

## Perceiving Duolingo beyond the classroom: insights from non-English major students in higher education

*Menyelami penggunaan Duolingo di luar kelas: pandangan mahasiswa non-jurusan bahasa Inggris di perguruan tinggi*

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### Abstract

This study investigates how Duolingo can serve as a supplementary tool for English learning among non-English major students at Universitas Muhammadiyah Buton, focusing on students in the Faculty of Economics. The research aims to understand students' perceptions of Duolingo's effectiveness and the challenges they face when using the app beyond the classroom. A mixed-methods approach was employed, combining quantitative and qualitative data gathered from 120 first-year students over a six-week period. Quantitative data, collected through surveys, measured students' usage patterns, motivation, and engagement levels, while qualitative data from open-ended responses provided insights into specific challenges and motivations related to Duolingo's gamified features, such as XP, leaderboards, and levels. The findings indicate that Duolingo's gamification elements contributed to increased motivation and engagement, particularly among students balancing academic and personal commitments. However, students faced challenges, including limited internet access, time constraints, and difficulty with advanced vocabulary and grammar. This study concludes that Duolingo is an effective supplementary tool for enhancing language learning outside the classroom, though additional support may be required to address connectivity issues and advanced language content.

### Abstrak

Penelitian ini mengkaji penggunaan Duolingo sebagai alat bantu dalam pembelajaran bahasa Inggris bagi mahasiswa non-jurusan bahasa Inggris di Universitas Muhammadiyah Buton, khususnya di Fakultas Ekonomi. Penelitian ini bertujuan untuk memahami persepsi mahasiswa mengenai efektivitas Duolingo serta tantangan yang mereka hadapi saat menggunakan aplikasi di luar lingkungan kelas. Pendekatan metode campuran digunakan dalam penelitian ini, dengan mengombinasikan data kuantitatif dan kualitatif yang dikumpulkan dari 120 mahasiswa tahun pertama selama enam minggu. Data kuantitatif dikumpulkan melalui survei untuk mengukur pola penggunaan, tingkat motivasi, dan keterlibatan mahasiswa, sementara data kualitatif diperoleh dari jawaban terbuka yang memberikan wawasan tentang tantangan dan motivasi terkait fitur gamifikasi Duolingo, seperti XP, papan peringkat, dan level. Hasil penelitian menunjukkan bahwa fitur gamifikasi pada Duolingo mampu meningkatkan motivasi dan keterlibatan mahasiswa, terutama bagi mahasiswa yang harus menyeimbangkan kewajiban akademik dan kewajiban pribadi. Namun, beberapa tantangan muncul, seperti keterbatasan akses internet, waktu yang terbatas, serta kesulitan dalam memahami kosa kata dan tata bahasa yang lebih kompleks. Kesimpulan dari penelitian ini adalah bahwa Duolingo dapat menjadi alat bantu yang efektif untuk mendukung pembelajaran bahasa Inggris di luar kelas, meskipun diperlukan dukungan tambahan untuk mengatasi masalah konektivitas dan dukungan materi bahasa Inggris yang lebih lanjut.

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## A. Introduction

In today's globalized world, proficiency in English is increasingly seen as a valuable skill, even for students who are not majoring in English or language-related fields. However, the traditional classroom setting, especially for non-English majors, often provides limited opportunities for students to fully develop their English skills. At Universitas Muhammadiyah Buton, particularly within the Faculty of Economics, students typically study English for just 48 classroom hours (divided into 24 hours in the first and second semesters) over a four-year period—reflecting a common situation across Indonesian higher education institutions. This limited exposure to English can be a significant barrier to achieving proficiency, underscoring the need for additional resources that students can access beyond the classroom (Walsh, 2021).

The rapid development of digital technologies has transformed language education, offering students greater flexibility and access to authentic materials (Lăpădat, 2023). One such transformative approach is Mobile-Assisted Language Learning (MALL), which provides a more adaptable and individualized learning experience compared to traditional methods (Wu, 2015; Yuan et al., 2023). MALL tools like Duolingo enable students to learn anytime and anywhere, addressing scheduling conflicts and the need for continuous practice, especially for students with limited formal instruction (Darsih & Asikin, 2020). Additionally, MALL's multi-sensory approach can reduce cognitive load, making learning more enjoyable and effective (Alzieni, 2024; Chen et al., 2019).

Duolingo, a popular language-learning app, effectively incorporates gamification elements such as experience points (XP), leaderboards, and levels to enhance user engagement and motivation. Research shows that gamified elements like these can foster motivation by creating a competitive, interactive environment, encouraging users to complete lessons, earn rewards, and track their progress (Infante-Paredes et al., 2024; Xodabande, 2018). Gamification, defined as the application of game design elements in non-game contexts, has been shown to increase student motivation and participation by integrating motivational aspects of games into the learning process (de Sousa Borges et al., 2014; Puspitasari & Arifin, 2023; Sailer & Homner, 2019). A meta-analysis by Sailer & Homner (2019) provides robust evidence supporting the effectiveness of gamification in educational contexts, highlighting its positive impact on cognitive, motivational, and behavioral outcomes. Furthermore, the flexibility and personalized feedback offered by Duolingo allow students to progress at their own pace, which is particularly beneficial for those balancing academic and personal commitments (Permatasari & Aryani, 2023). This individualized approach aligns with findings that emphasize the need for gamification strategies tailored to different learner profiles, as not all students respond uniformly to these elements (Ghaban & Hendley, 2019; Ibanez et al., 2014).

While gamification can drive motivation, studies have also noted potential drawbacks, such as the risk of fostering extrinsic motivation at the expense of intrinsic engagement (Hussain et al., 2023). However, with thoughtful implementation, gamification can significantly enhance student motivation, fostering a deeper commitment to learning goals (Biryukov et al., 2021; Gonzales, 2010). This dual potential for intrinsic and extrinsic motivation is especially relevant for self-directed learning in MALL, where students benefit from both the enjoyment of learning and the external incentives provided by gamified features (Infante-Paredes et al., 2024; Mahendra et al., 2022).

This study focuses on exploring how Duolingo can serve as a supplementary tool to support English learning among non-English major students at Universitas Muhammadiyah Buton, particularly in the Faculty of Economics. These students face unique challenges due to limited classroom hours dedicated to English, which restricts their exposure to the language and hinders their language proficiency. In this context, understanding how students perceive and utilize Duolingo as an extension of their language learning outside the classroom becomes essential. Additionally, examining the role of Duolingo's gamified environment in enhancing student motivation and engagement is crucial, as these features may help bridge the gap left by traditional academic instruction.

Furthermore, this research investigates the specific challenges students face in using Duolingo, including limited internet access, time constraints, and the difficulty of advanced content. By identifying these factors, this study aims to provide insights into the effectiveness and limitations of Duolingo in non-traditional learning settings and contribute to a better understanding of how digital tools like Duolingo can be optimized to meet the needs of students with limited formal instruction.

## B. Method

This study employed a mixed-methods approach, combining quantitative and qualitative data collection and analysis to explore how non-English major students at Universitas Muhammadiyah Buton, particularly within the Faculty of Economics, utilize Duolingo as a supplementary tool for learning English. A total of

120 first-year students from the Faculty of Economics participated, representing diverse backgrounds in terms of gender, age, and employment status, thus providing a rich dataset for analysis.

During the six-week study period, students were instructed to install and actively use the Duolingo application. In the initial week, students were introduced to the app's features, such as XP, leaderboards, and levels, and were given guidance on setting learning goals. Over the following weeks, students engaged in regular Duolingo sessions, with a minimum expected usage of 15–30 minutes per day. Weekly reminders encouraged students to maintain their streaks and monitor their XP progress. In the final week, students completed a survey to assess their experiences with Duolingo, focusing on their engagement, motivation, and any challenges faced.

Data Collection involved a structured survey with closed-ended and open-ended questions. The closed-ended questions generated quantitative data on students' demographic profiles, Duolingo usage patterns (e.g., session frequency and duration), and their ability to balance language learning with other responsibilities. Meanwhile, the open-ended questions gathered qualitative insights into students' motivations, challenges, and perceptions of Duolingo's gamified features. This combination of quantitative and qualitative data provided a comprehensive view of how students integrated Duolingo into their routines and engaged with its gamified environment.

The data analysis followed the model by Miles & Huberman (1994), comprising four stages: data collection, data reduction, data display, and conclusion drawing. The initial phase, data collection, involved gathering relevant data from the structured surveys. Closed-ended questions provided a quantitative perspective, while open-ended responses enriched the analysis with qualitative insights into specific student experiences, such as motivation and engagement. In the data reduction phase, researchers selected and focused on data that aligned with the study's objectives. Quantitative data was organized by categories like frequency and duration of use, while qualitative data was filtered to identify themes related to motivations, challenges, and interactions with gamification features such as XP and levels. This reduction process helped clarify and streamline the large volume of data, ensuring only relevant information was retained.

In the data display phase, the organized data was presented in descriptive formats for clarity. Quantitative data was visualized through charts and tables to illustrate patterns, while qualitative themes were displayed through narrative descriptions that provided deeper insight into student motivations and challenges. The final phase, conclusion drawing, synthesized both quantitative trends and qualitative themes to form conclusions that addressed the research problem. This stage aimed to highlight the role of Duolingo's gamification elements in fostering student motivation and to identify any specific challenges encountered by students, particularly related to balancing language learning with other responsibilities.

This comprehensive data analysis framework allowed the study to provide a nuanced understanding of Duolingo's impact as a supplementary language learning tool, examining both the potential benefits and limitations of gamification in supporting language acquisition among non-English major students.

## C. Results and Discussion

### 1. Results

This section presents the findings from a survey of 120 first-year undergraduate students from the Faculty of Economics at Universitas Muhammadiyah Buton. The study aimed to explore the usage patterns of Duolingo, a language-learning app, as a supplementary tool for improving English proficiency outside the classroom. With only 24 classroom hours dedicated to English language instruction over four years, Duolingo offers a critical solution to supplement students' learning. The results, drawn from the survey responses, are organized into key areas, including demographic profiles, Duolingo usage patterns, work-study balance, Challenges Faced While Using Duolingo and Engaging Learning Through Gamification.

#### a. Demographic Profile of Respondents

The charts in Figure 1 show that the majority of respondents are within the 18–20 years age range, with 92 out of 120 participants falling into this group, indicating that the study primarily targets first-year undergraduate students. A smaller number of respondents are aged 21–23 years (24 students), with only a few being 24–26 years (2 students) or older. In terms of gender distribution, 45 respondents are male and 75 are female, showing that the study captures a balanced perspective, though with more female participants. Regarding work status, 55 students reported that they are not working, while 44 are working part-time, and 21 are working full-time. This highlights the importance of understanding how a significant portion of

students balance both their academic and professional responsibilities while using Duolingo as a tool to supplement their English learning outside the classroom.

These demographic insights provide a strong foundation for understanding how these first-year students manage their language learning within the constraints of their busy schedules.

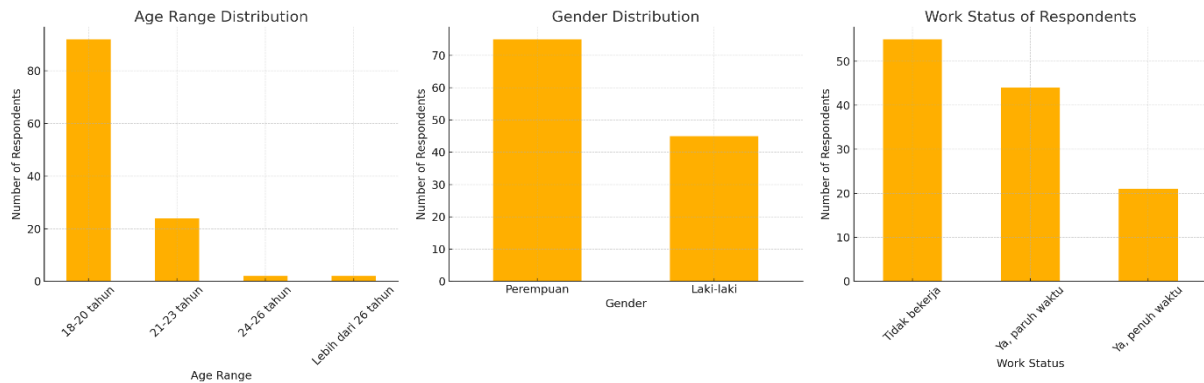


Figure 1. Demographic Profile of First-Year Students in the Faculty of Economics

## b. Duolingo usage patterns

Figure 2 illustrates the Duolingo usage patterns of first-year students in the Faculty of Economics. The Daily Usage Frequency chart (top left) shows that the majority of students use Duolingo 2—3 times a day, with a smaller proportion using it once per day and only a few using it 4—5 times or more per day. In terms of Weekly Usage Frequency (top right), most students use the app 3—4 times a week, followed by those who use it 1—2 times. A smaller group reports using it every day or 5—6 times per week, indicating that the app is not used intensively by most.

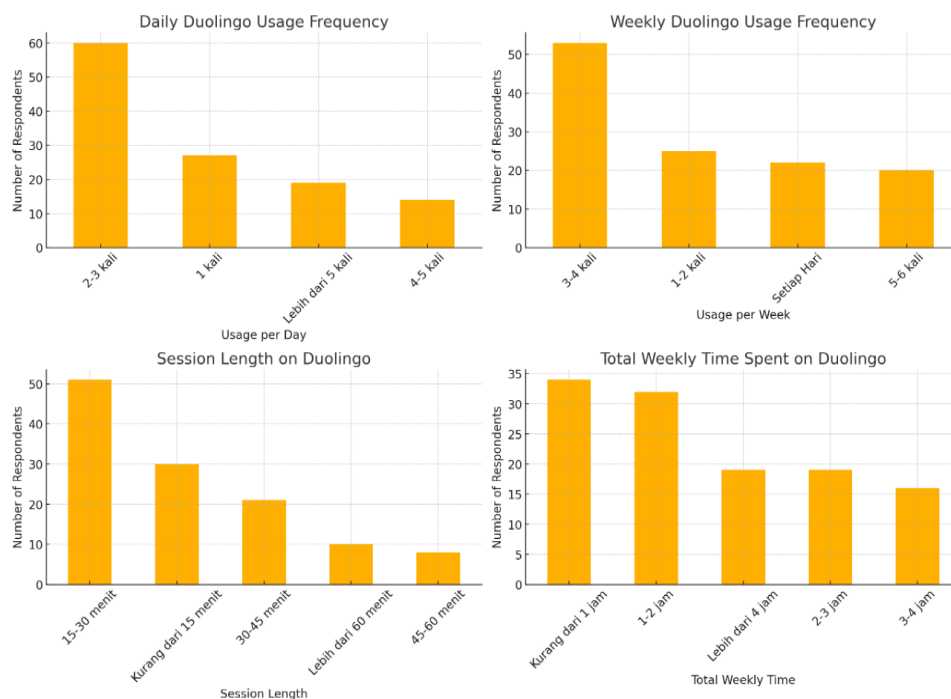


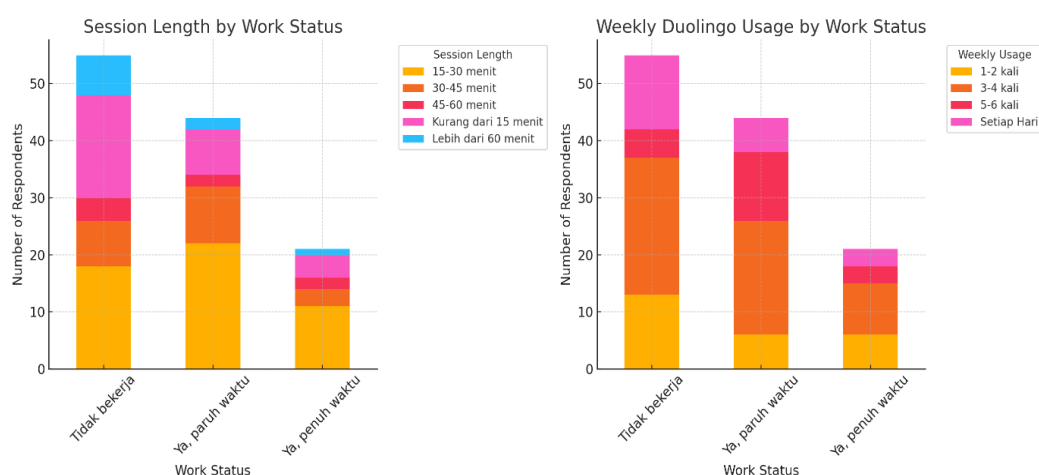
Figure 2. Duolingo Usage Patterns Among First-Year Students in the Faculty of Economics

The Session Length chart (bottom left) reveals that most students prefer shorter learning sessions, with the majority spending 15—30 minutes per session and a significant portion spending less than 15 minutes. Only a small number of students engage in longer sessions of 30—45 minutes or more. Finally, the Total Weekly Time Spent on Duolingo (bottom right) indicates that the majority of students spend less than 1 hour per week on the app, with some students dedicating 1—2 hours weekly. Very few students report spending more than 3—4 hours per week, suggesting that Duolingo is primarily used as a supplementary tool for quick and flexible learning sessions.

This figure highlights that Duolingo is integrated into students' learning routines through short, frequent study sessions, providing flexibility without demanding a significant time commitment.

### c. Work-Study Balance and Its Impact on Duolingo Usage

Figure 3 illustrates the relationship between work-study balance and Duolingo usage patterns. The left chart, which shows session length by work status, indicates that students who are not working tend to engage in longer Duolingo sessions. Many of these students spend 15—30 minutes per session, with a broader distribution of longer session lengths compared to their working counterparts. In contrast, part-time and full-time working students favor shorter sessions, with a significant proportion spending less than 15 minutes per session, reflecting the time constraints imposed by their work commitments.



**Figure 3. Duolingo Session Length and Weekly Usage by Work-Study Balance**

The right chart depicts weekly Duolingo usage by work status. Non-working students generally use Duolingo more frequently, with many engaging with the app 3—4 times per week, and some using it daily. On the other hand, working students, particularly those with full-time jobs, tend to use the app only 1—2 times per week, suggesting that their limited time for study affects their regular engagement with Duolingo.

The survey reveals that a substantial number of students are balancing work and study, with 55 respondents indicating that they are not working, while 44 students are employed part-time, and 21 students are employed full-time. This work-study balance appears to have a significant impact on Duolingo usage patterns.

Students who are not working generally spend more time on Duolingo, with a higher proportion engaging in longer sessions and using the app more frequently throughout the week. In contrast, students who are working part-time or full-time tend to favor shorter, more flexible learning sessions. For instance, working students are more likely to spend less than 15 minutes per session and use the app 1—2 times per week, reflecting the time constraints posed by their employment.

This suggests that Duolingo serves as a convenient and adaptable tool for students with busy schedules, particularly those balancing work and academic responsibilities. The app's short, flexible sessions allow students to incorporate language learning into their daily routines without demanding significant time investment.



#### d. Challenges Faced While Using Duolingo

Many students encountered various challenges while using Duolingo, both due to external factors and the app's own limitations. A frequent issue was limited internet access, which made it difficult for students to maintain regular practice. Without a stable connection or adequate data, students often struggled to engage with the app consistently. For instance, one student noted, "*Sinyal internet sering tidak stabil, jadi sulit untuk latihan setiap hari*" (The internet signal is often unstable, making it difficult to practice every day). Another student mentioned, "*Data internet saya terbatas, jadi tidak bisa menggunakan Duolingo dengan lancar*" (My mobile data is limited, so I can't use Duolingo smoothly). Without a stable connection or adequate data, students often struggled to engage with the app consistently. In addition to internet issues, students highlighted the challenge of time constraints. Balancing Duolingo with academic and personal responsibilities was a significant concern, with some students unable to dedicate as much time as they desired to their language learning efforts. One student expressed, "*Saya terlalu sibuk dengan tugas kuliah, jadi tidak bisa sering menggunakan Duolingo*" (I am too busy with university assignments, so I can't use Duolingo frequently). Another added, "*Kesibukan pekerjaan membuat saya sulit menyisihkan waktu untuk belajar bahasa Inggris di Duolingo*" (Work responsibilities make it hard for me to find time for learning English on Duolingo). These time constraints often limited students' ability to maintain a consistent learning routine.

A commonly mentioned frustration was Duolingo's heart system (referred to as "nyawa"), which limits the number of mistakes students can make before they must wait to regain hearts or stop practicing. As one respondent put it: "*Tantangannya lebih ke nyawa, soalnya kalau habis harus nunggu*" (The challenge is mostly the hearts, because when they run out, you have to wait). This system, while designed to encourage accuracy, was seen as a barrier to continuous learning for many students.

Another concern raised was the frequent appearance of ads on Duolingo's free version. One respondent noted: "*Waktu sehari-hari saya kurang karena bekerja dan terganggu dengan iklan saat menggunakan Duolingo*" (My daily time is limited due to work, and the ads on Duolingo are a distraction). The presence of ads during practice sessions not only interrupts the learning flow but also makes it difficult for students to use their limited time efficiently.

Finally, students faced challenges with advanced vocabulary and unfamiliar grammatical structures. As the lessons progressed, some found it difficult to keep up with more complex content, especially verbs and sentence constructions they had not encountered before. One student noted, "*Banyak kata baru yang belum pernah saya temui, jadi sulit untuk mengikuti pelajaran*" (There were many new words I hadn't encountered before, making it hard to follow the lessons). Another student mentioned, "*Struktur kalimat yang lebih kompleks sulit dipahami*" (The more complex sentence structures were difficult to understand). These challenges made it harder for some students to maintain their progress, particularly as the material became more advanced. This increasing difficulty was motivating for some but created obstacles for those without a strong foundational knowledge of English.

Despite these challenges, many students remained motivated to continue using Duolingo. The frustrations with time constraints, the heart system, and occasional difficulties with internet access did not overshadow the platform's positive aspects. In fact, these obstacles often motivated students to engage more creatively with their learning process. As they navigated these hurdles, students found that Duolingo's interactive and gamified features offered a uniquely engaging learning experience, making English learning enjoyable and rewarding. This transition from frustration to motivation is rooted in the platform's ability to turn learning into a game, where animated characters, missions, vocabulary-building, XP, and competition drive student success.

#### e. Engaging Learning Through Gamification: Missions, Vocabulary, XP, and Competition

Several students found Duolingo to be an engaging and motivating tool for learning English. One of the most commonly liked features was the gamified approach of the platform. The inclusion of animated characters and missions helped students stay motivated and made the learning process enjoyable. As one respondent mentioned: "*Di Duolingo kita diajarkan untuk mengasah kemampuan kita, di selingkan dengan tokoh animasi yang membuat saya tidak merasa bosan dan memotivasi saya untuk menyelesaikan semua misi-misinya*" (In Duolingo, we are taught to sharpen our skills, and the inclusion of animated characters makes it less boring and motivates me to complete all the missions).

Another feature that students appreciated was the ability to learn new vocabulary. Many students felt motivated to expand their English vocabulary through Duolingo, as they could quickly discover words they were unfamiliar with. One respondent said: "*Motivasinya yaitu menjadi lebih semangat untuk mengetahui kata-*

*kata bahasa Inggris yang sebelumnya belum saya ketahui*" (The motivation is that I get more excited to learn new English words I hadn't known before).

In addition, Duolingo's leveling system, XP (experience points), and competitive features were key motivators for students. The platform allows users to earn XP as they complete lessons, which helps them progress through different levels. One respondent highlighted how Duolingo's leveling system serves as a key motivator: *"Karena Duolingo ini mempunyai fitur level yang membuat saya merasa termotivasi untuk mencapai level yang lebih tinggi"* (Because Duolingo has a leveling feature, it motivates me to reach higher levels). This system gave students a tangible sense of achievement and encouraged them to keep learning. Some students also found the leaderboard and competition with friends or other learners to be motivating. Another student mentioned the competitive features as a motivator: *"Penggunaan Duolingo meningkatkan motivasi dan memberikan dorongan untuk terus belajar bahasa Inggris, terutama karena bisa melihat peringkat dan bersaing dengan teman-teman lain"* (Using Duolingo increases motivation and encourages me to keep learning English, especially because I can see my ranking and compete with other friends). Competing for the top ranks on the leaderboard made learning more exciting and fostered a healthy sense of competition.

Additionally, students enjoyed the structured lessons that Duolingo offers. The progressive nature of the lessons, combined with instant feedback on errors, motivated them to improve their performance and achieve learning goals. This sense of progress tracking—through completing missions, earning XP, and gaining rewards—was another key factor that kept students engaged and motivated.

Overall, the fun, interactive format of Duolingo, combined with the sense of accomplishment from completing challenges and leveling up, helped students stay motivated and eager to continue their English learning journey.

## 2. Discussion

The study's findings provide an in-depth perspective on how first-year students in the Faculty of Economics at Universitas Muhammadiyah Buton utilize Duolingo as a supplementary English learning tool. The analysis of their demographic profiles reveals a diverse set of students across age, gender, and employment status. Many respondents, especially those aged 18–20, juggle their academic responsibilities with part-time or full-time work, making the work-study balance a crucial factor in shaping their learning behaviors and patterns. This aligns with findings from previous studies emphasizing that flexible mobile-assisted language learning (MALL) tools can help students integrate language practice into their daily routines, even when managing busy schedules (Vega et al., 2023; Walsh, 2021).

Students' usage patterns of Duolingo reflect the demands of their schedules. The majority reported engaging with Duolingo in short, frequent sessions, with most sessions lasting between 15–30 minutes, typically 2–3 times per week. This finding is consistent with Ajisoko (2020), who found that mobile app usage tends to stabilize into shorter, frequent sessions as users integrate the tool into their routines. Furthermore, Wu (2015) suggests that MALL tools enable students to learn anytime and anywhere, making language learning adaptable to individual schedules. However, students with employment commitments tend to use Duolingo less frequently and for shorter sessions, underscoring the impact of time constraints on their learning opportunities, a phenomenon also observed in studies by García Botero et al. (2021) regarding the flexibility of MALL.

The study also highlighted specific challenges students faced, including limited internet access and frustration with Duolingo's "heart" system, which limits mistakes before requiring a break. This structure, combined with frequent advertisements, was perceived as disruptive to the learning experience. Despite these obstacles, students remained committed, often citing their intrinsic desire to improve their English skills as a strong motivator. This resilience supports Self-Determination Theory (SDT), which posits that intrinsic motivation, driven by personal growth goals, is a powerful motivator in self-directed learning (Gardner & Yung, 2017; Mahendra et al., 2022).

A notable finding from this study is the positive impact of Duolingo's gamified features in helping students stay engaged. The platform's use of missions, animated characters, and competitive elements such as XP, levels, and leaderboards transformed language learning into an engaging, game-like experience. Consistent with Infante-Paredes et al. (2024), gamification elements like leaderboards and points increase student engagement by adding a layer of competition. This aligns with Sailer & Homner (2019), who demonstrated that gamification enhances motivation and engagement by providing a sense of achievement. The leaderboard system, specifically, supports social relatedness by enabling students to see their progress relative to others, which is also discussed by Lister (2015) as a crucial element in enhancing motivation.

The study's findings contribute uniquely to the existing body of research on gamification and MALL by focusing on non-English major students in Indonesia, an underrepresented demographic. While much of

the literature examines English majors or general populations, this research highlights the adaptability of Duolingo's gamified elements in addressing the specific constraints of non-language majors who have limited time for language learning (Apoko et al., 2023; Permatasari & Aryani, 2023). This context-specific focus provides valuable insights into how Duolingo and similar tools can be adapted to support language learning in non-traditional contexts, bridging gaps in language education for students outside of formal English curricula.

Despite these promising findings, some limitations must be acknowledged. The study's focus on a single demographic—non-English major students from one institution—limits the generalizability of the results to other educational contexts. Additionally, the reliance on self-reported data introduces the potential for response bias, as students may overstate or understate their engagement and motivations. The study duration, limited to six weeks, further restricts the ability to observe long-term effects of gamified learning on language acquisition. Longer, longitudinal studies could provide a clearer picture of the sustained impact of gamified MALL on language proficiency and retention (Jeong, 2023).

In conclusion, this study underscores the potential of flexible, gamified tools like Duolingo in supporting language acquisition for non-English major students who face significant time constraints. While challenges related to time, internet access, and the “heart” system persist, the motivational power of gamification—particularly through elements like XP, levels, and leaderboards—proves effective in sustaining student engagement. These findings reinforce the role of interactive, accessible digital tools in bridging gaps in language education, offering practical implications for integrating gamified MALL applications into higher education. Future research should explore the comparative effectiveness of Duolingo with other MALL tools, such as Memrise or Babbel, to identify which features most effectively enhance motivation and learning outcomes (Mustaffa & Sailin, 2022). Additionally, further studies on personalized feedback mechanisms could reveal new approaches to optimizing engagement in diverse educational settings (Cigdem et al., 2024; Yu-lin, 2015).

#### D. Conclusion

This study reveals that Duolingo, with its gamified elements such as XP, levels, and leaderboards, serves as an effective supplementary tool for English language learning among non-English major students at Universitas Muhammadiyah Buton. The app's accessibility and flexibility allow students to integrate short, frequent learning sessions into their busy schedules, which is particularly beneficial for those balancing academic responsibilities with part-time or full-time jobs. Duolingo's gamified approach—providing instant feedback, progress tracking, and competitive features—effectively sustains motivation, even amid challenges such as limited internet access, time constraints, and occasional frustrations with app-specific features like the heart system and ads.

The findings align with existing research on the motivational benefits of gamification in educational contexts, resonating with Self-Determination Theory by fulfilling students' intrinsic needs for competence and social relatedness. This study uniquely contributes by focusing on non-English major students in a resource-limited Indonesian context, highlighting Duolingo's potential to bridge the gap created by limited classroom exposure to English. For these students, Duolingo offers a practical, engaging way to enhance language proficiency outside traditional learning environments.

However, this study is limited by its focus on a specific demographic within a single university and a relatively short duration. Future research should explore the long-term retention of language skills acquired through gamified platforms, as well as the effectiveness of Duolingo in developing spoken communication and listening comprehension skills. A comparative analysis with other Mobile-Assisted Language Learning tools would offer deeper insights into which gamification elements best support various learner profiles and contexts. Such studies could inform the integration of gamified tools like Duolingo into broader language curricula, providing students in diverse educational settings with effective, engaging resources to improve language acquisition.

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