This questionnaire consisted of items in the form of a 5-point Likert scale ranging from strongly disagree to strongly agree. It measured learners' interest in learning, engagement in the learning process, confidence in learning, and general attitudes towards mobile-assisted language learning.

EFL professionals reviewed the questionnaire to assess the content validity and clarity of items. Based on expert recommendations regarding how to improve the wording and relevance of items, minor revisions were made. Subsequently, a pilot study was conducted with 20 EFL students in order to measure the reliability of the questionnaire. The results of the analysis indicated that the Cronbach's alpha coefficient was equal to 0.84; therefore, it was concluded that the questionnaire had acceptable internal consistency and was appropriate for assessing learner motivation.

3.4 Procedure

During the initial stages of the study, both groups took the speaking pre-test and completed the motivation questionnaire. The experimental group was then exposed to the Duolingo application for the first time and trained to use it effectively as an optional supplementary learning source.

The experiment lasted for eight weeks, during which each participant in the experimental group regularly utilized the Duolingo app to perform speaking activities including but not limited to pronunciation exercises, repetition tasks, and interactive activities. The participants in the experimental group used the app to support their speaking practice both inside and outside the classroom. The control group continued to receive traditional classroom instruction via text-based activity, teacher instructions, and face-to-face speaking practice. After the experiment, both groups took the speaking post-test and completed the motivation questionnaire a second time. The scores from the post-test were compared to the scores from the pre-test to evaluate changes in speaking performance and learner motivation.

3.5 Validity and Reliability

Several measures were developed to ensure the validity and reliability of the research. Internal validity was enhanced by having a control group, using a pre-test/post-test design, and providing both groups with identical instructional content. Using standardized instruments, and consistent scoring criteria, assisted in adding methodological strength to the study.

The content validity of the instruments was established through expert evaluation. The reliability of the two instruments was established by means of inter-rater reliability for the speaking test and by conducting internal consistency reliability analysis on the motivation questionnaire. All of these methods supported the trustworthiness of the data collected in terms of accuracy and consistency.

3.6 Ethical Considerations

Ethical issues were carefully addressed throughout the research. Participation in this study was voluntary, and each learner was aware of the purpose of this research before data collection began. Informed consent was obtained from learners prior to their participation in the study; their identity was kept confidential. In addition, they were assured that their course grades would not be affected by either their performance or participation in the study. They were informed that they could withdraw from the study at any time.

3.7 Data Analysis

Appropriate statistical tests were utilized to analyze the collected data. Descriptive statistics such as mean and standard deviation were calculated to describe learners' speaking performance and motivation. A paired samples t-test was used to evaluate differences between pre-test and post-test scores within the same group of learners, while an independent samples t-test was used to compare the performance of the experimental and control groups. The significance level was set at $p \leq .05$.

4. Results

4.1 Descriptive Statistics of Speaking Test Scores

To investigate the impact of Duolingo on learners' speaking proficiency, descriptive statistics were calculated for both the experimental, control groups in the pre-test, and post-test. Table 1 shows the means and standard deviations for the overall and individual speaking skill scores of both groups.

Table 1. Descriptive Statistics for Overall and Individual Speaking Skill Scores

Speaking Measure	Group	Pre-test M (SD)	Post-test M (SD)	t	p
Overall Speaking Score	Experimental	12.45 (2.31)	18.45 (2.12)	3.52	.001
	Control	12.18 (2.27)	15.67 (2.34)		
Pronunciation	Experimental	2.41 (0.61)	4.12 (0.54)	2.87	.007
	Control	2.38 (0.58)	3.45 (0.63)		
Fluency	Experimental	2.53 (0.57)	4.35 (0.49)	3.11	.003
	Control	2.49 (0.60)	3.61 (0.58)		
Vocabulary	Experimental	2.47 (0.63)	4.01 (0.55)	2.45	.018
	Control	2.43 (0.59)	3.52 (0.61)		
Grammar	Experimental	2.50 (0.60)	3.95 (0.57)	2.22	.031
	Control	2.44 (0.62)	3.40 (0.66)		
Comprehension	Experimental	2.54 (0.56)	4.28 (0.50)	2.94	.005
	Control	2.44 (0.58)	3.66 (0.60)		

Note. The total speaking test score was calculated out of 25 points. M = Mean; SD = Standard Deviation.

Table 1 summarizes the pre-test and post-test results for overall and individual speaking skill scores of the experimental and control groups. The pre-test results showed that the two groups were comparable in speaking proficiency prior to the intervention. However, the post-test findings showed that the experimental group achieved significantly higher scores than the control group across the various speaking skills, suggesting a positive effect of the intervention on learners' speaking proficiency.

4.2 The Effect of Duolingo on Speaking Skills

To determine whether the differences between the two groups were statistically significant, paired-samples and independent-samples t-tests were conducted. The results of the paired-samples t-tests and effect sizes for both groups were displayed in Table 2. The results demonstrated that the experimental group significantly improved their speaking skills after utilising Duolingo compared to the control sample who did not significantly improve in their speaking skills. Additionally, the independent-samples t-test indicated statistically significant differences in post-test mean scores between the experimental and control groups. Lastly, effect size analysis indicated a significant effect of Duolingo on developing learners' speaking skills.

Table 2 presents the results of paired-samples t-test and effect sizes for both groups. The findings revealed that the experimental group demonstrated a statistically significant improvement in speaking proficiency after using Duolingo, whereas the control group showed only a statistically non-significant improvement. Furthermore, the independent-samples t-test indicated a statistically significant difference between the post-test mean scores of the experimental and control groups. The effect size analysis revealed a substantial impact of Duolingo on learners' speaking proficiency.

Table 2. Paired-Samples t-Test Results and Effect Sizes for Pre-test and Post-test Speaking Scores

Group	Pre-test M (SD)	Post-test M (SD)	Mean Difference	t	df	p	Cohen's d	Effect Size
Experimental	12.45 (2.31)	18.45 (2.12)	6.00	8.27	24	.001	1.20	Large
Control	12.18 (2.27)	15.67 (2.34)	3.49	1.42	24	.167	0.32	Small

Note. M = Mean; SD = Standard Deviation.

These results suggest that learners who used Duolingo significantly outperformed those who received traditional instruction only in terms of speaking proficiency. The statistically significant differences and the large effect size indicate that Duolingo had a substantial positive

effect on learners' speaking skills.

4.3 Motivation Questionnaire Results

The researcher used a motivation questionnaire administered before and after the intervention to investigate learners' motivation toward using Duolingo. Table 3 presents the means and standard deviations for all questionnaire items.

Table 3. Means and Standard Deviations of Motivation Questionnaire Items before and after the Intervention

Item	Pre-test M (SD)	Post-test M (SD)
Duolingo increased my motivation to learn English.	3.12 (0.74)	4.41 (0.51)
I felt more confident speaking English after using Duolingo.	3.05 (0.81)	4.53 (0.49)
Duolingo made speaking practice enjoyable.	3.27 (0.69)	4.62 (0.44)
Duolingo reduced my anxiety while speaking English.	2.98 (0.77)	4.36 (0.58)
I was more willing to participate in speaking activities.	3.10 (0.72)	4.47 (0.50)
Overall Mean	3.10 (0.75)	4.48 (0.50)

Table 3 shows improvements in learners' responses to the questionnaire items following the intervention. The highest post-test mean was associated with learners' enjoyment of speaking practice through Duolingo, suggesting that the application contributed to an engaging learning environment. Additionally, learners reported greater willingness to participate in speaking activities and increased confidence in speaking. The findings also suggest that Duolingo may have helped reduce speaking anxiety and positively influenced learners' motivation to speak English.

The t-tests of both paired-samples and independent-samples were conducted in order to verify whether the differences obtained in the questionnaire scores are statistically significant. The results of these analyses are presented in Table 4.

Table 4. Paired-Samples and Independent-Samples t-Test Results for Motivation Questionnaire Scores

Analysis	Group	Pre-test M (SD)	Post-test M (SD)	t	df	p
Paired-samples t-test	Experimental	3.10 (0.75)	4.48 (0.50)	9.42	24	.001
Paired-samples t-test	Control	3.08 (0.71)	3.41 (0.62)	1.87	24	.067
Independent-samples t-test	Experimental vs. Control	—	—	5.37	48	.001

The paired-samples t-test results revealed a statistically significant improvement in the experimental group's questionnaire scores after the intervention, whereas the control group showed no statistically significant differences. An independent-samples t-test was conducted to further compare the experimental and control groups on their post-intervention questionnaire scores, revealing there was a statistically significant difference between the two groups, indicating that Duolingo had a positive impact on learners' motivation and attitudes towards learning and speaking English.

These results suggest a positive impact of using the Duolingo app on the speaking proficiency of Arabic-speaking EFL learners. Compared to the control group, the participants in the experimental group showed a significant improvement in speaking performance. In addition to improving speaking proficiency, students' motivation to learn and speak English improved with use of the Duolingo app.

5. Discussion

The present study evaluated whether the Duolingo app improved the speaking ability of Jordanian EFL learners, as well as whether there were motivational differences between the experimental and control groups. Results indicated that students who used Duolingo as a supplementary resource outperformed students who received only traditional instruction in speaking performance. Furthermore, the experimental group reported increased motivation to learn English compared to the control group. These results add to the literature on MALL and provide empirical evidence on the use of mobile applications in EFL environments.

5.1 Duolingo and the Development of Speaking Skills

Given the significant improvement in the speaking proficiency of the experimental group, the findings support the effectiveness of Duolingo in facilitating oral skills development alongside EFL classroom instruction. The experimental group learners demonstrated significant improvement in all of speaking skills (i.e., pronunciation, fluency, etc.,) when compared to the control group. The large effect size indicates that the improvement in speaking performance within the experimental group was not only statistically significant but also meaningful to the learner's educational experiences.

Theoretically, Krashen's Input Hypothesis and Affective Filter Hypothesis (Krashen, 1982) can help explain the findings. Duolingo allows learners to receive graded, comprehensible input through short, structured activities that correspond to their proficiency level (Krashen, 1982). Furthermore, Duolingo's non-threatening environment fosters an ideal environment for learners to practice speaking without fear of negative evaluation (i.e., lower anxiety reduces learners' affective filters and thus leads to increased language acquisition and greater willingness to practice).

In addition, the results of the study support behaviorist-learning principles, in particular, Skinner's (1957) emphasis on repeated oral practice through repetition activities and immediate feedback. Frequent practice, along with immediate corrective feedback, is necessary for developing speaking skills, as developing oral proficiency also requires the automatization and the rapid retrieval of language forms (Goh & Burns, 2012).

The results also highlight the interactionist perspective of language acquisition, which emphasizes the role of output and feedback in

developing communicative competence (Long, 1996; Swain, 2005). Even though Duolingo does not provide learners with fully authentic interaction, it requires learners to produce output via speaking and receive feedback on their output on a regular basis. As a result, this ongoing process may have assisted learners in identifying gaps in their interlanguage and improving their oral production over time.

Moreover, the slight improvement exhibited by the learners in the control group highlights the limitations of traditional EFL instruction in developing speaking proficiency. The learners in the control group received identical curriculum content; however, they exhibited very little improvement, which was not statistically significant. The results of this study support previous research findings that traditional EFL instruction is frequently teacher-centered and does not typically offer learners sufficient opportunities for meaningful speaking practice, especially in large EFL classrooms (Goh & Burns, 2012; Richards, 2008).

5.2 Comparison with Previous Studies

Recent research supports the benefits of Duolingo when used as a supplement to classroom-based instruction for language learners. Vesselinov and Grego (2012) found that Duolingo produced language gains equivalent to those of formal, face-to-face university instruction. Multiple studies, including Loewen et al. (2019), indicated that users of Duolingo showed substantial improvements in vocabulary and reading skills. The current findings of this research expand upon existing literature confirming that Duolingo is successful at facilitating the improvement of speaking skills. These findings support current research that shows mobile-assisted and gamified language learning applications can improve learners' oral proficiency, increase learners' engagement, and increase learners' confidence in EFL environments (Kazu & Kuvvetli, 2024; Ouyang et al., 2024; Putra et al., 2026).

Because the current study focuses on EFL learners, the findings align with prior research in Arabic and Asian contexts. For example, Ahmed (2016) and Almulhim (2021) reported positive attitudes and improved performance among Saudi EFL learners who used Duolingo for language learning. Similarly, Kim and Kim (2017) found improvements in pronunciation accuracy and speaking confidence for EFL learners who used mobile applications. Therefore, the present study on Jordanian EFL learners adds to the existing literature by providing regional evidence of the effectiveness of Duolingo.

The present study's findings also corroborate other researchers who caution against using Duolingo as the only method of instruction (Burston, 2014; Loewen et al., 2019). According to Burston and Loewen et al., the opportunities Duolingo provides for spontaneous interaction and communicative meaning negotiation are limited. Therefore, while Duolingo provides controlled speaking practice, it is necessary to combine Duolingo with more communicative classroom activities to improve learners' overall oral proficiency.

5.3 The Effect of Duolingo on Learner Motivation

Another important outcome of this research is the increased motivation of learners within the experimental group. This indicates that affective factors are crucial in foreign language learning, and supports the idea that features of mobile apps enhance learner motivation through engaging designs and increased learner autonomy.

The motivation associated with Duolingo can best be explained using self-determination theory (Deci & Ryan, 2000), which identifies autonomy, competence, and relatedness as the three basic principles that foster intrinsic motivation. Duolingo, allows learners to control the pace and timing of their learning, thereby strengthening a sense of autonomy. Gamification features of Duolingo (points, levels and rewards) increase learners enjoyment and engagement. The feedback and progress indicators that the learners receive on a regular basis also help learners feel competent.

The results of this study also support Dörnyei's (2001) model of motivation as it relates to learner engagement and positive attitudes, which help learners to be successful in a language. Increased motivation may have caused behavioral changes among learners through more frequent and consistent practice, and may have subsequently contributed to improvements in speaking proficiency. The relationship between motivation and language development is another reason why EFL instructors should consider motivation when addressing both cognitive and emotional aspects of language learning.

The absence of a significant increase in motivation among students in the control group indicates that conventional teaching methods may not meet the motivational needs of all learners. When learners do not use cooperative or specialized practice strategies, they often see language learning as monotonous and test-oriented; thus, they are not engaged in English learning or motivated to practice speaking.

5.4. Pedagogical Implications for the Jordanian EFL Context

This research has numerous pedagogical implications for improving EFL instructional practices in Jordan. As a result of the increased availability of mobile devices like smartphones for students, there is an opportunity to extend EFL learning through the inclusion of mobile applications such as Duolingo. Opportunities to practice speaking outside of the EFL classroom will benefit learners, especially in contexts with limited exposure to English.

Using a blended instructional model will allow teachers to use mobile-assisted learning tools such as Duolingo to support traditional classroom instruction. Teachers can utilize Duolingo in class to assist in practicing pronunciation, reinforcing vocabulary, and encouraging learner engagement, while incorporating further communicative activities and meaningful language use into the classroom. The integration of classroom and mobile-assisted learning tools may assist in bridging the gap between instructional goals and learners' actual performance.

The successful use of technology in the classroom requires effective teacher support and pedagogical planning. Introducing technology

into the classroom without clearly defined instructional objectives may result in ineffective learning. EFL teacher training and curriculum should be aligned with the instructional goals in order to maximize the effectiveness of mobile-assisted learning.

6. Conclusion

The purpose of this study was to investigate the effectiveness of the Duolingo application in improving the speaking proficiency of Jordanian EFL learners and to investigate whether it had a positive effect on learners' motivation. The results of this study provide empirical evidence that using Duolingo as a supplementary tool enhanced learners' speaking performance and their motivation compared to traditional methods of instruction. The findings of the study indicate that users of Duolingo improved significantly in their speaking abilities (especially pronunciation, fluency) compared to those who received only traditional classroom instruction. The study indicates that mobile-assisted learning applications such as Duolingo can provide learners with additional flexible and low-pressure practice opportunities to overcome some limitations of traditional EFL instruction. In addition, this study showed that the use of Duolingo significantly and positively influenced learners' motivation. The rewards, instant feedback, and progress-tracking features within Duolingo appear to have increased learners engagement and willingness to participate in language learning activities. Higher motivation levels may have contributed to better speaking performance among learners, which reinforces the relationship between affective factors and language skill improvement. The findings of this study have significant implications for EFL education in Jordan and similar contexts. Mobile apps such as Duolingo should be used to support EFL teachers in their teaching instruction. However, mobile apps should not replace the in-person instruction that is provided by EFL teachers, but only serve as an additional tool to support EFL teachers in conducting communicative classroom activities. There are certain limitations to this study, including its relatively short duration and reliance on quantitative data. Future research should examine the long-term impact of Duolingo on speaking skills development. Additionally, using qualitative methods would allow researchers to have a better understanding of the overall experiences of language learners. Conducting similar studies across different types of educational systems strengthens the generalizability of the study's findings. In conclusion, the Duolingo application is an effective mobile tool that can improve speaking proficiency and learner motivation of Jordanian EFL learners. The integration of mobile technology in EFL classrooms can provide a more dynamic, student-centered, and more effective language instruction.

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