



A COMPARATIVE ANALYSIS OF DUOLINGO AND BABEL IN ENHANCING UNDERGRADUATE STUDENTS' LANGUAGE COMPREHENSION: A USES AND GRATIFICATIONS THEORY PERSPECTIVE

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Abstract

Mobile-Assisted Language Learning (MALL) transforms language learning by providing flexible and interactive learning opportunities through mobile applications. This study compares the effectiveness of two popular MALL applications, Duolingo and Babel, in enhancing undergraduate students' language comprehension. The study is based on the Uses and Gratifications Theory (UGT), which explains learners' preferences and app usage. A quantitative descriptive research design is adopted. Data is collected from 35 undergraduate students (17 males and 18 females) using a self-developed five-point Likert-scale questionnaire. Purposive sampling is used to select participants who actively use either Duolingo or Babel. The collected data is analyzed using percentage distributions and mean scores. The findings indicate that both applications positively contribute to language comprehension. Duolingo is perceived as more effective in increasing learner motivation, engagement, and flexible learning, whereas Babel is considered more effective in improving grammar, pronunciation, and structured language learning. The study concludes that both applications support language learning in different ways and that learners choose them according to their learning needs and preferences. These findings contribute to the growing body of research on Mobile-Assisted Language Learning and provide useful insights for students and educators.

Keywords: *Babel, Duolingo, Language Comprehension, Mobile-Assisted Language Learning (MALL), Uses and Gratifications Theory (UGT).*

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1. Introduction

Mobile-Assisted Language Learning (MALL), also known as mobile learning (M-learning), has become an important approach to language education in recent years. The rapid growth of smartphones, mobile applications, and digital technologies has changed the way people learn languages by providing flexible, accessible, and interactive learning opportunities (Kessler et al., 2025; Sapuan et al., 2024). Unlike traditional classroom learning, MALL allows learners to study anytime and anywhere, making language learning more convenient and learner-centered. Mobile applications also provide immediate feedback, personalized learning, and self-paced practice, which help learners improve their language skills more effectively (Dixon et al., 2022).

Among the many MALL applications available today, **Duolingo** and **Babbel** are two of the most widely used and researched language learning platforms (Curry, 2022). Both applications aim to improve language proficiency, but they use different instructional approaches. Duolingo focuses on gamification by using points, badges, daily goals, and interactive exercises to increase learner motivation and engagement (Jiang, 2024). In contrast, Babbel follows a more structured approach by offering lessons designed by language experts and aligned with the **Common European Framework of Reference for Languages (CEFR)**. Its lessons emphasize grammar, pronunciation, vocabulary, and real-life communication (De Oliveira et al., 2021).

Previous studies have reported positive effects of both applications on language learning. Kessler et al. (2025) found that both Duolingo and Babbel improve learners' reading, writing, listening, and speaking skills. However, their study also showed that Duolingo is more effective in promoting learner motivation and engagement, while Babbel provides stronger support for grammar and pronunciation. Similarly, Aliabedi et al. (2025) reported that Duolingo encourages self-directed learning and vocabulary development, whereas Babbel offers more systematic language instruction. These findings suggest that both applications are beneficial, but each supports different aspects of language learning.

The **Uses and Gratifications Theory (UGT)** provides a useful framework for understanding why learners choose particular language learning applications. According to UGT, individuals actively select media and technologies that satisfy their personal, educational, and motivational needs (Chen, 2018). In the context of language learning, some learners may prefer Duolingo because of its enjoyable and flexible learning experience, while others may choose Babbel for its structured lessons and focus on language accuracy. Therefore, UGT helps explain learners' preferences and their perceptions of the effectiveness of these applications.

Although previous research has examined the effectiveness of Duolingo and Babbel, most studies have focused on vocabulary learning, grammar improvement, learner motivation, or overall language proficiency (Kessler et al., 2025; Dixon et al., 2022).

Comparatively fewer studies have specifically investigated **language comprehension** among undergraduate students. In addition, limited research has compared these applications using the **Uses and Gratifications Theory (UGT)** to understand learners' perceptions and preferences.

Therefore, the present study compares the effectiveness of Duolingo and Babbel in improving undergraduate students' language comprehension. It also examines the relationship between app usage frequency and learners' perceived language comprehension using the Uses and Gratifications Theory (UGT). The findings of this study will contribute to the growing field of Mobile-Assisted Language Learning and provide useful insights for students, teachers, and researchers interested in technology-enhanced language education.

1.1. Research Objectives

1. To examine undergraduate students' perceptions of the effectiveness of Duolingo and Babbel in improving language comprehension.
2. To compare the effectiveness of Duolingo and Babbel in improving grammar, pronunciation, and language comprehension.

1.2. Research Questions

1. How do undergraduate students perceive the effectiveness of Duolingo and Babbel in improving language comprehension?
2. Which application is perceived to be more effective in improving grammar, pronunciation, and language comprehension?

1.3. Statement of the Problem

Language learning applications such as Duolingo and Babbel are widely used by undergraduate students to improve their language skills. However, it is still unclear which application is more effective in improving language comprehension. Since both applications use different teaching approaches, a comparative study is needed to understand their effectiveness in supporting undergraduate students' language comprehension.

1.4. Delimitations

The study is limited to undergraduate students who actively use Babbel or Duolingo. Other learners or those at different educational levels were excluded. The research focuses on perceived comprehension improvements through self-reported questionnaires, rather than objective proficiency tests. Consequently, generalization is limited to the specific context and sample of this academic term.

2. Literature Review

Mobile-Assisted Language Learning (MALL) has become one of the fastest-growing areas in language education, enabling learners to develop language skills through smartphones and digital applications. Researchers have widely acknowledged that mobile

learning provides flexibility, learner autonomy, immediate feedback, and increased accessibility, making language learning more engaging than traditional classroom instruction. Among numerous MALL applications, **Duolingo** and **Babbel** have received considerable academic attention because of their popularity and distinct instructional approaches.

Previous studies have consistently reported that **Duolingo** positively influences learner motivation, vocabulary acquisition, and engagement through its gamified learning environment. According to Jiang (2024), Duolingo encourages continuous practice by incorporating game-like features such as rewards, badges, and progress tracking, which increase learner motivation and support self-directed learning. Similarly, Aliabedi et al. (2025) found that Duolingo effectively improves vocabulary and grammar acquisition while promoting learner autonomy. However, these researchers also observed that the application's impact on pronunciation and advanced language proficiency is comparatively limited. These findings suggest that Duolingo is particularly effective in satisfying learners' motivational and affective needs rather than providing comprehensive linguistic instruction.

In contrast, previous research highlights **Babbel** as a more structured and academically oriented language learning application. Unlike Duolingo, Babbel emphasizes grammar instruction, pronunciation practice, and real-life conversational skills through lessons designed by language experts and aligned with the Common European Framework of Reference for Languages (CEFR). Studies have shown that Babbel provides systematic language progression and greater instructional depth, making it particularly suitable for learners seeking formal language development rather than purely motivational learning experiences. Although Babbel requires a paid subscription for full access, many learners perceive its structured lessons as beneficial for developing grammatical accuracy and communicative competence.

Several comparative studies have examined both applications simultaneously. Kessler, Loewen, and Gönülal (2025) compared Babbel and Duolingo using a mixed-method approach and reported that both applications significantly improved learners' language skills, including reading, writing, listening, and speaking. However, their findings indicated notable differences in learning experiences. While Duolingo was preferred because of its engaging and gamified design, Babbel demonstrated stronger relationships between study time and improvements in grammar and pronunciation. Likewise, user perception studies reported that learners appreciated Duolingo for its accessibility and enjoyable interface, whereas Babbel was valued for its instructional organization and language accuracy. These findings indicate that both applications contribute positively to language learning but satisfy different learner needs.

Despite these positive findings, previous research presents several contrasting perspectives. Some researchers argue that Duolingo's gamification significantly increases learner motivation and promotes regular practice, whereas others criticize its repetitive exercises and limited content for advanced learners. Similarly, Babbel has been praised for its structured curriculum and high-quality instructional content but criticized for subscription costs and comparatively lower motivational appeal. These contrasting findings demonstrate that neither application is universally superior. Instead, their effectiveness depends largely on learners' objectives, preferences, and learning contexts.

Most existing studies have focused on vocabulary acquisition, learner motivation, speaking skills, grammar improvement, or overall language proficiency. Comparatively fewer studies have specifically investigated **language comprehension** as the primary outcome variable, particularly among undergraduate students. Furthermore, although previous research has compared Babbel and Duolingo, limited quantitative research has examined how learners' perceptions of language comprehension relate to the frequency of application usage within the framework of the **Uses and Gratifications Theory (UGT)**. Consequently, important questions remain regarding why learners prefer one application over another and how these preferences influence perceived comprehension improvement.

The present study addresses these gaps by conducting a comparative quantitative analysis of undergraduate students who use Babbel and Duolingo. Unlike previous studies that primarily examined vocabulary development, learner satisfaction, or general language proficiency, this research specifically focuses on **language comprehension**. Moreover, it employs the **Uses and Gratifications Theory** to explain how learners actively select language learning applications according to their educational, motivational, and cognitive needs. By comparing both applications and examining the relationship between application usage frequency and perceived comprehension improvement, this study contributes additional evidence to the growing body of research on Mobile-Assisted Language Learning.

2.1. Research Gap

Previous studies have examined Duolingo and Babbel in terms of vocabulary, grammar, motivation, and overall language learning. However, few studies have compared these applications specifically for improving language comprehension among undergraduate students. Moreover, limited research has used the Uses and Gratifications Theory (UGT) to explain learners' perceptions and app preferences. Therefore, this study fills this gap by comparing Duolingo and Babbel from the perspective of undergraduate students' language comprehension.

3. Methodology

3.1. Research Design

This study employed a **quantitative descriptive research design** to examine undergraduate students' perceptions of the effectiveness of Duolingo and Babbel in improving language comprehension. A quantitative approach was chosen because it allows numerical data to be collected and analyzed systematically. The descriptive design helps describe and compare learners' perceptions without manipulating any variables. The study is guided by the **Uses and Gratifications Theory (UGT)**, which explains how learners actively choose language learning applications based on their educational and motivational needs.

3.2. Population and Sample

The population of this study consisted of undergraduate students who actively used **Duolingo** or **Babbel** for language learning. A purposive sampling technique was used to select participants because only students with experience using these applications were suitable for the study. The final sample included **35 undergraduate students**, comprising **17 male** and **18 female** participants.

3.3. Research Instrument

A self-developed structured questionnaire was used as the research instrument to collect data from the participants. The questionnaire was based on a **five-point Likert scale** consisting of **Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree**.

The questionnaire included two sections. The first section collected demographic information such as gender and the language learning application used by the participants. The second section consisted of statements related to language comprehension, grammar improvement, pronunciation, learner motivation, learning flexibility, lesson structure, practice opportunities, feedback, confidence in language use, and content suitability. The questionnaire was designed to compare undergraduate students' perceptions of the effectiveness of Duolingo and Babbel in improving language comprehension.

3.4. Data Collection Procedure

Data were collected through a questionnaire distributed to 35 undergraduate students who actively used Duolingo or Babbel. A purposive sampling technique was used to select participants with experience using these applications. Participation was voluntary, and respondents were informed about the purpose of the study. All responses were collected anonymously to ensure confidentiality and encourage honest answers. The completed questionnaires were checked, organized, and prepared for data analysis.

3.5. Data Analysis Technique

The collected data were analyzed using **descriptive statistics**. Percentage distributions were used to show the frequency of participants' responses for each questionnaire item, while **mean scores** were calculated to determine the overall level of agreement. The results were presented in tables and interpreted according to the objectives

of the study and the Uses and Gratifications Theory (UGT). Since the purpose of the study was to describe and compare learners' perceptions, no inferential statistical tests were used.

3.6. Ethical Considerations

Ethical principles were followed throughout the study. Participation was voluntary, and participants were informed about the purpose of the research before completing the questionnaire. Their responses were kept confidential, and no personal information was disclosed. The collected data were used only for academic purposes. Participants had the right to withdraw from the study at any stage without any consequences.

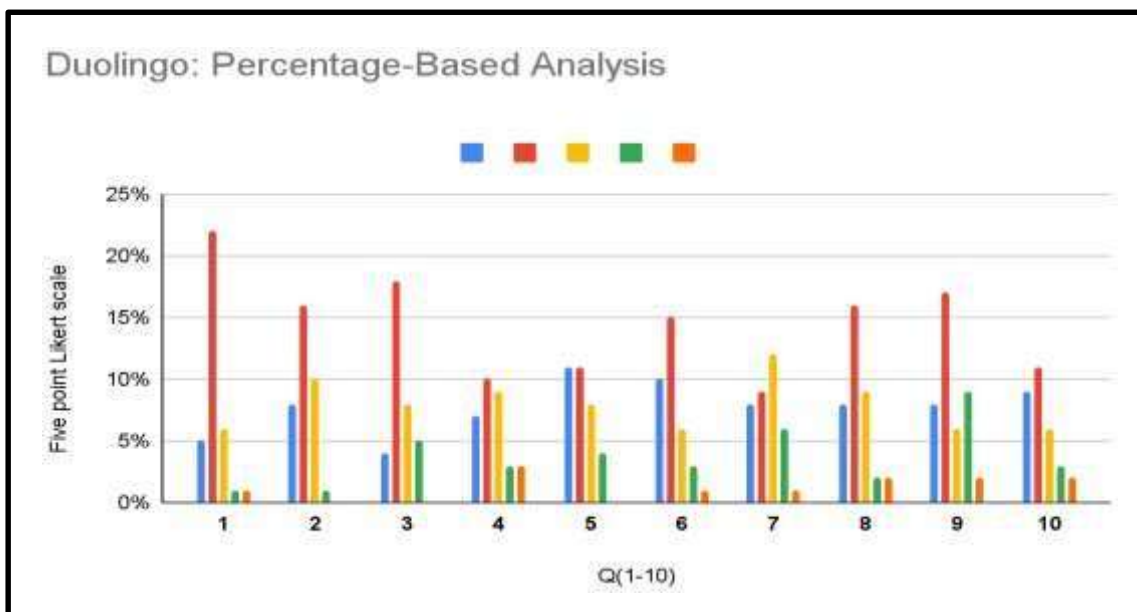
4. Data Collection and Data Analysis

A descriptive quantitative analysis of undergraduate students' opinions about Duolingo and Babbel's efficacy in enhancing language understanding is presented in this chapter. Mean scores and percentage distributions from Likert-scale questionnaire responses form the basis of the study. While mean scores provide an overview of the general tendency of replies for each statement, percentages enable comparison across items. Each item's Likert scale responses were transformed into percentage values, and mean scores were computed to show general trends in agreement. This methodology aligns with quantitative descriptive research based on the Uses and Gratifications Theory (UGT).

4.1. Duolingo: Percentage-Based Analysis and Mean Scores

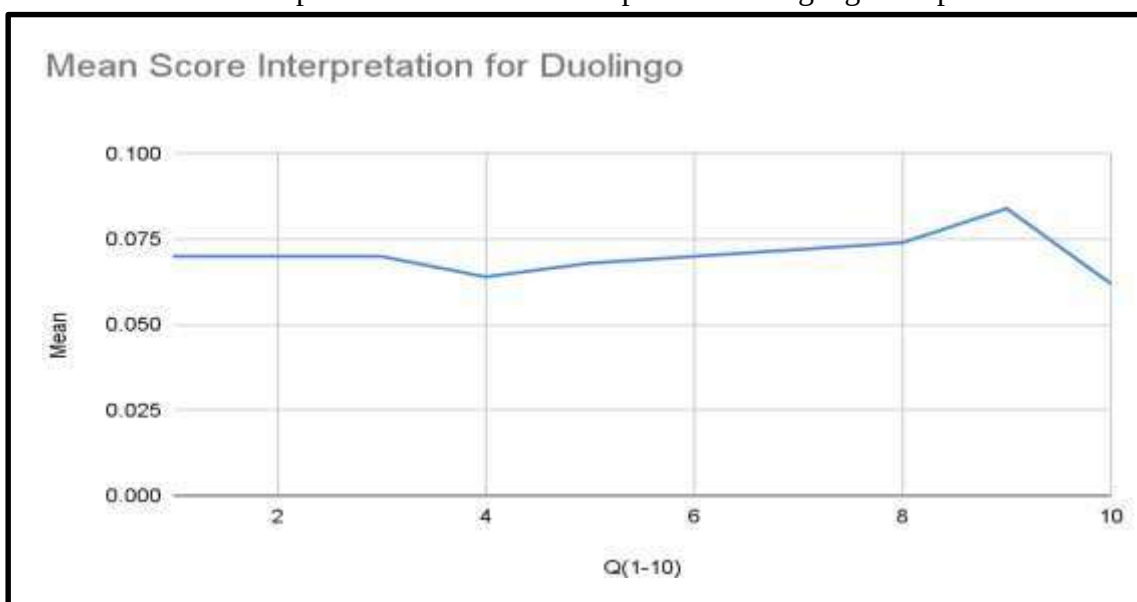
4.1.1. Percentage Distribution

The percentage analysis shows that across all ten items, agreement responses exceed neutral and disagreement responses. Most undergraduates believe Duolingo improves overall language comprehension, with minimal neutrality and very little dissent. Grammar improvement records moderate to high agreement, while pronunciation shows slightly higher neutral and disagreement rates, reflecting mixed views. Motivation, gamification, and self paced learning flexibility receive strong agreement, highlighting Duolingo's engagement and convenience. Feedback effectiveness and confidence in language use show balanced agreement and neutral responses, indicating varied impact, while content suitability remains positively rated and generally aligned with learners' proficiency levels.



4.1.2. Mean Score Interpretation for Duolingo

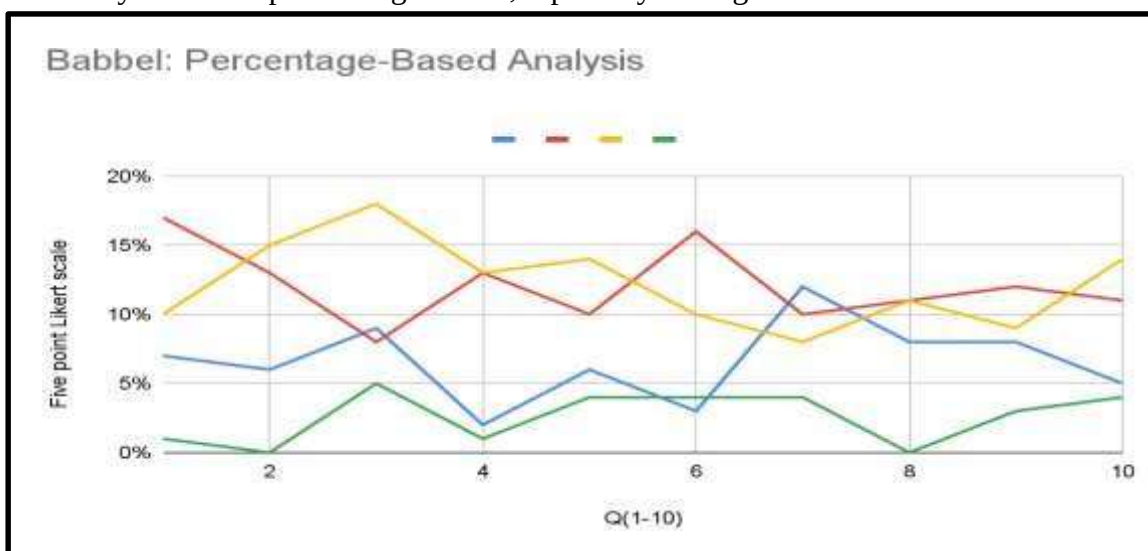
The Duolingo item mean scores show a generally favorable response trend, ranging roughly from 0.062 to 0.084. Items pertaining to confidence, feedback, and content compatibility show higher mean values, indicating more perceived advantages in these domains. Grammar and pronunciation show slightly lower mean values, confirming previous findings that Duolingo is seen to be more beneficial for comprehension and engagement than for form-focused accuracy. These mean scores show that, from a UGT standpoint, Duolingo mostly satisfies motivational, practical, and enjoyable gratifications, which have a direct impact on users' favorable opinions of language comprehension.



4.2. Babbel: Percentage-Based Analysis and Mean Scores

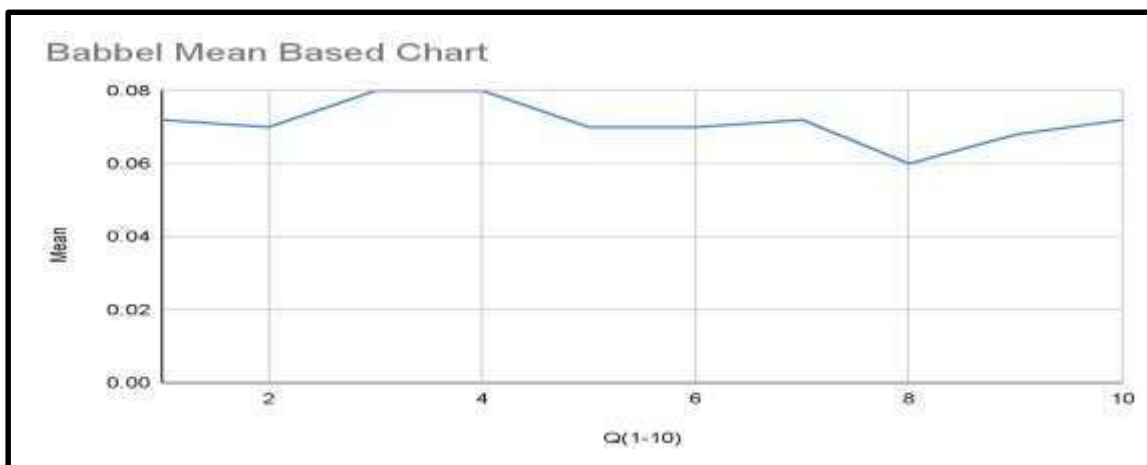
4.2.1. Percentage Distribution

The percentage analysis of Babbel responses shows a more balanced distribution between agreement and neutral responses, with relatively fewer disagreement replies. Most users perceive Babbel as effective in improving overall language comprehension, reflected in strong agreement levels. Grammar and pronunciation improvement receive higher agreement compared to Duolingo, highlighting Babbel's strength in structured language instruction. Motivation related responses show moderate agreement with higher neutral percentages, suggesting that Babbel places less emphasis on enjoyment and gamified features. High agreement is also observed in items related to lesson structure and practice sufficiency, emphasizing its strong pedagogical design. Feedback, correction, and confidence in language use show steady agreement with little disagreement, while content suitability maintains positive agreement, especially for beginner and intermediate learners.



4.2.2. Mean Score Interpretation for Babbel

The average scores for Babbel items fall roughly between 0.060 and 0.080, suggesting a generally favorable but more academically focused response pattern. Babbel's efficacy in linguistic precision is reflected in higher mean scores for grammar, pronunciation, and lesson structure. The interpretation that Babbel prioritizes instructional clarity over gamification is supported by somewhat lower mean values for incentive. Babbel satisfies cognitive and learning-oriented needs within the UGT framework, drawing users who are more interested in systematic language acquisition than amusement.



4.3. Comparative Mean and Percentage Analysis

According to a comparison of percentages and mean scores, Duolingo is more appealing to students looking for interesting and independent learning experiences because it exhibits greater agreement percentages and mean values in motivation, enjoyment, and flexible learning. Babbel exhibits higher mean scores and agreement in grammar, pronunciation, and lesson structure, suggesting more perceived efficacy in form-focused understanding. The mean scores for both apps are generally positive, indicating that undergraduate students perceive quantifiable improvements in language comprehension through MALL applications. These results corroborate the main tenet of Uses and Gratifications Theory, which holds that students actively choose media resources according to the results they hope to achieve.

4.4. Summary of Findings

The percentage-based and mean score analysis confirms that; both Duolingo and Babbel positively impact undergraduate learners' perceived language comprehension. Duolingo excels in motivational and affective gratifications. Babbel excels in cognitive and instructional gratifications. Learners' perceptions of improvement are directly linked to the specific gratifications each app provides.

5. Discussion

5.1. Discussion of Findings

The present study examined undergraduate students' perceptions of the effectiveness of Duolingo and Babbel in improving language comprehension. It also explored which application was perceived as more effective in different areas of language learning and how learners' app preferences could be explained through the Uses and Gratifications Theory (UGT). The findings indicate that both applications positively support language learning, but they differ in the way they meet learners' educational and motivational needs.

The first objective of the study was to examine undergraduate students' perceptions of the effectiveness of Duolingo and Babbel in improving language comprehension. The findings revealed that students viewed both applications as useful learning tools. Most participants believed that using either application helped improve their understanding of the English language. This finding suggests that Mobile-Assisted Language Learning (MALL) applications provide learners with flexible opportunities to practice language skills outside the classroom. The results support the findings of Kessler et al. (2025), who reported that both Duolingo and Babbel contribute positively to language learning by improving reading, writing, listening, and speaking skills. Similarly, Dixon et al. (2022) concluded that digital language learning applications can improve language learning by increasing learner engagement and providing regular opportunities for practice.

The second objective was to compare the effectiveness of Duolingo and Babbel in improving grammar, pronunciation, and language comprehension. The findings show that although both applications are effective, they have different strengths. Duolingo received higher agreement in motivation, enjoyment, and learning flexibility. Students appreciated its gamified features, such as rewards, progress tracking, and interactive exercises, which encouraged them to practice regularly. These features make learning more enjoyable and help students remain interested in language learning. These findings are consistent with Jiang (2024), who found that Duolingo increases learner motivation through gamification and encourages continuous learning. Likewise, Aliabedi et al. (2025) reported that Duolingo supports independent learning by allowing learners to study at their own pace.

However, the results also indicate that Duolingo was perceived as less effective in improving grammar and pronunciation. Although students considered it useful for overall language learning, some participants gave neutral responses regarding its ability to develop accurate grammar and pronunciation. This may be because Duolingo focuses more on short interactive activities than detailed language explanations. Therefore, while the application successfully motivates learners, it may not provide enough structured instruction for students who want to develop advanced language accuracy.

In contrast, Babbel received stronger agreement in grammar, pronunciation, lesson structure, and practice activities. Students believed that Babbel's organized lessons helped them understand language rules more clearly and improve their pronunciation through practical exercises. These findings support De Oliveira et al. (2021), who stated that Babbel provides structured language instruction that develops grammar, pronunciation, and communication skills. Similarly, Kessler et al. (2025) found that Babbel offers greater support for grammar and pronunciation because its lessons follow a systematic learning sequence. These findings suggest that learners who prefer organized and academically focused instruction may benefit more from Babbel.

Although Babbel performed well in language accuracy, the findings indicate that it was less effective in motivating learners than Duolingo. Participants reported moderate agreement regarding enjoyment and engagement, suggesting that Babbel places greater emphasis on structured learning than on entertainment. This does not reduce its educational value, but it shows that learners may choose different applications depending on their learning preferences. Students who enjoy interactive and game-based learning may prefer Duolingo, whereas students who want structured lessons may find Babbel more suitable.

Another objective of the study was to examine the relationship between app usage frequency and learners' perceived language comprehension using the Uses and Gratifications Theory (UGT). The findings suggest that students who used the applications regularly reported greater improvement in their language comprehension. Frequent use provided more opportunities for practice, revision, and exposure to language content, which positively influenced learners' confidence and understanding. These findings support the main idea of UGT, which explains that people actively choose media that satisfy their personal and educational needs. In this study, learners selected Duolingo or Babbel according to the type of learning experience they wanted to achieve.

The findings also provide clear answers to the research questions. First, undergraduate students perceived both Duolingo and Babbel as effective applications for improving language comprehension. Second, Duolingo was perceived as more effective in increasing learner motivation, engagement, and learning flexibility, whereas Babbel was considered more effective in improving grammar, pronunciation, and structured language learning. Finally, the findings indicate that learners' app preferences and usage patterns are influenced by the different benefits each application provides, which strongly supports the Uses and Gratifications Theory.

Overall, the findings demonstrate that both Duolingo and Babbel make valuable contributions to Mobile-Assisted Language Learning. Rather than competing with one another, the two applications meet different learning needs. Duolingo is better suited for learners who want motivation, flexibility, and enjoyable learning experiences, while Babbel is more suitable for learners who prefer structured lessons and greater language accuracy. Therefore, the findings suggest that the effectiveness of a language learning application depends not only on its features but also on the learners' goals, preferences, and learning styles. This study contributes to the existing literature by providing a comparative analysis of both applications from the perspective of undergraduate students' language comprehension and by demonstrating how the Uses and Gratifications Theory explains learners' choices and learning experiences.

6. Conclusion

This study examined undergraduate students' perceptions of the effectiveness of **Duolingo** and **Babbel** in improving language comprehension from the perspective of the **Uses and Gratifications Theory (UGT)**. The findings revealed that both applications positively contribute to language learning, but each offers different benefits based on learners' needs and preferences.

The study found that Duolingo is more effective in increasing learner motivation, engagement, confidence, and learning flexibility. Its gamified features, including rewards, progress tracking, and interactive activities, encourage students to practice regularly and make language learning more enjoyable. These features help learners remain interested and committed to their language learning journey.

On the other hand, Babbel was perceived as more effective in improving grammar, pronunciation, lesson organization, and structured language learning. Participants appreciated its systematic learning approach, which helped them better understand language rules and develop more accurate language skills. Although Babbel was considered less entertaining than Duolingo, students recognized its value in providing organized and academically focused instruction.

The findings also showed that regular use of language learning applications positively influenced students' perceived language comprehension. Learners who used the applications more frequently reported greater improvement in their understanding of the language. This supports the main assumption of the Uses and Gratifications Theory, which suggests that individuals actively choose learning technologies that best satisfy their educational, motivational, and cognitive needs.

Overall, this study demonstrates that both Duolingo and Babbel are valuable Mobile-Assisted Language Learning (MALL) applications. Rather than viewing one application as superior to the other, the findings suggest that their effectiveness depends on learners' goals and learning preferences. Duolingo is more suitable for learners seeking motivation and flexible learning, whereas Babbel better serves learners who prefer structured instruction and language accuracy. Therefore, both applications can play an important role in supporting undergraduate students' language comprehension when used according to learners' individual needs.

7. Practical Implications

The findings of this study have several practical implications for language learners, teachers, and educational institutions. Undergraduate students can select language learning applications according to their personal learning goals. Students who need motivation, flexibility, and regular practice may benefit more from Duolingo, while those who wish to strengthen grammar, pronunciation, and structured language learning may find Babbel more suitable.

Teachers can also integrate mobile language learning applications into classroom instruction to support traditional teaching methods. Combining classroom learning with MALL applications can provide students with additional opportunities to practice language skills outside the classroom. Educational institutions may also encourage the use of these applications as supplementary learning resources to promote independent learning and continuous language practice.

Furthermore, application developers may use these findings to improve their platforms. Duolingo could strengthen its grammar and pronunciation instruction, while Babbel could incorporate more interactive and motivational features to increase learner engagement. Such improvements may enhance the overall effectiveness of both applications for diverse groups of learners.

8. Theoretical Implications

This study contributes to the existing literature by applying the **Uses and Gratifications Theory (UGT)** to Mobile-Assisted Language Learning. The findings support the central assumption of UGT that learners actively select media and technologies based on the specific benefits they expect to receive.

The results indicate that learners choose Duolingo primarily for motivation, enjoyment, flexibility, and independent learning, whereas Babbel is preferred for structured lessons, grammar instruction, and language accuracy. These findings demonstrate that learners' preferences are influenced by different educational and motivational gratifications rather than by the popularity of an application alone.

In addition, the study extends previous research by focusing specifically on undergraduate students' perceptions of language comprehension rather than general language learning outcomes. Therefore, it provides further evidence that the Uses and Gratifications Theory is an appropriate theoretical framework for explaining learners' choices and experiences in technology-assisted language learning environments.

9. Limitations

Although this study achieved its objectives, several limitations should be acknowledged. First, the study involved only **35 undergraduate students**, which limits the generalizability of the findings to a larger population. Second, purposive sampling was used, meaning that only students who actively used Duolingo or Babbel participated in the study. Therefore, the findings may not represent the experiences of all language learners.

Another limitation is that the study relied on **self-reported questionnaire responses** rather than objective language proficiency tests. Participants evaluated their own learning experiences and perceived improvements, which may differ from their actual language performance. Furthermore, the study was conducted within a single academic context and focused only on two Mobile-Assisted Language Learning applications. Other language learning platforms and educational settings were not included in the analysis.

Despite these limitations, the study provides useful insights into undergraduate students' perceptions of language learning applications and offers a foundation for future research in Mobile-Assisted Language Learning.

10. Recommendations

Based on the findings of this study, several recommendations can be made for future research and educational practice.

Future researchers should include larger and more diverse samples from different universities and educational backgrounds to improve the generalizability of the findings. Studies may also compare additional Mobile-Assisted Language Learning applications to provide a broader understanding of technology-assisted language learning.

Future research should employ experimental or longitudinal research designs to examine actual improvements in language comprehension over an extended period rather than relying solely on learners' perceptions. Researchers may also combine quantitative and qualitative methods to gain a deeper understanding of learners' experiences, motivations, and challenges when using language learning applications.

Finally, future studies should investigate additional factors such as learner autonomy, learning strategies, artificial intelligence features, classroom integration, long-term retention, and personalized learning experiences. Exploring these areas would further strengthen the understanding of how mobile language learning applications contribute to language education and learners' overall academic development.

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