

Research Articles

Boosting English Vocabulary Acquisition through Daily Duolingo Practice: A Pre-Experimental Study on Pharmacy Students

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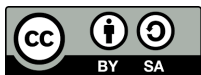
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Abstract: Education involves acquiring knowledge and skills, with English learning being a skill-based process that requires consistent and engaging practice. In the digital era, mobile applications have emerged as effective tools to overcome traditional limitations in language learning. This study investigates the effectiveness of the Duolingo application in enhancing English vocabulary among university students. A pre-experimental one-group pretest-posttest design was employed involving 40 first-semester Pharmacy students at Anwar Medika University. Participants engaged in daily Duolingo practice (20 XP per day) for 30 consecutive days. Data were collected through vocabulary pretest and posttest as well as a Likert-scale questionnaire. Quantitative analysis revealed a significant improvement in vocabulary scores, with the mean score increasing from 57.25 in the pretest to 81.70 in the posttest. Questionnaire results indicated high student motivation, positive perceptions of the app's usefulness and ease of use, and minimal perceived disadvantages. The findings suggest that daily Duolingo practice is an effective, engaging, and accessible method for boosting English vocabulary acquisition. This study provides practical insights for educators seeking innovative technology-integrated approaches to language teaching.

Keywords: Duolingo; English Language Learning; Mobile-Assisted Language Learning; Pre-Experimental Design; Vocabulary Acquisition.

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1. Introduction

Vocabulary is a fundamental component of English language learning and plays a crucial role in developing learners' overall proficiency. It is closely interconnected with the four primary language skills listening, speaking, reading, and writing. Without sufficient vocabulary knowledge, learners may struggle to comprehend input and express ideas effectively. As Jack C. Richards and Renandya (2002) emphasize, vocabulary is central to language proficiency, as it significantly influences how well learners can communicate in both spoken and written forms.

A limited vocabulary can hinder students from benefiting from authentic language exposure, such as listening to English media, interacting with native speakers, or engaging with written texts. Therefore, vocabulary acquisition should be a primary focus in English language instruction. Teachers play a vital role in facilitating vocabulary development by employing creative strategies and utilizing engaging learning media. However, despite the integration of various instructional tools, vocabulary learning is sometimes not given sufficient emphasis in classroom practices.

With the advancement of technology, digital tools have become increasingly prominent in language learning. One such innovation is mobile-assisted language learning (MALL), which allows learners to study anytime and anywhere using mobile devices. Among the widely used applications is Duolingo, a free language-learning platform available on smartphones. According to its official mission, Duolingo aims to provide accessible education worldwide and reduce language barriers by offering free language instruction (Duolingo, n.d.).

Duolingo offers various languages, including English, Arabic, Spanish, French, and others, and incorporates features such as gamification, progress tracking, and interactive exercises. These elements include points, daily streaks, levels, and skill trees that motivate learners to remain consistent in their studies. The platform also provides a user-friendly interface suitable for learners of different age groups. Research by Philip Munday (2016) suggests that students often find Duolingo more engaging than traditional assignments due to its accessibility and interactive design. Furthermore, a study by Roumen Vesselinov & John Grego (2012) revealed that learners generally report positive experiences and satisfaction when using the application.

Given these advantages, Duolingo has the potential to enhance vocabulary acquisition, particularly among non-English major students. Therefore, this study aims to investigate the effectiveness of Duolingo in improving vocabulary mastery among second-semester students at Anwar Medika University, while also fostering learners' motivation and engagement in English learning..

2. Literature Review

Vocabulary knowledge is widely recognized as a key determinant of language proficiency. Learners with a rich vocabulary are better equipped to understand spoken and written texts and to communicate their ideas clearly. According to Richards and Renandya (2002), vocabulary serves as the foundation for language use, and insufficient vocabulary knowledge can limit both comprehension and production. Similarly, Ajisoko (2020) highlights that vocabulary mastery significantly contributes to learners' success in acquiring English as a foreign language.

Without adequate vocabulary, students may face difficulties in interpreting meaning, constructing sentences, and participating in communication. Therefore, vocabulary acquisition should be systematically integrated into language learning to support overall linguistic competence..

The integration of mobile technology into language learning has transformed traditional instructional approaches. Mobile-Assisted Language Learning (MALL) enables learners to access learning materials anytime and anywhere, providing flexibility and autonomy in the learning process (García Botero et al., 2019).

One of the key features of MALL applications is gamification, which involves the use of game-like elements such as rewards, points, levels, and instant feedback to enhance learner motivation. Studies have shown that gamification increases student engagement and encourages consistent learning behavior (Shortt et al., 2023; Nuraidayati, 2025).

Furthermore, mobile learning platforms support self-directed learning, allowing students to take control of their learning pace and progress. This approach is particularly beneficial in vocabulary learning, where repeated exposure and practice are essential for retention.

Duolingo is one of the most widely used MALL applications and has gained attention for its effectiveness in language learning. The application employs various pedagogical strategies, including spaced repetition, gamification, and bite-sized lessons, which are particularly effective for vocabulary acquisition (Munday, 2016; Smith et al., 2024).

Several studies have demonstrated the positive impact of Duolingo on vocabulary learning. For instance, Ajisoko (2020) found that the use of Duolingo significantly improved students' vocabulary mastery. Similarly, Ramdhani (2025) and Zainudin et al. (2025) reported notable improvements in learners' vocabulary skills after consistent use of the application.

In addition, learners' perceptions of Duolingo are generally positive. Apoko (2023) and Sakkir (2023) revealed that students perceive Duolingo as an engaging and effective learning tool. The combination of interactive exercises, immediate feedback, and motivational features contributes to higher learner satisfaction and sustained engagement.

Building upon previous studies, the present research focuses on implementing a structured learning approach using Duolingo, including a fixed daily XP target. It also specifically targets Pharmacy students, who are non-English majors, to examine how digital tools can support vocabulary development in specialized academic contexts.)

3. Method

This study adopted a pre-experimental design featuring a one-group pre-test and post-test. The participants were 40 first-semester students from the 2025/2026 academic year in the Bachelor of Pharmacy Department at Anwar Medika University. They were required to use the Duolingo app daily, earning 20 XP per day, for 30 consecutive days after completing their campus classes. Vocabulary mastery was assessed through a pre-test administered before the treatment began. An increase in post-test scores compared to pre-test scores would indicate vocabulary improvement and confirm the effectiveness of Duolingo as a tool for teaching vocabulary.

Two main instruments were employed: tests and a questionnaire. The tests consisted of a pre-test and a post-test, each containing 25 questions on basic vocabulary. The pre-test evaluated initial vocabulary knowledge, while the post-test, conducted after the 30-day treatment, measured progress. By comparing the results of both tests, the study examined the impact of Duolingo on students' vocabulary development.

The questionnaire aimed to capture students' perceptions of Duolingo after the treatment. It was a closed-ended instrument using a Likert scale, comprising 12 items that explored students' interest, as well as the perceived advantages and disadvantages of the app. The questionnaire was distributed and completed during the final session.

4. Results and Discussion

Result of pre-test and post-test

For both the pre-test and post-test, students were required to answer questions assessing their English vocabulary proficiency. Although the question types were identical in both tests, the specific items differed to prevent memorization effects. The scores from the pre-test and post-test are presented in Table 1

Table 1. Learners' Score.

No.	Student's Initial	Pre-test	Post-test
1.	FIJ	58	72
2.	AF	64	88
3.	NM	52	76
4.	RHLS	70	90
5.	PD	46	84
6.	NPA	62	68
7.	NPAZ	68	92
8.	AAA	54	80
9.	HR	60	86
10.	NLDA	44	74
11.	PRAM	72	94
12.	R	56	82
13.	KN	66	78
14.	VAN	48	88
15.	RAIC	52	70
16.	ZNIP	60	84
17.	KZ	42	90
18.	SRM	70	76
19.	ZF	58	92
20.	MT	64	72
21.	CWJ	54	86
22.	EAAS	66	80
23.	KAAZ	56	68
24.	AR	68	94

25.	CFD	62	74
26.	ASER	50	82
27.	MH	40	88
28.	BSA	70	78
29.	ZAP	48	90
30.	NEAS	52	84
31.	DNEC	44	70
32.	ADM	58	92
33.	ASM	66	76
34.	RA	54	86
35.	QJCN	60	80
36.	DM	42	68
37.	III	56	94
38.	EA	64	82
39.	IR	46	72
40.	DLA	68	88

Referring to the data presented in Table 1, the pre-test results indicate that learners' initial ability was relatively limited. The highest pre-test score achieved was 72, while the lowest score was 40. Only one learner reached the maximum score, and the majority of learners did not meet the minimum achievement standard. After calculating all pre-test scores, the average score was found to be 57.25. This result suggests that learners generally demonstrated low proficiency before the instructional treatment was implemented.

In contrast, the post-test results show a noticeable improvement in learners' performance. The highest post-test score increased to 94, whereas the lowest score rose to 68. Three learners attained the maximum score, and all learners successfully exceeded the minimum criterion. The calculated mean score of the post-test was 81.70, indicating a marked enhancement in overall learning outcomes.

When comparing the pre-test and post-test results, it is evident that learners experienced a significant improvement in their academic achievement. The considerable increase in the mean score from 57.25 in the pre-test to 81.70 in the post-test demonstrates that the applied instructional strategy effectively supported learners' progress and contributed positively to their learning performance.

Result of Questionnaire

A questionnaire was administered to collect data on learners' perceptions of using Duolingo as a tool for extensive vocabulary learning. The instrument consisted of twelve items. The results are presented and explained in the following figures along with their corresponding descriptions.

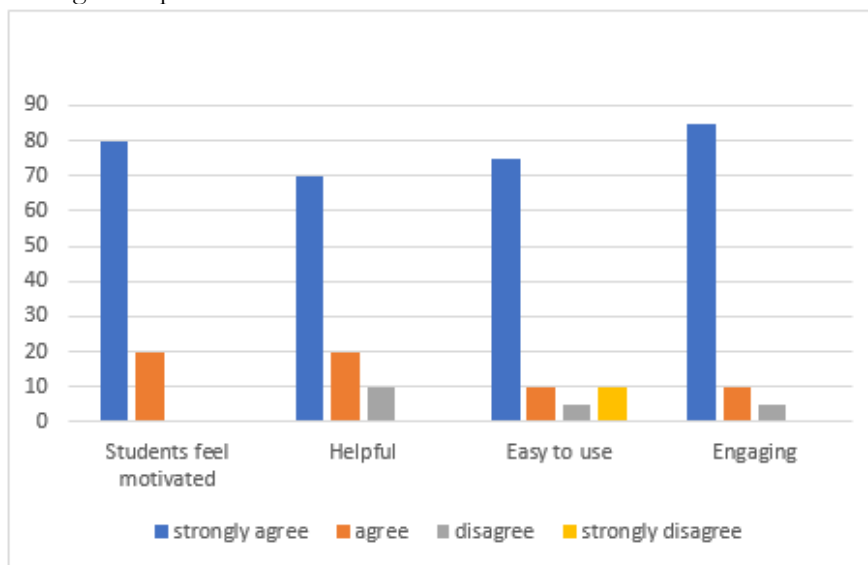


Figure 1. Students' Interest in Using Duolingo.

Based on the data presented above, the learners demonstrated a strong positive interest in using Duolingo for vocabulary learning. A large proportion of students strongly agreed that Duolingo motivated them (80%) and made learning engaging (85%), while the remaining learners agreed with these statements. Regarding usefulness, 70% of learners strongly agreed and 20% agreed that Duolingo was helpful, although a small percentage (10%) expressed disagreement. In terms of ease of use, most learners responded positively, with 75% strongly agreeing and 10% agreeing, while only a few learners showed disagreement or strong disagreement. Overall, the findings indicate that Duolingo effectively motivates learners, supports vocabulary practice, and encourages active engagement in the learning process.

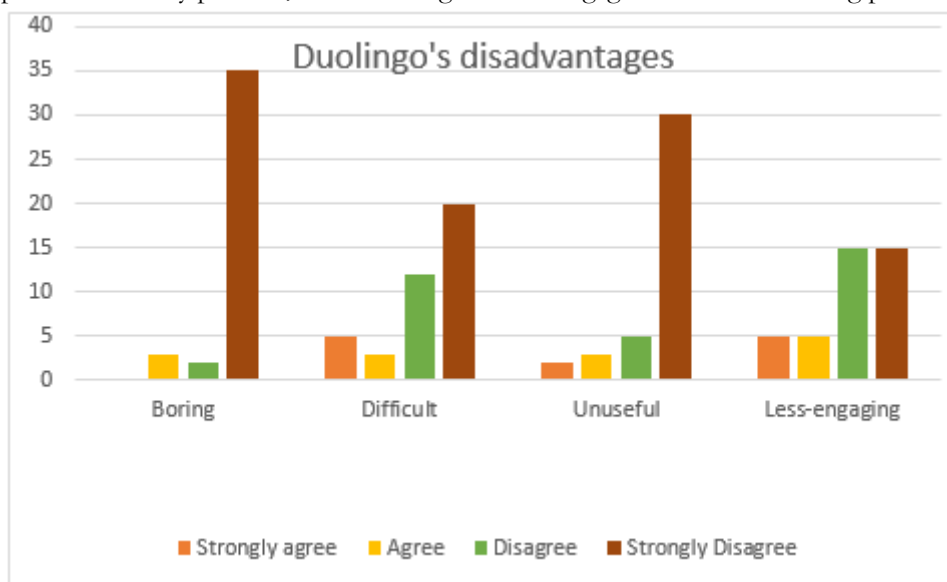


Figure 2. Duolingo's Disadvantages According to the Students.

The results indicate that learners generally did not perceive Duolingo as having significant disadvantages. Most learners strongly disagreed that Duolingo is boring (87.5%) or unuseful (75%). Half of the learners (50%) strongly disagreed that the application is difficult, while 30% disagreed. Although some learners (25%) considered Duolingo less engaging, the majority (75%) expressed disagreement. Overall, these findings suggest that Duolingo is positively received and does not present major obstacles for vocabulary learning.

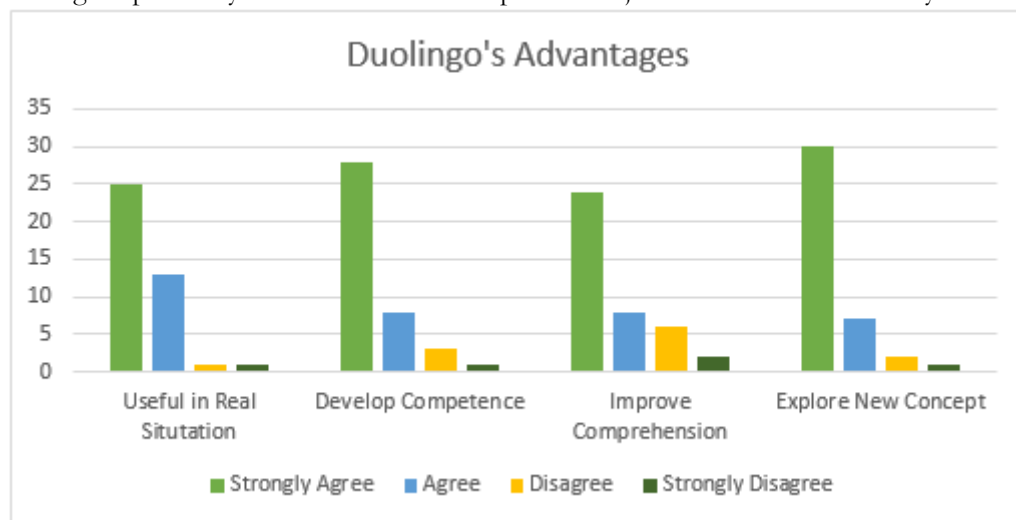


Figure 3. Duolingo's Advantages According to the Students.

The questionnaire results indicated strong positive perceptions among the students toward Duolingo's advantages in vocabulary learning. Approximately 89% of the learners strongly agreed and 10% agreed that Duolingo provides significant benefits for learning vocabulary. The majority of participants reported that the app effectively helps them explore new concepts, improve comprehension, build vocabulary mastery, and apply the language in

practical situations. Only about 1% expressed disagreement on certain aspects. These responses demonstrate that Duolingo successfully supports students in better understanding and actively practicing their English vocabulary.

The results of this study showed that almost every student achieved a markedly higher score on the post-test compared to the pre-test. The post-test scores clearly reflected progress in the students' performance. Specifically, the average post-test score reached 81.70, which is substantially higher than the pre-test average of 57.25. This substantial increase indicates that the students' English vocabulary mastery improved considerably after using the app. Overall, the findings demonstrate a statistically and practically significant enhancement in vocabulary scores following the 30-day intensive use of Duolingo.

Responses from the questionnaire were overall positive. Students reported feeling more motivated to learn English, noting that their interest grew along with their confidence and skills. The students found the material easier to grasp and appreciated how Duolingo reduced boredom during study sessions. Many highlighted that the app encouraged creative thinking, helped them remember new words more effectively, allowed everyone equal opportunities to practice, and made it simpler to apply vocabulary in everyday situations.

5. Conclusion

In this era of advancement, English teachers need to integrate technology into language instruction. Since most students already own smartphones and use them to access information, educators should adapt their teaching methods to incorporate modern tools in the simplest and most practical ways possible. Duolingo stands out as one effective application that can significantly support English learning, particularly in building vocabulary.

The app proved to be a valuable tool for teaching and learning vocabulary. Students responded very positively to it, finding the content easy to follow and engaging. Duolingo gives every learner an equal chance to practice without feeling left out, helps reduce monotony during study sessions, and sparks fresh ideas and creativity in approaching language learning.

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