

An Observational Analysis of Gamification Dynamics in Several Language Apps among EFL University Students

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Abstract

Mobile-assisted language learning (MALL) has become popular in recent years. Many language learning applications are turning to gamification as a core strategy to keep users engaged, but the question of whether these game-like features truly support language learning or simply keep learners clicking remains worth examining. This research investigates how gamification shapes learner motivation across several language applications, such as Cake, Duolingo, and Stimuler, with a particular focus on EFL university students and speaking skill development. Using a qualitative design, the researchers collected data through behavioural checklists and short post-observation interviews conducted with three students who frequently used the apps and were willing to participate in this research. The findings paint an interesting picture: Cake users were largely driven by external rewards such as points and notification reminders, while Duolingo users showed stronger intrinsic motivation despite having little freedom to navigate the app on their own terms. Stimuler, surprisingly, produced the most focused and self-directed learning behaviour even without any points or leaderboard system in place. Across all three applications, however, a shared limitation emerged: none of them sufficiently supported productive speaking output, which raises important questions about how well current MALL tools serve oral language development. These findings suggest that meaningful language learning through gamification depends less on how gamified the apps are, and more on how well they nurture learners' genuine curiosity and sense of autonomy.

Keywords: *Mobile Assisted Language Learning (MALL), Gamification, English as a Foreign Language (EFL), Language Learning Applications*

INTRODUCTION

The way people learn languages has changed quite dramatically over the past decade. Where learners once relied almost entirely on classroom instruction and printed materials, many now turn to their smartphones as a primary learning tool. Language learning applications have made practice more accessible than ever, allowing

users to engage with content anytime and anywhere at their own pace. This shift has given rise to a growing body of research on Mobile-Assisted Language Learning (MALL), broadly defined as the use of mobile devices to support and facilitate second or foreign language learning outside and sometimes inside the classroom (Stockwell, 2022). Studies across various EFL contexts have consistently shown that MALL can positively influence learners' language development by providing flexible, interactive, and self-paced learning experiences (Rajendran & Yunus, 2021).

One of the most defining characteristics of today's language learning applications is their heavy integration of gamification and the use of game design elements in non-game contexts (Deterding et al., 2011). Features such as experience points (XP), leaderboards, streaks, badges, and visual feedback have become standard components of popular MALL platforms. The appeal is understandable: gamification promises to make learning feel more engaging and enjoyable, potentially encouraging consistent app usage. Gamification has become an innovative trend in education which aims to make the learning process more attractive to students in a fun learning environment and is believed to facilitate and encourage students to participate in learning (Deterding et al., 2011). Research has also shown that gamified learning environments can boost motivation and support regular practice (Hamari, Koivisto, & Sarsa, 2014). However, motivation to open an app and motivation to genuinely learn a language are not always the same thing, and this distinction matters more than it might initially appear.

This tension becomes especially significant when considering speaking skills. EFL speaking performance is recognized as one of the most challenging skills among the four language competencies for EFL learners (Jao et al., 2022). Unlike reading or vocabulary exercises, speaking requires active and meaningful language production not merely recognition or selection of correct answers (Thornbury, 2005). In the current EFL context, MALL technologies are rarely used for educational purposes related to speaking, and instructors still tend to adopt conventional methods of language teaching (Hwang et al., 2024). Most applications continue to prioritize passive or recognition-based tasks listening, matching, and multiple choice over activities that genuinely push learners to produce spoken language independently. This raises a legitimate question: are these apps helping EFL learners develop speaking competence, or are they simply keeping users engaged through rewards and visual feedback?

Previous studies have explored gamification and MALL from various angles, including vocabulary acquisition, writing skills, and general language proficiency (Pingmuang & Koraneekij, 2022; Yassin & Abugohar, 2022). A systematic review of Duolingo literature noted that its challenging tasks, reward incentives, systematic levels, and ranking of users according to their achievements demonstrate strong gamification elements within this popular language learning application (Shortt et al., 2021). However, comparative observational studies that examine how different apps shape learner motivation particularly through the lens of intrinsic versus extrinsic motivation remain limited. Even less attention has been paid to how these motivational dynamics relate specifically to speaking skill development. This gap forms the core motivation for the present study.

Drawing on Self-Determination Theory (SDT) as its theoretical framework, which is a broad framework for understanding factors that facilitate or undermine intrinsic motivation, autonomous extrinsic motivation, and psychological wellness (Ryan & Deci, 2020), this study investigates how gamification shapes learner motivation across three MALL applications Cake, Duolingo, and Stimuler. Data were collected through behavioural observation checklists and brief post-observation interviews with three EFL university students who regularly used each application. The study aims to examine the nature of gamification features present in each app, identify the motivational profiles they generate in EFL learners, and explore the extent to which these applications support productive speaking output.

METHOD

This study employs a qualitative research design to explore how gamification shapes learner motivation across three MALL applications: Cake, Duolingo, and Stimuler among EFL university students. Unlike quantitative research, which focuses on measurement and generalisation, qualitative inquiry values depth, context, and human meaning (Creswell & Poth, 2018). This approach is particularly suited to the present study, as the goal is not to measure motivation statistically, but to understand how it manifests naturally in real users' interaction with language learning applications. The observational nature of the data collection further supports the choice of a qualitative framework, allowing the researchers to capture authentic behavioural patterns without manipulating the learning environment.

Participants

Three EFL university students participated in this study, one for each application under investigation. Participants were selected through purposive sampling, a technique widely used in qualitative research that involves the intentional selection of specific units based on their relevance to the research question, enabling the researchers to gain deep insights into complex phenomena (Tajik et al., 2024). The selection criteria required that participants were active users of their respective applications, meaning they had been using the app regularly for at least two weeks prior to the observation and were willing to participate in both the observation session and a brief follow-up interview. Participant A, observed using Cake, was a Level 5 user who reported using the application as a hobby. Participant B, observed using Duolingo, was a Level 11 user motivated by a desire to improve his speaking in a foreign language. Participant C, observed using Stimuler, had maintained a two-streak usage pattern for more than two weeks and expressed a goal of improving her English fluency for professional purposes. All participants were enrolled in an English Language Education Study Program at a university in Bogor.

Data Collection Instrument

Data were collected through two complementary instruments. The first was a structured behavioural observation checklist, designed to capture specific gamification-related behaviours during real-time app usage. The checklist covered five observable dimensions: the presence and user reaction to points or XP systems, engagement with leaderboard features, responses to visual and audio feedback, error management behaviour, and learning pace or speed of interaction. Each dimension was marked as present or absent and accompanied by descriptive field notes documenting the participant's actual behavioural responses. The observation sessions were conducted online via Google Meet video calls, during which observers watched participants interact with their respective applications in real time. Session durations ranged from 15 to 26 minutes.

The second instrument was a brief semi-structured post-observation interview consisting of three key questions drawn from Self-Determination Theory (SDT), focusing on extrinsic motivation (the influence of points and leaderboards on daily app usage), intrinsic motivation (whether the participant genuinely sought to understand the material or merely completed daily targets), and learner autonomy (whether the participant felt free to choose content or felt directed by the app's structure). This

combination of observation and interview allowed for data triangulation, strengthening the credibility of the findings (Creswell & Creswell, 2018).

Data Analysis

Data were analysed using thematic analysis following the six-phase framework proposed by Braun and Clarke (2006). Thematic analysis is a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set (Braun & Clarke, 2019). The analysis began with repeated reading and familiarization of all observation checklists and interview notes across the three apps. Initial codes were then generated to capture key behavioural and motivational patterns, followed by a process of clustering related codes into broader themes. Themes were subsequently reviewed and refined to ensure they were grounded in the data rather than imposed from outside. The final themes were defined and named in relation to the study's theoretical framework; Self-Determination Theory, particularly the constructs of intrinsic motivation, extrinsic motivation, and learner autonomy. Given the small and purposive sample, the findings are presented as descriptive and interpretive rather than generalizable, in keeping with the nature of qualitative inquiry.

RESULTS

This section presents the findings from the behavioural observation checklists and post-observation interviews conducted across three MALL applications Cake, Duolingo, and Stimuler. The results are organized around three main areas: (1) gamification features observed in each application, (2) learner motivation profiles as reflected in behavioural and interview data, and (3) the extent to which each application supported productive speaking output.

Gamification Features Across the Three Applications

The observation checklist revealed notable differences in the gamification features present across the three applications. Cake and Duolingo both demonstrated a full range of conventional gamification elements, while Stimuler stood out for its near-complete absence of such features.

In Cake, all five gamification dimensions on the checklist were observed as present. The application rewards users with experience points (XP) upon task completion, displays a leaderboard ranking users by score, provides immediate visual and audio feedback including checkmarks, motivational messages such as "Great job" and "Excellent," and pink crosses for incorrect answers and incorporates an error

management system that redirects users to the correct answer after a mistake. In terms of learning pace, the XP-based reward system appeared to encourage more careful and deliberate responses, as accuracy directly influenced point accumulation.

Duolingo similarly showed the presence of points and leaderboard features, along with immediate visual and audio feedback. However, one notable difference from Cake was the absence of an observable error management response in the participant, the subject did not appear to show frustration or heightened focus when answering incorrectly. Additionally, the observed participant demonstrated a tendency to click through answers quickly rather than reading instructions carefully, suggesting that the gamification system may have encouraged speed over depth of engagement.

Stimuler presented a markedly different profile. Neither points nor a leaderboard system was present in the application. The only gamification-adjacent feature observed was audio feedback in the form of a "ding" sound upon correct responses, which the participant reacted to positively. Instead of rushing through tasks, the participant consistently read instructions carefully before responding and reported that her pace was driven by genuine comprehension rather than any desire to accumulate points. The cross-app comparison of gamification features is summarized in Table 1 below.

Table 1. Gamification Feature Checklist Across Three Applications

No	Gamification Feature	App's Name		
		Cake	Duolingo	Stimuler
1	Points / XP	✓ Present	✓ Present	✗ Absent
2	Leaderboard	✓ Present	✓ Present	✗ Absent
3	Visual / Audio Feedback	✓ Present	✓ Present	✓ Present
4	Error Management	✓ Present	✗ Not observed	✓ Present
5	Deliberate Learning Pace	✓ Careful	✗ Rushed	✓ Careful

Learner Motivation Profiles

The post-observation interviews revealed distinct motivational profiles for each application user, reflecting varying degrees of intrinsic motivation, extrinsic motivation, and learner autonomy.

The Cake user demonstrated a predominantly extrinsic motivational profile. When asked about the influence of points and leaderboards on her daily app usage, the participant acknowledged that external features such as notifications, rewards, and point accumulation played a role in encouraging her to open the application regularly, as it was mentioned by student A;

" I always get notification from Cake APP when I haven't finished my daily challenge, it reminds me that I must keep in touch with English...., little bit worry of missing out the reward and point"

Intrinsic motivation appeared limited; the participant's primary driver was not deep language comprehension but rather the completion of daily targets prompted by app reminders. In terms of autonomy, the application offered some degree of self-pacing and freedom to choose learning activities, though access to higher-level content was restricted behind a premium subscription, which limited genuine learner independence.

The Duolingo user, by contrast, demonstrated a stronger intrinsic motivational profile. The participant explicitly stated that points and leaderboard rankings were not his primary reason for using the application; he opened it daily out of a genuine desire to understand the material. He also clarified that his motivation was not tied to maintaining streaks or completing daily targets, but to personal interest in language learning. However, his autonomy was notably limited: he reported following the application's preset content sequence without the freedom to navigate or select materials independently. It was in line with the statements from student B;

"To me, points or rewards were not very important, because my own goal is how I frequently interact with English everyday through this App....."

The Stimuler user showed the strongest intrinsic motivation among the three participants. Despite the complete absence of points and leaderboard features, she continued to engage with the application regularly, driven by a genuine desire to improve her English fluency for professional purposes. Student C said;

"I force myself to keep using the App, even if the App does not compete with gamified features, because I am more focused on English fluency rather than achieving the rewards or level..."

She confirmed that her approach to learning was focused on true comprehension rather than task completion, and that while she followed the app's level structure, she did not feel constrained or directed by it. The absence of gamification pressure appeared to create a more relaxed and focused learning environment.

Speaking Output Support

Across all three applications, a shared limitation emerged from the observation data. None of the three applications was found to adequately support productive speaking output. The tasks observed across Cake, Duolingo, and Stimuler were predominantly receptive in nature consisting of listening exercises, word matching, gap-filling, and multiple-choice activities. No instance of free or extended spoken language production was observed during any of the three sessions. This finding suggests that despite their differences in gamification design and motivational impact, all three applications share a common gap in their capacity to scaffold meaningful oral language development for EFL learners.

DISCUSSION

The findings of this study open a genuinely interesting conversation about how gamification functions and sometimes misfunctions in the context of mobile-assisted language learning. Rather than confirming a straightforward relationship between game-like features and learning quality, the data reveal a more nuanced picture: the presence of gamification does not guarantee meaningful engagement, and the absence of it does not necessarily diminish learning motivation. This section discusses the findings in relation to three key themes: the role of gamification in shaping motivation, the tension between extrinsic rewards and intrinsic learning drive, and the persistent gap in productive speaking support across all three applications.

Gamification and Motivational Orientation

The observation data clearly showed that the three applications occupy very different positions on the gamification spectrum, and that these differences correspond to distinct motivational orientations in their users. Cake and Duolingo, both heavily gamified, produced contrasting motivational profiles despite sharing similar game elements, a finding that challenges any assumption that gamification automatically

produces a uniform motivational effect. Gamification, through the incorporation of game elements such as points, badges, and leaderboards, has been shown to foster intrinsic motivation by creating a sense of achievement and competition, fuelling learners' enthusiasm and persistence in language learning tasks (Shen et al., 2024). However, the present study suggests that the effectiveness of these elements depends heavily on the individual learner's orientation toward them.

In the case of Cake, the gamification system appeared to function primarily as external trigger notifications and point accumulation were the main drivers of app usage rather than genuine interest in the language material. This aligns with what Self-Determination Theory describes as externally regulated motivation, the least autonomous form of extrinsic motivation, where behaviour is controlled by external contingencies such as rewards and reminders rather than personal value or interest (Ryan & Deci, 2020). In contrast, the Duolingo user demonstrated that strong intrinsic motivation could coexist with a heavily gamified interface, if the learner's fundamental orientation is toward genuine understanding rather than reward-seeking. This finding is consistent with research suggesting that SDT emphasizes fulfilling psychological needs such as competence, autonomy, and relatedness, which gamification can address through tailored challenges, choices, and social interaction (Shen et al., 2024).

The Over justification Risk in Language Learning Apps

Perhaps the most significant theoretical implication of the Cake findings concerns what Deci and colleagues have described as the over justification effect of the phenomenon whereby external rewards, over time, can undermine a learner's intrinsic motivation for an activity (Deci, Koestner, & Ryan, 1999). Tangible rewards do indeed have a substantial undermining effect on intrinsic motivation, and this risk appears particularly relevant in app-based language learning environments where reward systems are persistent, automated, and deeply embedded in the user experience (Deci et al., 1999). When the Cake user admitted that notification reminders were her primary motivation for opening the application, rather than a genuine desire to engage with the language, this suggests that the gamification design may have inadvertently displaced intrinsic motivation rather than supported it.

This risk is not inevitable, however. The Duolingo case demonstrates that even within a gamified system, intrinsic motivation can remain the dominant driver when the learner approaches the app with clear personal goals. What the data suggest is that the relationship between gamification and motivation is not determined by the features

themselves, but by the interaction between those features and the learner's pre-existing motivational orientation. App designers and EFL educators alike would benefit from recognizing this distinction particularly when recommending or integrating language learning apps into formal or informal learning programs.

The Autonomy Paradox

A further finding that warrants discussion is the apparent paradox around learner autonomy. All three applications were found to limit learner autonomy to varying degrees, despite their marketing as self-directed learning tools. It is not easy to find appropriate mobile applications in this modern era, and EFL learners need more time and chance to be accustomed to mobile use in learner autonomy (Chen, 2023). Duolingo was the most restrictive in this regard; the participant reported having no freedom to choose content, following only the app's prescribed learning sequence. Cake offered somewhat more flexibility in terms of content categories, but access to higher-level materials behind a premium paywall effectively limited genuine autonomy for free users. Stimuler, while also structured around levels, was perceived by its user as less controlling perhaps because the absence of reward pressure reduced the sense of being "driven" by external forces.

This finding is significant because learner autonomy is one of the three basic psychological needs identified in Self-Determination Theory alongside competence and relatedness as essential for intrinsic motivation and sustained engagement (Ryan & Deci, 2020). When apps restrict learner agency through rigid content sequencing or paywalled materials, they may inadvertently undermine the very motivational conditions that make self-directed mobile learning effective. The use of mobile-assisted language learning to promote learner autonomy in the EFL speaking context remains a promising but underrealized potential in current app design (Jaelani & Adung, 2022).

The Speaking Gap: A Shared Limitation

Across all three applications, the most consistent and arguably most consequential finding was the absence of productive speaking support. Regardless of their differences in gamification design and motivational impact, Cake, Duolingo, and Stimuler all relied predominantly on receptive tasks listening, matching, and multiple choice with no observed opportunity for learners to produce free or extended spoken output. These findings echoes what Hwang et al. (2024) identified in their review of MALL literature: most related studies have explored broader aspects of language

learning, such as vocabulary and grammar knowledge, and neglected the specific use of MALL apps' affordances in developing EFL learners' speaking skills.

The implications for EFL pedagogy are clear. Speaking, as Thornbury (2005) argues, requires not just exposure to language input but active and meaningful production conditions that none of the three observed applications adequately provided. For EFL university students whose academic and professional goals often centre on communicative competence, this gap represents a genuine limitation of current MALL tools. Future MALL applications would benefit from incorporating features that encourage spontaneous spoken production, such as voice recording tasks, AI-powered speaking feedback, or peer interaction functions, in ways that are meaningfully integrated with rather than subordinated to gamification mechanics.

CONCLUSION AND SUGGESTION

Conclusion

This study set out to examine how gamification shapes learner motivation across three MALL applications Cake, Duolingo, and Stimuler among EFL university students, with a particular focus on speaking skill development. Through behavioural observation checklists and brief post-observation interviews, the study produced findings that are both practically relevant and theoretically meaningful.

Three conclusions can be drawn from the data. First, gamification does not produce a uniform motivational effect across learners. While Cake and Duolingo share comparable gamification features, the motivational profiles of their users differed considerably, one leaning toward extrinsic motivation driven by external rewards and notifications, the other toward genuine intrinsic engagement with the learning content. This finding suggests that the motivational impact of gamification is shaped as much by the learner's personal orientation as by the app's design itself.

Second, the study found that the absence of gamification does not necessarily reduce engagement or learning motivation. Stimuler, despite offering no points or leaderboard system, produced the most focused and intrinsically motivated learning behaviour among the three participants. This is a particularly important finding for app developers and EFL educators, as it challenges the widely held assumption that gamification is a prerequisite for effective mobile language learning. Sustainable motivation in educational settings depends not on the quantity of external rewards but

on how well the learning environment supports learners' basic psychological needs for autonomy, competence, and relatedness.

Third, and perhaps most significantly for the EFL context, none of the three applications was found to adequately support productive speaking output. All three relied predominantly on receptive tasks, offering no observable opportunity for learners to produce free or extended spoken language. This finding confirms what the trajectory of MALL research has increasingly recognized: as technology becomes more ingrained in educational settings, researchers are recognizing the importance and potential of MALL in enhancing English speaking proficiency, yet current app designs still fall short of realizing this potential. Taken together, these findings suggest that meaningful language learning through MALL depends less on how gamified an application is, and more on how well it nurtures learners' genuine curiosity, sense of autonomy, and opportunities for authentic language production.

Suggestion

Based on the conclusions above, several suggestions are offered for two groups; EFL educators, and future researchers. For EFL educators, the study suggests that app selection for language learning should go beyond surface-level features such as visual appeal or popularity. Educators should critically evaluate whether a given application supports the kind of deep, intrinsically motivated engagement that leads to genuine language acquisition, rather than simply rewarding task completion. Additionally, educators can complement app-based learning by designing speaking tasks that bridge the productive gap identified in all three applications, ensuring that students have structured opportunities to practice oral production beyond what the app itself provides.

For future researchers, this study opens several productive avenues for further investigation. Given the small and purposive sample of this study, larger-scale research involving more participants across diverse EFL contexts would strengthen the generalizability of these findings. Longitudinal studies tracking changes in learner motivation over extended periods of app use would also be valuable, as the over justification effect may become more pronounced over time in heavily gamified environments. Finally, future research should replicate findings in varied contexts, including speaking and listening skills, and explore the impacts of learner autonomy and motivation in applications specifically designed to support oral language

development, including emerging AI-powered speaking tools that offer real-time pronunciation and fluency feedback.

REFERENCES

- Braun, V., & Clarke, V. 2006. *Using thematic analysis in psychology. Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. 2019. *Reflecting on reflexive thematic analysis. Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Chen, Y. 2023. *A review on learner autonomy with mobile-assisted language learning for EFL learners at the tertiary level. Open Journal of Modern Linguistics*, 13(5), 712–724. <https://doi.org/10.4236/ojml.2023.135046>
- Creswell, J. W., & Creswell, J. D. 2018. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th ed.)*. Thousand Oaks: SAGE Publications.
- Creswell, J. W., & Poth, C. N. 2018. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches (4th ed.)*. Thousand Oaks: SAGE Publications.
- Deci, E. L., Koestner, R., & Ryan, R. M. 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627–668. <https://doi.org/10.1037/0033-2909.125.6.627>
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. 2011. From game design elements to gamefulness: Defining gamification. *Proceedings of the 15th International Academic MindTrek Conference*. Tampere: ACM, 9–15. <https://doi.org/10.1145/2181037.2181040>
- Hamari, J., Koivisto, J., & Sarsa, H. 2014. Does gamification work? A literature review of empirical studies on gamification. *Proceedings of the 47th Hawaii International Conference on System Sciences*. Hawaii: IEEE, 3025–3034. <https://doi.org/10.1109/HICSS.2014.377>
- Hwang, G. J., Rahimi, M., & Fathi, J. 2024. Enhancing EFL learners' speaking skills, foreign language enjoyment, and language-specific grit utilising the affordances of a

- MALL app: A microgenetic perspective. *Computers & Education*, 214, 105015. <https://doi.org/10.1016/j.compedu.2024.105015>
- Jaelani, A., & Adung, N. 2022. The use of mobile-assisted language learning to promote learner autonomy in the EFL speaking context. *Journal of English Education*, 8(1), 68–84. <https://doi.org/10.30606/jee.v8i1.1284>
- Jao, C. Y., Yeh, H. C., Huang, Y. M., & Chen, N. S. 2022. Improving EFL speaking performance among undergraduate students with an AI-powered mobile app. *Humanities and Social Sciences Communications*, 12, 1–13. <https://doi.org/10.1057/s41599-025-04688-0>
- Pingmuang, P., & Koraneekij, P. 2022. Mobile-assisted language learning using task-based approach and gamification for enhancing writing skills in EFL students. *Electronic Journal of e-Learning*, 20(2), 84–97. <https://doi.org/10.34190/ejel.20.2.2339>
- Rajendran, T., & Yunus, M. M. 2021. A systematic literature review on the use of mobile-assisted language learning (MALL) for enhancing speaking skills among ESL and EFL learners. *International Journal of Academic Research in Progressive Education and Development*, 10(1), 586–609. <https://doi.org/10.6007/IJARPED/v10-i1/8327>
- Ryan, R. M., & Deci, E. L. 2020. Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Shen, Z., Lai, M., & Wang, F. 2024. Investigating the influence of gamification on motivation and learning outcomes in online language learning. *Frontiers in Psychology*, 15, 1295709. <https://doi.org/10.3389/fpsyg.2024.1295709>
- Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., & Akinkuolie, B. 2021. Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning*, 36(3), 517–554. <https://doi.org/10.1080/09588221.2021.1933540>
- Stockwell, G. 2022. *Mobile Assisted Language Learning: Concepts, Contexts and Challenges*. Cambridge: Cambridge University Press.

- Tajik, O., Golzar, J., & Noor, S. 2024. Purposive sampling in qualitative research: Insights and applications. *International Journal of English and Literature Studies*, 2(2), 1–15. <https://doi.org/10.22034/ijels.2025>
- Thornbury, S. 2005. *How to Teach Speaking*. Harlow: Pearson Longman.
- Yassin, B., & Abugohar, M. A. 2022. Gamified mobile-assisted formative assessment for reviving undergraduate learners' overall language proficiency. *Teaching English with Technology*, 22(2), 69–89.