

Exploring Students' Perceptions of Duolingo: Engagement, Motivation, and Self-Confidence

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Abstract

Mobile-assisted language learning (MALL) is increasingly used to extend English learning beyond the classroom, but evidence about learners' experiences remains fragmented because engagement, motivation, and self-confidence are often examined separately. This study investigated university EFL learners' perceptions of Duolingo across these interrelated dimensions while also recognizing perceived challenges as an intended questionnaire domain. A quantitative cross-sectional descriptive survey was conducted among university English learners with prior experience using Duolingo. Data were collected over two weeks using a structured five-point Likert questionnaire and summarized descriptively. Four in five respondents reported positive engagement. Motivation was characterized more strongly by goal achievement and intrinsic interest than by extrinsic rewards, while self-confidence was strongest for vocabulary and grammar and comparatively weaker for extended writing. Separate numerical results for perceived challenges were not available; therefore, no quantitative claim is made for that domain. By interpreting engagement, motivation, and self-confidence within a single learner-perception framework, the study contributes an integrated view of the psychological dimensions of MALL use while avoiding claims of causal proficiency gains. Pedagogically, the findings support Duolingo as a supplementary component of blended EFL instruction that should be paired with contextualized speaking, extended writing, and teacher feedback.

Keywords: *Duolingo, Mobile-assisted language learning, Student engagement, Motivation, Self-confidence*

Introduction

Mobile technologies have expanded when and where English as a Foreign Language (EFL) learners can practice. Mobile-assisted language learning (MALL) can provide repeated access to language resources, feedback, and progress information beyond scheduled classroom hours, thereby creating opportunities for self-directed learning and self-regulation (Lai et al., 2022; Lei et al., 2022). These affordances are especially relevant in higher education, where learners often combine formal instruction with out-of-class digital practice.

Artificial intelligence (AI) extends this mobile environment through adaptive sequencing, automated feedback, and data-informed personalization. Recent synthesis of AI-supported EFL research nevertheless emphasizes that the educational value of a technology depends on how its capabilities are integrated into learning tasks rather than on technical sophistication alone (Tang & Zhang, 2026). Duolingo provides a concrete MALL example: short lessons, progress indicators, repetition, and gamified elements such as points, streaks, and leaderboards translate these digital affordances into a highly structured practice environment (Shortt et al., 2023). Thus, the relevant pedagogical question is not simply whether the application contains engaging features, but how

learners experience those features and what kinds of learning they perceive them to support.

Prior Duolingo research presents a positive but not uniformly conclusive picture. Learners have reported valuing the application's flexibility and gamification, while independent case evidence has also documented variation in motivation and frustration with instructional materials (Loewen et al., 2019). Studies in Indonesian contexts similarly report positive perceptions of Duolingo for vocabulary learning and self-directed practice (Apoko et al., 2023; Sakkir & Syamsuddin, 2023; Dhiyaushshafa & Djuharie, 2025). However, positive perception should not be treated as equivalent to objective language gain. For example, Rachels and Rockinson-Szapkiw (2018) found no significant advantage for Duolingo over conventional instruction in Spanish achievement or academic self-efficacy, illustrating that favorable app experiences do not automatically establish superior learning outcomes.

Three learner-related constructs are particularly useful for interpreting these experiences. Engagement includes behavioral participation, emotional involvement, and cognitive investment (Fredricks et al., 2004). Motivation concerns why learners initiate and sustain practice; from a Self-Determination Theory (SDT) perspective, intrinsic motivation and more autonomous forms of extrinsic motivation are strengthened when learners experience autonomy and competence (Ryan & Deci, 2020). Duolingo research informed by SDT has likewise linked gamified progress with perceived motivation (Muttaqin et al., 2025). Self-confidence is also important in EFL contexts because a comparatively private digital space may lower anxiety and support repeated trial and error; broader MALL evidence has shown beneficial effects on motivation, anxiety, and self-efficacy, although such effects depend on context and design (Dong et al., 2022). These constructs are theoretically related, yet they are often studied as separate outcomes.

This separation leaves an important practical and conceptual gap. Reviews of self-directed mobile language learning show that mobile tools can support cognitive, metacognitive, social, and affective strategies, but learners still require appropriate strategies and pedagogical support to use technology effectively (Lai et al., 2022). Similarly, Duolingo-focused literature indicates that gamification can sustain participation while the application remains better suited to some forms of structured practice than to all aspects of communicative competence (Shortt et al., 2023; Dhiyaushshafa & Djuharie, 2025). For EFL teachers and higher education institutions, an integrated account of engagement, motivation, and self-confidence is therefore more informative than a single-outcome evaluation because it can clarify both the psychological appeal of the application and the areas in which classroom mediation remains necessary.

The novelty of the present study lies in examining engagement, motivation, self-confidence, and perceived challenges within one learner-perception framework rather than treating these dimensions as unrelated outcomes. The study aimed to explore how university English learners perceived the use of Duolingo for learning English across these dimensions. Accordingly, the research question was: How do university English learners perceive the use of Duolingo in learning English in relation to engagement, motivation, self-confidence, and perceived challenges? The archived research report preserved numerical findings for the first three dimensions but not a separate quantitative breakdown for perceived challenges; this reporting gap is stated explicitly in the Method and Results and is treated as a limitation rather than being filled through inference.

Method

Type of Research

This study employed a quantitative descriptive survey with a cross-sectional design. The design was appropriate because the purpose was to describe current patterns in learners' perceptions at a defined point in time rather than to manipulate an instructional treatment or establish causal effects (Creswell & Creswell, 2023). The questionnaire generated structured numerical responses that were summarized using descriptive statistics. Consequently, the study should be interpreted as an account of self-reported perceptions, not as evidence that Duolingo caused changes in language proficiency or psychological outcomes.

Subjects

Participants were university English learners in an EFL setting who had prior experience using Duolingo. Prior use was an eligibility criterion so that respondents could evaluate the application's learning features on the basis of direct experience. Data were collected during an academic semester over a two-week period.

Instrument

Data were collected using a structured questionnaire with a five-point Likert response scale from 1 (strongly disagree) to 5 (strongly agree). The instrument was organized around four domains: engagement, motivation, self-confidence, and perceived challenges. The questionnaire was adapted and developed from relevant literature, and the domain structure is summarized in Table 1. Likert-type items provide a consistent format for quantifying perceptions across multiple dimensions (Jebb et al., 2021).

Table 1. Questionnaire Dimensions

Dimension	Focus	Illustrative Indicators
Engagement	Learners' involvement and interest	Interactive features; immediate feedback; gamification; sustained participation
Motivation	Reasons for continuing to learn	Intrinsic interest; extrinsic rewards; goal achievement; future utility
Self-confidence	Perceived ability to use English	Speaking English; writing; vocabulary range; grammar accuracy
Perceived challenges	Difficulties encountered during use	Contextual limitations; technical issues; task difficulty; productive-skill limitations

Note. All items were rated on a five-point scale from strongly disagree to strongly agree.

Data Collection

The questionnaire was distributed to eligible students who had previously used Duolingo, and respondents answered on the basis of their recent learning experiences. Completed responses were checked for completeness, organized by questionnaire domain, and coded numerically. The two-week collection period was intended to capture current perceptions and limit long-term recall.

Data Analysis

Responses were coded from 1 (strongly disagree) to 5 (strongly agree) and entered into spreadsheet software, then grouped by the four questionnaire domains. Frequencies, percentages, and mean scores were calculated to summarize response patterns (Hair et

al., 2022). Although the questionnaire included perceived challenges, no separate numerical distribution for that domain was available in the reported results. Accordingly, no challenge percentages or mean scores are reconstructed in this article; this limitation is acknowledged in the interpretation of the findings.

Results

The reported data show generally positive perceptions of Duolingo across engagement, motivation, and self-confidence. These are three of the four domains identified in the questionnaire. A separate quantitative distribution for perceived challenges was not reported; therefore, the results below present only the dimensions for which empirical percentages were available. This distinction avoids unsupported reconstruction of missing results.

Student Engagement

Table 2. Students' Engagement Levels

Engagement Category	Percentage
Highly engaged	38%
Engaged	42%
Moderately engaged	15%
Low engagement	5%

The engagement distribution is concentrated in the two highest categories: 80% of respondents were engaged or highly engaged, while 15% were moderately engaged and 5% reported low engagement. Educationally, this pattern indicates that most respondents experienced Duolingo as a context in which they could remain involved in learning activities. However, the distribution describes perceived involvement only; it does not demonstrate that interactive features or gamification caused the engagement pattern, nor does it establish corresponding gains in English proficiency.

Student Motivation

Table 3. Reported Motivational Factors

Motivational Factor	Percentage
Goal achievement	85%
Intrinsic interest	78%
Future utility	72%
Extrinsic rewards	62%

The motivational profile shows a clear hierarchy. Goal achievement (85%) and intrinsic interest (78%) were more prominent than future utility (72%) and extrinsic rewards (62%). This ordering is analytically important because it suggests that respondents valued progress and the learning experience itself more than external incentives alone. The pattern is compatible with a more self-determined motivational orientation, although the descriptive design does not test the psychological mechanisms behind these percentages.

Student Self-Confidence

Table 4. Reported Improvement in Self-Confidence

Language Area	Percentage
Vocabulary range	82%
Grammar accuracy	70%
Speaking English	68%
Writing skills	55%

Self-confidence was strongest for vocabulary range (82%) and grammar accuracy (70%), followed by speaking English (68%), whereas writing skills received the lowest positive rating (55%). The pattern suggests a possible alignment between confidence and the type of practice most readily supported by short, repetitive, feedback-rich activities. The comparatively lower writing result is educationally meaningful because extended writing requires idea development, discourse organization, contextual appropriateness, and feedback beyond sentence-level accuracy. These results refer to perceived confidence and should not be interpreted as objective improvement in the corresponding language skills.

Perceived Challenges

Perceived challenges were included in the questionnaire design, with intended indicators related to contextual limitations, technical issues, task difficulty, and productive-skill limitations. However, the archived research report does not contain a separate numerical distribution or item-level results for this domain. For this reason, no empirical percentage or mean is reported here. The absence of these data reduces the completeness of the integrated framework and prevents balanced comparison between perceived benefits and difficulties.

Discussion

The engagement findings are consistent with the broader Duolingo literature in showing that learners often respond positively to flexibility, visible progress, and gamified practice (Loewen et al., 2019; Shortt et al., 2023). From a multidimensional engagement perspective, these features may support behavioral participation by prompting repeated use and emotional engagement by making progress visible and practice less monotonous (Fredricks et al., 2004). At the same time, the present study cannot determine which feature generated the observed engagement because no feature-level causal test was conducted. This caution matters because prior Duolingo research has also reported frustration and variability in learner persistence, indicating that gamification does not operate uniformly for all users (Loewen et al., 2019).

The motivational hierarchy provides a stronger theoretical insight than the percentages alone. Goal achievement and intrinsic interest exceeded extrinsic rewards, a pattern that is compatible with Self-Determination Theory, which distinguishes intrinsic and autonomous motivation from more externally controlled forms of regulation (Ryan & Deci, 2020). In this interpretation, progress indicators may be motivating not merely because they function as rewards, but because they can make competence and personal goal attainment visible. The finding is broadly consistent with Duolingo research framed through SDT (Muttaqin et al., 2025). Nevertheless, this study did not measure autonomy, competence, or relatedness directly, so SDT is used as an interpretive lens rather than as a statistically tested explanatory model.

The self-confidence pattern also qualifies overly broad claims about app effectiveness. Vocabulary and grammar received the strongest confidence ratings, whereas writing was markedly lower. Broader MALL research has shown that technology-supported instruction can improve psychological variables such as motivation and self-efficacy (Dong et al., 2022), but experimental Duolingo evidence has not always shown advantages over conventional instruction for achievement or self-efficacy (Rachels & Rockinson-Szapkiw, 2018). The present findings therefore add a more differentiated learner perspective: respondents felt more confident in areas compatible with structured repetition and immediate correction, while confidence was less pronounced for an open-ended productive skill. Because confidence was self-reported, it should not be equated with measured proficiency.

The lower writing confidence has direct pedagogical significance. Reviews of self-directed mobile language learning indicate that learners frequently rely on lower-order cognitive strategies and benefit when mobile practice is complemented by metacognitive, social, and higher-order activity (Lai et al., 2022). Duolingo can therefore be useful for routine individual practice without functioning as a complete EFL curriculum. The finding also aligns with recent synthesis emphasizing Duolingo's value for autonomous practice while noting limitations in speaking interaction and broader communicative development (Dhiyaushshafa & Djuharie, 2025). Classroom follow-up should consequently provide what the application offers less directly: authentic interaction, extended discourse, collaborative meaning-making, and individualized teacher feedback.

The study's scientific contribution is the integrated interpretation of three psychological dimensions that are often discussed separately. Considered together, the data suggest a coherent pattern in which a highly engaging practice environment coexists with motivation oriented more toward achievement and intrinsic interest, alongside confidence that varies by language skill. This integrated pattern generates a more nuanced hypothesis about MALL use than any single percentage can provide: app features may support sustained participation, visible progress may reinforce autonomous forms of motivation, and repeated low-risk practice may be associated with domain-specific confidence. Importantly, these relationships were not tested through correlation, mediation, or longitudinal analysis, so the proposed integration should be treated as a theory-informed interpretation and a basis for future hypothesis testing rather than evidence of a causal cycle.

Pedagogically, EFL teachers can use Duolingo as a structured out-of-class or blended-learning component while deliberately connecting app practice to classroom communication. A practical sequence is to use app-based work for repeated vocabulary/grammar exposure and progress monitoring, then require learners to reuse the same language in pair or group speaking, contextualized problem-solving, and extended writing followed by teacher or peer feedback. Higher education institutions can support this model through digital-access support, teacher development on MALL integration, and assessment policies that treat app activity as evidence of practice rather than as a substitute for demonstrated communicative performance. Such integration is consistent with research showing that mobile technology is most productive when learners receive strategic and pedagogical support (Lai et al., 2022; Lei et al., 2022).

Several limitations constrain interpretation and generalizability. First, the cross-sectional design captures perceptions at one point in time and cannot determine whether engagement, motivation, or confidence are sustained. Second, all outcomes are self-reported and may reflect response tendencies, prior preferences for digital learning, or perceived rather than actual proficiency. Third, complete participant demographics,

sampling details, item-level instrument information, psychometric evidence, and a separate quantitative analysis of perceived challenges were not available for the present reporting. These omissions limit evaluation of representativeness and measurement quality, concerns that are especially important in quantitative MALL research (Hou & Aryadoust, 2021). Finally, because the participants already had experience using Duolingo, the sample may underrepresent students who discontinued or avoided the application because of negative experiences.

Conclusion

This study addressed its objective by examining university EFL learners' perceptions of Duolingo through an integrated lens of engagement, motivation, and self-confidence while acknowledging the absence of separate quantitative reporting for perceived challenges. The central contribution is not a claim that Duolingo improves proficiency, but a differentiated account of how learners experience the application psychologically: participation was broadly positive, motivation was oriented more toward achievement and intrinsic interest than external rewards, and confidence varied across language domains. Interpreting these dimensions together extends single-outcome descriptions of MALL and offers a focused basis for theory-informed research on how engagement, motivation, and confidence may interact during app-supported language learning.

For practice, the findings support a blended model in which Duolingo is used for regular individual practice and progress visibility, while face-to-face or synchronous instruction supplies contextualized speaking, collaborative interaction, extended writing, and feedback on meaning and discourse. This complementary use preserves the application's strengths without treating it as a stand-alone curriculum or as evidence of objective proficiency.

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