



Duolingo as a Supplementary Tool in Formal Beginner German Instruction

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Abstract

This study explores the role of Duolingo as a supplementary tool in formal German language instruction for beginners at tertiary institutions in New Zealand and Sweden. Specifically, it investigates how learners' engagement, and perceptions of language proficiency are influenced by using Duolingo in their German language learning experience. Two groups of students (A1, CEFR) participated: 19 students in New Zealand and 20 students in Sweden. The study compares their attitudes toward Duolingo as a non-formal learning tool integrated into formal language courses

The theoretical framework is grounded in Self-Determination Theory [1,2], which focuses on autonomous motivation—the intrinsic desire to learn an L2 because the learner finds it enjoyable and rewarding. This framework is also informed by mobile learning theory, as mobile technologies such as Duolingo can motivate frequent, informal learning opportunities rather than deep, formal learning [2]. Additionally, socio-cultural theory [3] is used to explore how Duolingo's adaptive learning features and gamification elements foster learner engagement, autonomy, and progression.

The research employs both quantitative (survey with Likert scale questions) and qualitative (thematic analysis of open-ended responses) methods. A survey was administered in early 2025 via Google Forms. The findings reveal distinct differences in students' perceptions of Duolingo, with Swedish learners demonstrating a more positive attitude toward the tool compared to their New Zealand counterparts. Both groups of students perceive Duolingo as a valuable tool for enhancing listening (71% agreed) and reading (92% agreed) comprehension. Additionally, the gamified features of Duolingo were highly motivational, with 86% of students agreeing. The study highlights Duolingo's potential as an effective supplementary tool for language learning while identifying the need for further research into its long-term impact on language proficiency, retention, and broader educational contexts.

Keywords: Duolingo, learner autonomy, motivation, gamification, mobile-assisted language learning, A1 German, tertiary education

1. Introduction

As language education continues to evolve, educators are looking for more tools that align with students' digital habits and promote engagement with the target language. This study examines the use of Duolingo, a gamified language learning app, as a supplementary tool in beginner (A1, CEFR) German courses at the tertiary level. The primary aim is to evaluate Duolingo's potential to enhance learners' motivation, engagement and autonomy when incorporated into formal curricula.

Using informal, mobile-based platforms to support language learning is not a new concept [4,5]. However, the growing popularity of gamified applications such as Duolingo is creating new opportunities to integrate language practice into students' daily routines. The mobile accessibility of these tools supports flexible, self-directed learning that can be aligned with individual schedules and preferences [6].

This study investigates the use of Duolingo as an optional, informal supplement to German language instruction for A1-level learners at tertiary institutions in New Zealand and Sweden. Nineteen students in New Zealand and twenty in Sweden participated in the study over a three-month period. This paper includes a review of relevant literature, outlines the research methodology and analyses data



collected via a mixed-methods questionnaire. The discussion section highlights the implications of incorporating informal learning tools into formal educational settings.

2. Literature Review

Motivation is widely acknowledged as a key factor in successful language learning. Ryan and Deci [1] argue that environments that support autonomy lead to increased motivation, performance, and psychological well-being. Zeng and Fisher [7] applied Self-determination-theory to the use of the Duolingo-app and found that its gamified features enhance intrinsic motivation, encouraging motivational spill over into other learning contexts. Ushioda [2] examined early on how mobile platforms support motivation and dimensions of autonomy, competence, and relatedness. His findings revealed a significant correlation between high self-reported scores in these areas and heightened learner motivation. Similarly, Li, Hew and Du [8] emphasised the role of gamification in fostering intrinsic motivation through features such as progress tracking and achievement badges.

According to sociocultural theory, learning is mediated through social interaction and cultural tools [3]. Duolingo's gamified features, such as friend quests and leaderboards, foster peer connection and a sense of belonging. This social engagement enhances motivation by embedding learning in meaningful, collaborative digital contexts. Azhima and Halim [9] examined the use of Duolingo in a classroom setting, focusing on the platform's sociocultural elements. They found that these features contributed to increased learner motivation. Additionally, their case study in an EFL classroom revealed that Duolingo's repetitive tasks were beneficial for improving all four language skills as well as grammar.

Mobile-assisted language learning (MALL) promotes learner autonomy by providing personalised, self-paced access to educational resources. Crompton and Burke [10] emphasised the role of mobile apps in improving access to resources and promoting independent learning. Tong et al. [11] also noted the positive impact of mobile learning on self-regulation and learner motivation. Research by Li et al. [12] specifically investigated Duolingo's contribution to learner autonomy. While most studies report positive outcomes, several suggest that learners benefit from structured guidance alongside mobile tools to sustain motivation.

Considering the above-mentioned benefits of Duolingo, it is a suitable app for formal language learning. It has become the subject of growing academic interest, partly due to the company's own research initiatives. Studies consistently demonstrate that Duolingo provides an engaging, low-pressure environment for practising vocabulary and developing language skills. For example, Schneider and Blikstein [13] found that regular Duolingo users reported increased motivation and perceived improvement in their language skills.

The app provides balanced practice in the four core language skills — reading, writing, listening and speaking — through short, manageable tasks. Ouyang et al. [14] found that listening exercises were particularly effective. In their study of 245 A2-level English learners, participants achieved significantly higher listening comprehension scores after consistent use of the platform. Similarly, [15] Jiang et al. [15] found that EFL students in China who used Duolingo alongside regular coursework performed better in final assessments. These students showed higher levels of engagement and comprehension than those in the control group. Listening was identified once again as the skill most positively impacted.

An interesting study by Kessler et al. [16] compared Babbel and Duolingo in an eight-week mixed-methods study involving adult learners of Turkish (N = 59). Participants were divided into two groups, using either Babbel (n = 27) or Duolingo (n = 32), and completed two exit assessments after the study period. The results showed that learners using Babbel achieved higher scores on the assessment tasks. While there is substantial research on the informal use of Duolingo, few studies have examined its structured integration into formal classroom settings. Kessler et al.'s [16] study helps address this gap, particularly by focusing on the under-researched population of learners for whom English is not their first language. Our study will partly address this research gap by addressing the research question: How do students of German perceive the effects of Duolingo as a supplementary language learning tool in enhancing motivation, and autonomy among A1-level German learners?



3. Methods

3.1 Participants

The study involved 39 participants from two tertiary institutions: 19 from New Zealand and 20 from Sweden. All students were A1-level German learners aged between 18 and 25. The New Zealand cohort was English speakers, while the Swedish participants were Swedish speakers. The students were enrolled in a German beginners' course.

3.2 Study Design

Duolingo was introduced as an optional supplement to the existing beginner German curriculum. The Swedish course ran online for 15 weeks, while the New Zealand course was delivered in face-to-face mode on campus over 12 weeks. Students were encouraged, but not required, to use Duolingo regularly alongside their coursework.

3.3 Data Collection and Data Analysis

Data were collected via a Google Forms questionnaire containing 28 questions: nineteen were in Likert scale or multiple-choice format and nine were open-ended questions. The open-ended questions were an opportunity for the participants to describe their experience using Duolingo in more detail. Participation was voluntary, with written consent provided by all students.

Quantitative data were analysed using descriptive statistics. Thematic analysis was applied to the open-ended responses in order to identify patterns and recurring themes across both student cohorts.

4. Results

The analysis of the quantitative data shows that in terms of daily use, 57.9% of New Zealand students reported using Duolingo daily, compared to 35% of Swedish students. When asked about its role alongside classroom learning, 54% of New Zealand students and 60% of Swedish students answered that Duolingo complemented their language studies.

Students also highlighted improvements in specific skills. 70% of New Zealand students agreed that Duolingo helped them learn new vocabulary, and 60% of Swedish students reported that Duolingo helped them learn and deepen their vocabulary. Listening skills were also positively affected, with 63% of New Zealand and 73% of Swedish students noticing progress. Reading, however, showed a contrast between the two groups: while 92% of Swedish students found Duolingo beneficial for developing reading skills, only 45% of New Zealand students agreed.

Perceptions of speaking practice were more balanced, with 63% of New Zealand students and 53% of Swedish students agreeing that Duolingo supported their oral skills. Writing, by contrast, showed the strongest difference: only 27% of New Zealand students considered Duolingo useful for improving their writing skills, whereas 73% of Swedish students valued its contribution in this area.

Despite these differences, both groups agreed on the usefulness of the different types of exercises. Translation exercises were a clear favourite, with 90% of students in both groups rating them as very helpful. Overall, most students felt that Duolingo supported their language learning goals: 81% of New Zealand students and 60% of Swedish students fully agreed that the platform contributed to their progress and that they wanted to continue using it alongside their formal language course.

The analysis of the qualitative data showed that students found: 'The daily habit with reminders helps my motivation' and 'I like the cute little owl'. There was also the motivation 'I don't want to lose my streak'. One student found that 'friends' quests' were the most motivating element. Duolingo feedback was also experienced as motivating: 'I like the direct feedback — it motivates me to continue learning.'

The students perceived the mobile app as convenient; one student wrote, "Easy to use on my phone — convenient anytime, even before sleep". Being able to keep track of their own learning motivated



the students: 'I enjoy tracking my progress and seeing improvements.' They appreciated the convenience of being able to learn in their own time and in small bursts: 'The app lets me study in short bursts whenever I have free time.'

The sociocultural features of the app were recognised as beneficial, as one student mentioned: 'I liked being able to befriend my classmates through the app.' Another student said: 'Friends quests made me feel part of a learning community.' This student saw language learning as a social activity: 'It made language learning social, not just individual.' Overall, the students had positive things to say about the Duolingo app and perceived it as a beneficial addition to their language learning.

5. Discussion

The findings suggest that Duolingo has a positive impact on motivation, autonomy and learning among beginner German learners in higher education. The app's gamified features, such as streaks, badges, progress tracking and social interaction, were particularly effective in encouraging consistent use, especially among New Zealand students. However, Swedish students reported higher perceived benefits for reading skills, which may reflect differences in how the app was integrated into coursework, cultural attitudes towards digital tools or learner preferences.

Students valued the flexibility and convenience of mobile access, which aligns with MALL principles and literature [16]. These outcomes also support research on Self-determination-theory and mobile learning, highlighting the role of informal tools in fostering learning leading to intrinsic motivation and learner autonomy [17, 2].

Despite the positive outcomes, some participants expressed a desire for more guidance or teacher feedback. This indicates that informal tools may be most effective when blended with structured instruction. This aligns with literature suggesting that hybrid models combining formal and informal learning can optimise student outcomes [9].

6. Conclusion

This study demonstrates that Duolingo can serve as an effective supplementary tool for A1-level German learners in tertiary education. By enhancing learner motivation, engagement, and autonomy, the app bridges students' digital habits with academic language learning. Future research should explore the long-term impact of such tools, cultural differences in app usage, and strategies for deeper curricular integration.

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