RESEARCH PAPERS ON KNOWLEDGE, INNOVATION AND ENTERPRISE
VOLUME 14, ISSUE 1, JULY 2026, PP. 30-45

Students' Perceptions of Mobile-Assisted Grammar Learning: A Pilot Study of HSC Students in Dhaka, Bangladesh

TANVIR MOSTAFA
Bangladesh Air Force Shaheen College Kurmitola
Dhaka, Bangladesh

Abstract

This pilot mixed-methods study examined Higher Secondary Certificate (HSC) students' perceptions of mobile applications for English grammar learning in Dhaka, Bangladesh. A structured questionnaire was completed by 30 HSC students, and semi-structured interviews were conducted with 10 questionnaire respondents. Most participants perceived grammar-learning apps as engaging, easy to use, and motivating. Interactive exercises, gamification, user-friendly interfaces, and immediate feedback were commonly identified as helpful features. Interview participants also reported enjoyment, perceived writing confidence, and opportunities for independent practice. However, they identified simplified explanations, limited contextual examples, internet-related difficulties, and possible over-reliance on automated feedback as important limitations. As the study examined students' perceptions and did not measure changes in grammar performance, the findings should not be interpreted as evidence of actual improvement in grammar learning, writing ability, confidence, or motivation. The findings suggest that mobile grammar-learning tools may serve as supplementary resources when combined with teacher explanation, contextualised practice, guided writing, and classroom feedback.

Keywords: mobile-assisted language learning, grammar learning, HSC students, Bangladesh, learner motivation, Grammarly, Duolingo

1. Introduction

Grammar continues to be a high-stakes area of learning for students in Bangladesh. At the Higher Secondary Certificate (HSC) level, students are expected to use grammatically accurate English in classroom activities, public examinations, and future academic or professional contexts. Although the place of explicit grammar teaching has changed within English language teaching, grammatical accuracy remains important for students'

writing confidence and assessment readiness. However, many students associate grammar learning with memorisation, repetition, and teacher-led correction. This creates a need for supplementary practices that may offer flexibility, interaction, and motivation without neglecting accuracy.

Mobile-assisted language learning (MALL) has emerged as a significant branch of technology-based language teaching and learning. Mobile devices allow learners to practise outside the classroom, receive immediate feedback, and repeat exercises at their own pace (Kukulska-Hulme, 2009; Stockwell, 2010). In recent years, many English learners have become familiar with mobile tools such as Duolingo and Grammarly, together with other grammar-practice applications. These tools commonly provide short tasks, automated correction, gamification, progress monitoring, and portable learning materials. Such features may be particularly appealing to HSC students who combine classroom study with independent practice.

However, the pedagogical value of mobile grammar-learning tools should not be assumed merely because the technology is available. Although students may perceive an app as motivating and appreciate immediate correction, some tools may provide simplified explanations or encourage dependence on automated feedback. International research therefore emphasises that pedagogical integration, access, self-regulation, task design, and contextual relevance are important conditions for successful mobile learning (Burston, 2015; Sung et al., 2015; Zhang & Zou, 2022).

Empirical evidence on HSC students' perceptions of mobile applications for grammar learning remains limited in Bangladesh. Existing digital-learning research has focused mainly on general English proficiency, higher education, or broad technology use rather than grammar-focused mobile learning at the higher-secondary level. The present study addresses this gap by examining students' perceptions of engagement, usability, motivation, helpful features, and constraints in the Dhaka context.

1.1 Research Questions

1. How do HSC students perceive the use of mobile applications for learning English grammar?
2. Which features of grammar-learning apps do students perceive as helpful or challenging?
3. How do students perceive the influence of mobile applications on their motivation and interest in learning grammar?

1.2 Objectives of the Study

1. To identify students' attitudes toward mobile applications used for English grammar learning.
2. To examine the app features that support or limit grammar learning from students' perspectives.

3. To offer practical recommendations for teachers, curriculum designers, and app developers in relation to mobile-assisted grammar learning in Bangladesh.

2. Literature Review and Theoretical Positioning

2.1 Mobile-Assisted Language Learning

MALL refers to language learning through portable digital devices such as smartphones and tablets. As an extension of computer-assisted language learning, MALL enables learning across locations, times, and individual study patterns. Godwin-Jones (2017) highlights the growing importance of smartphones in language learning, while Shadiev et al. (2017) emphasise the value of authentic mobile-learning contexts. Kukulska-Hulme (2009) argues that mobile devices can make language learning flexible and context -sensitive beyond the classroom. Stockwell (2010) similarly notes that mobile devices are suitable for short, frequent learning tasks, although successful use depends on learner motivation and task appropriateness. Systematic reviews and meta-analyses generally report beneficial outcomes when mobile activities are carefully designed. Burston (2015) stresses that successful MALL should be understood in terms of pedagogical integration rather than technology use alone, while Sung et al. (2015) found that mobile devices are most useful when activities are structured and linked to language-learning objectives. Personalisation, accessibility, self-regulation, collaboration, and contextual learning remain central themes in the literature (Crompton & Burke, 2018; Kukulska-Hulme & Viberg, 2018; Naveed et al., 2023; Valencia-Arias et al., 2024).

2.2 Mobile Applications and Grammar Learning

Grammar learning requires repeated exposure, attention to form, practice, feedback, and opportunities for use. Mobile grammar-learning tools may support these processes through interactive exercises, immediate feedback, and repeated practice. Li and Hegelheimer (2013) showed that mobile grammar activities can assist self-editing in L2 writing by helping learners notice and correct forms. Nevertheless, error correction alone is insufficient. Explanations, contextualised examples, communicative use, and teacher guidance are also needed to help learners understand why a structure is appropriate. Automated writing-evaluation tools such as Grammarly can provide immediate feedback on spelling, punctuation, grammar, and style. Previous research indicates that students may perceive such tools as supporting confidence and independence, while also raising concerns about the pedagogical depth and accuracy of automated feedback (Cavaleri & Dianati, 2016; Ghufron & Rosyida, 2018; O'Neill & Russell, 2019; Ranalli, 2018). Dizon and Gayed (2021) similarly suggest that the value of Grammarly for L2 writing depends on how learners interpret and apply its feedback.

2.3 Motivation, Gamification, and Learner Autonomy

Gamification features such as points, badges, streaks, progress indicators, and levels are common in language-learning apps. These features may make grammar practice more engaging and encourage repeated interaction. Mobile tools may also reduce the pressure associated with immediate peer evaluation by allowing learners to practise privately and repeat activities. This is consistent with Krashen's (1982) argument that a lower affective filter can facilitate second-language acquisition. However, gamification may encourage superficial engagement when rewards are not connected to meaningful learning objectives. Teacher mediation therefore remains important in helping students transform app-based practice into durable grammatical knowledge.

Mobile apps also allow learners to practise independently and monitor their progress. However, learner autonomy should not be understood as learning in isolation. Sociocultural theory proposes that learners develop through tools, interaction, and support within the Zone of Proximal Development (Vygotsky, 1978). In mobile grammar learning, scaffolding may be provided through hints, corrective feedback, examples, and teacher follow-up. Apps may therefore function as mediating tools when learners receive guidance on evaluating feedback critically, avoiding excessive dependence, and applying grammatical knowledge in writing and communication. Recent evidence also suggests that gamified tasks, personalised learning, collaborative activities, and learner interaction can support mobile-assisted self-regulated language learning (Asadnia, 2025).

2.4 Bangladeshi HSC Context and Research Gap

English has high academic and social status in Bangladesh, although many learners have limited opportunities for extended English use. Grammar remains significant at the HSC level because it is closely connected to examination writing and perceived writing confidence. Although communicative and digital approaches are encouraged, teachers and students may continue to prioritise grammatical accuracy. Earlier research has repeatedly identified gaps among curriculum intentions, assessment requirements, classroom practices, and available resources in Bangladesh (Hamid & Baldauf, 2008). The present study responds to the limited evidence on HSC students' perceptions of mobile grammar-learning tools by combining questionnaire trends with interview accounts in a grammar-focused investigation.

2.5 Theoretical Framework

The Technology Acceptance Model (TAM) was used as the principal analytical framework of this study. TAM explains technology adoption through perceived usefulness and perceived ease of use (Davis, 1989). These constructs were applied to examine whether students perceived mobile grammar-learning tools as useful, accessible, easy to operate, and rele-

vant to grammar practice. Sociocultural theory was retained as a supporting perspective to explain the importance of scaffolding, feedback, contextualised examples, and teacher mediation (Vygotsky, 1978). In the analysis, TAM was applied to students' perceptions of usefulness and usability, while sociocultural theory supported the interpretation of teacher guidance and scaffolding. Krashen's input hypothesis is discussed in the literature review but was not used as a separate analytical framework in interpreting the findings. Recent research also indicates that perceived usefulness, ease of use, facilitating conditions, motivation, and personal characteristics shape students' adoption of smartphone-assisted language learning (Luo & Watts, 2026).

3. Methodology

3.1 Research Design

The study adopted a pilot mixed-methods design. The quantitative component used a structured questionnaire to identify broad patterns in students' perceptions. The qualitative component used semi-structured interviews with a subset of questionnaire respondents to explore their experiences, explanations, and concerns in greater depth. The two components were integrated during interpretation to examine where numerical trends and interview accounts converged or differed.

3.2 Participants and Setting

This small-scale pilot study used convenience sampling to recruit 30 HSC students from eight higher-secondary colleges in Dhaka, Bangladesh. Participants were selected on the basis of accessibility, voluntary participation, current HSC enrolment, and prior experience with mobile grammar-learning tools. All 30 students completed the questionnaire, and 10 questionnaire respondents volunteered for follow-up semi-structured interviews. The sample included male and female students aged approximately 16-18 years; however, separate gender counts were not recorded in the manuscript. Regarding prior app-use frequency, eight participants reported daily use, 12 weekly use, seven occasional use, and three rare use. Participants had experience with mobile grammar-learning tools, including Duolingo, Grammarly, and other grammar-practice applications. The institutions are not identified because formal permission to disclose their names was not obtained and the study focused on students' perceptions rather than institutional performance.

3.3 Instruments

Two instruments were used to collect data. The questionnaire was structured around the three research questions and included demographic and app-use questions, four five-point Likert-scale items measuring general

attitudes, and five feature items classified as helpful, neutral, or challenging. The five-point scale ranged from strongly disagree to strongly agree and addressed engagement, ease of use, perceived motivation, and the sufficiency of examples. The feature items addressed interactive exercises, gamification, feedback mechanisms, contextual examples, and user interface. The semi-structured interview guide explored enjoyment, portability, feedback, technical difficulties, perceived writing confidence, and comparisons with textbook-based learning. The two instruments supported methodological triangulation by allowing questionnaire trends to be compared with participants' interview accounts. The questionnaire was not formally pilot-tested, and internal-consistency reliability was not assessed using Cronbach's alpha. The quantitative findings are therefore interpreted as preliminary descriptive evidence rather than results from a validated measurement scale.

3.4 Data Collection Procedures

Data collection occurred in two stages. First, the questionnaire was distributed to 30 HSC students and required approximately 20 minutes to complete. Second, 10 questionnaire respondents participated in semi-structured interviews. The interviews were conducted in a quiet classroom and lasted approximately 10 minutes each. The same broad topics were addressed across interviews, while follow-up prompts allowed participants to explain their experiences in greater detail.

3.5 Data Analysis

Questionnaire responses were analysed descriptively using frequencies and percentages and were organised around the three research questions. Interview responses were analysed thematically through repeated reading, initial coding, comparison across participants, and grouping of related codes into broader themes. The final themes included engagement and enjoyment, usability and accessibility, perceived confidence, simplified explanations, technical barriers, and possible over-reliance on automated feedback. The quantitative and qualitative findings were compared to identify convergence, differences, and areas where interview data provided additional explanation. Coding was conducted by the author, and no independent second -coder check was undertaken; this is acknowledged as a methodological limitation.

3.6 Ethical Considerations

Participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time. Questionnaire and interview responses were anonymised, and no personally identifying information was reported. The collected data were used only for academic purposes. Because the participants were approximately 16-18 years

old, the study records should ideally distinguish adult consent from student assent and parental or guardian permission for participants under 18. This distinction was not documented in the available pilot-study records and is acknowledged as a procedural limitation.

4. Results

4.1 RQ1: Students' General Perceptions and App-Use Patterns

The first research question examined students' general perceptions of mobile applications for English grammar learning. Table 1 presents responses to four statements concerning engagement, ease of use, perceived motivation, and the sufficiency of examples.

Table 1. *Students' general attitudes toward grammar apps (n = 30)*

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Mobile apps make grammar learning engaging	12 (40.0%)	11 (36.7%)	3 (10.0%)	2 (6.7%)	2 (6.7%)
Grammar apps are easy to use	10 (33.3%)	13 (43.3%)	4 (13.3%)	2 (6.7%)	1 (3.3%)
I feel more motivated to study grammar when using grammar-learning apps	10 (33.3%)	12 (40.0%)	5 (16.7%)	2 (6.7%)	1 (3.3%)
Grammar apps provide sufficient examples	8 (26.7%)	11 (36.7%)	6 (20.0%)	3 (10.0%)	2 (6.7%)

Note. Percentages are rounded to one decimal place.

The highest level of agreement was observed for engagement: 23 of 30 students (76.7%) agreed or strongly agreed that mobile apps made grammar learning engaging. The same number held positive perceptions of ease of

use. Twenty-two students (73.3%) reported feeling more motivated when using grammar-learning apps. The lowest positive response concerned the sufficiency of examples, with 19 students (63.3%) agreeing or strongly agreeing.

Table 2. *Frequency of grammar-app use (n = 30)*

Frequency of use	Number of students	Percentage
Daily	8	26.7%
Weekly	12	40.0%
Occasional	7	23.3%
Rare	3	10.0%

Note. Percentages are rounded to one decimal place.

Regarding frequency of use, eight participants (26.7%) reported daily use, 12 (40.0%) weekly use, seven (23.3%) occasional use, and three (10.0%) rare use. Thus, 20 of the 30 respondents reported using grammar-learning apps at least once a week.

The questionnaire and interview findings broadly converged. Interview participants described grammar-learning apps as more enjoyable and accessible than textbook-only practice. One student stated, "Duolingo is like a game; I don't get bored with grammar." Another explained, "I can study grammar on the bus; I can study grammar anywhere." These accounts support the positive questionnaire trends regarding engagement and usability, while representing perceived experiences rather than measured improvement.

4.2 RQ2: Helpful and Challenging App Features

The second research question examined the features that students perceived as helpful or challenging. Table 3 presents their evaluations of five common app features.

Table 3. *Students' perceptions of grammar-app features (n = 30)*

Feature	Helpful	Neutral	Challenging
Interactive exercises	26 (86.7%)	3 (10.0%)	1 (3.3%)
Gamification (points, badges, levels)	21 (70.0%)	6 (20.0%)	3 (10.0%)
Feedback mechanisms	23 (76.7%)	4 (13.3%)	3 (10.0%)
Contextual examples	18 (60.0%)	8 (26.7%)	4 (13.3%)
User interface	24 (80.0%)	5 (16.7%)	1 (3.3%)

Note. Percentages are rounded to one decimal place.

Interactive exercises received the highest helpful rating, followed by user interface and feedback mechanisms. Gamification was also viewed positively by most participants. Contextual examples received the lowest helpful rating, indicating that students valued app-based practice but did not always consider the examples sufficiently detailed or relevant.

The quantitative and qualitative findings converged regarding the usefulness of interactive activities, easy navigation, and immediate feedback. One participant commented, "Grammarly is easy to use; it corrects my mistakes as they happen." However, the interviews provided additional detail about limitations. One student stated, "Sometimes the grammar rules are simplified in apps, and I need more detailed explanations." Another reported, "There's a problem with the Internet connection. I can't use the apps without a Wi-Fi connection." These comments show that pedagogical depth and technical access shaped students' evaluations of the tools.

4.3 RQ3: Perceived Influence on Motivation and Interest

The third research question examined students' perceptions of how mobile applications influenced their motivation and interest in grammar learning. Twenty-two participants (73.3%) agreed or strongly agreed that they felt more motivated when using grammar-learning apps. Interview participants associated this perception with gamification, portability, immediate feedback, and reduced boredom.

One participant stated, "I enjoy accumulating points and badges; it helps me stay motivated." Another reported, "I feel good when I write essays using Grammarly." The interview data were broadly consistent with the questionnaire trend, while also suggesting that technical problems and simplified explanations could reduce sustained motivation. These accounts

indicate perceived motivation and confidence; they do not demonstrate objectively measured changes in motivation, writing ability, or grammar performance.

5. Discussion

5.1 Discussion of RQ1: Students' General Perceptions

The findings for RQ1 suggest that the participating HSC students generally perceived mobile grammar-learning tools positively. Questionnaire responses indicated favourable perceptions of engagement, usability, and regular access, while interview participants described the tools as convenient and enjoyable. This convergence suggests that portability, ease of use, and short practice opportunities were important aspects of students' experiences. The findings are consistent with MALL research emphasising flexibility, accessibility, and opportunities for language practice beyond the classroom (Kukulska-Hulme, 2009; Stockwell, 2010; Sung et al., 2015). However, the study measured perceptions rather than learning outcomes and cannot establish that frequent app use improved grammar knowledge or writing performance.

5.2 Discussion of RQ2: Helpful and Challenging Features

For RQ2, participants most often identified interactive exercises, user-friendly interfaces, immediate feedback, and gamification as helpful. Questionnaire and interview findings converged particularly on ease of use and immediate correction. However, contextual examples received the lowest helpful rating, and interview participants described some explanations as overly simplified. This finding is consistent with concerns that automated feedback may identify errors without always providing sufficient explanation for deeper grammatical understanding (Cavaleri & Dianati, 2016; Ranalli, 2018). Internet connectivity and possible over-reliance on automated correction also emerged as challenges. The interviews therefore extended the questionnaire results by explaining why some features were viewed less positively.

5.3 Discussion of RQ3: Perceived Motivation and Interest

For RQ3, most participants reported that mobile apps made grammar practice more enjoyable and motivating. Interview responses linked these perceptions to points, badges, portability, immediate feedback, and reduced boredom. Some students also reported greater confidence when writing with Grammarly. These findings require cautious interpretation. Motivation was not measured with a validated motivation scale, writing confidence was not compared with assessed writing performance, and the study did not use a control group or pre-test-post-test design. The results therefore indicate perceived motivation and confidence rather than demonstrated psychological or academic improvement.

5.4 Theoretical Interpretation

The findings are consistent with TAM because students' positive perceptions were associated with perceived usefulness and ease of use. Students valued tools that were accessible, understandable, and relevant to grammar practice, while technical barriers and limited explanations appeared to reduce perceived usefulness. Sociocultural theory provides a supporting interpretation of the continuing role of teacher mediation. Although apps may provide exercises, hints, and immediate feedback, teachers remain important for explaining grammatical rules, contextualising examples, and helping students evaluate automated suggestions. Mobile grammar-learning tools are therefore better understood as supplementary resources than as replacements for classroom instruction.

6. Pedagogical Implications

First, teachers may use grammar-learning apps as supplementary tools after classroom explanation. Following instruction on a grammar point, students may complete app-based practice and then review common difficulties with the teacher.

Second, automated feedback should be treated as a starting point rather than an endpoint. Students should be encouraged to evaluate suggestions, compare them with reliable explanations, and revise their own writing critically.

Third, curriculum designers may integrate mobile-assisted grammar practice into revision, homework, and other low-stakes blended-learning activities, provided that the tasks remain aligned with local curricular and assessment needs.

Fourth, app developers should consider more contextualised grammar examples, offline access, lightweight tasks, and content relevant to Bangladeshi learners. Localised examples may make grammar practice more meaningful and easier to connect with classroom learning.

Finally, students should be encouraged to use apps regularly but critically. Independent practice may support learner autonomy, whereas uncritical reliance on automated correction may weaken students' ability to make their own grammatical judgements.

7. Limitations and Future Research

This research has several limitations. First, it was a small pilot study involving 30 HSC students selected through convenience sampling from eight colleges in Dhaka; the findings cannot be generalised to all HSC learners in Bangladesh. Second, the study relied on self-reported perceptions and did not include a grammar test, writing assessment, control group, or pre-test-post-test design. Third, the questionnaire was not formally pilot-tested, and internal-consistency reliability was not assessed using

Cronbach's alpha. Fourth, interview coding was conducted by the author without an independent second-coder check. Fifth, separate gender counts were not reported. Finally, the available study records did not distinguish adult consent from assent and parental or guardian permission for participants under 18. These limitations require cautious interpretation of both the quantitative and qualitative findings.

Future research should use larger and more diverse samples from urban and rural contexts. Longitudinal or experimental designs are needed to determine whether regular app use produces measurable changes in grammatical accuracy or writing performance. Future studies may also compare specific grammar-learning tools, examine teacher-supported implementation, use validated motivation or technology-acceptance measures, and investigate the value of offline or locally contextualised features for learners with limited internet access.

8. Conclusion

This pilot study examined HSC students' perceptions of mobile-assisted grammar learning in Dhaka, Bangladesh. Most participants perceived grammar-learning apps as engaging, easy to use, and motivating. They particularly valued interactive exercises, gamification, user-friendly interfaces, and immediate feedback. However, they also reported simplified explanations, limited contextual examples, internet-related difficulties, and possible over-reliance on automated correction. Because the study measured perceptions rather than actual grammar performance, it does not demonstrate that mobile apps improve grammar learning, writing ability, confidence, or motivation. The findings suggest only that the participating students viewed these tools as potentially useful supplementary resources. Mobile grammar-learning tools may be most appropriately used alongside teacher explanation, contextualised examples, guided writing practice, and classroom feedback. Larger experimental and longitudinal studies are needed to determine whether regular app use produces measurable changes in grammar performance.

Correspondence
Tanvir Mostafa
Lecturer, Department of English
Bangladesh Air Force Shaheen College Kurmitola
Dhaka, Bangladesh
Email: romen18142@gmail.com

Declarations

Ethics statement

Participation was voluntary, responses were anonymised, and no identifying student information is reported. The available pilot-study records did not separately document age-specific assent and parental or guardian permission procedures for participants under 18.

Conflict of interest

The author declares no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

AI disclosure statement

During the preparation and revision of this manuscript, the author used ChatGPT, developed by OpenAI, for language refinement, editorial restructuring, and improving academic clarity, and Grammarly for grammar, spelling, and style checking. All AI-assisted content was critically reviewed, revised, and approved by the author, who assumes full responsibility for the accuracy, integrity, originality, citations, interpretations, and final content of the manuscript.

References

Asadnia, F. (2025). From passive installers to active app users: EFL students' lived experiences of mobile-assisted self-regulated language learning. Innovation in Language Learning and Teaching. Advance online publication. https://doi.org/10.1080/17501229.2025.2563109

Burston, J. (2015). Twenty years of MALL project implementation: A meta-analysis of learning outcomes. ReCALL, 27(1), 4-20. https://doi.org/10.1017/S0958344014000159

Cavaleri, M., & Dianati, S. (2016). You want me to check your grammar again? The usefulness of an online grammar checker as perceived by students. Journal of Academic Language & Learning, 10(1), A223-A236.

Crompton, H., & Burke, D. (2018). The use of mobile learning in higher education: A systematic review. Computers & Education, 123, 53-64. https://doi.org/10.1016/j.compedu.2018.04.007

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340. https://doi.org/10.2307/249008

Dizon, G., & Gayed, J. M. (2021). Examining the impact of Grammarly on the quality of mobile L2 writing. The JALT CALL Journal, 17(2), 74-92. https://doi.org/10.29140/jaltcall.v17n2.336

Ghufron, M. A., & Rosyida, F. (2018). The role of Grammarly in assessing English as a foreign language (EFL) writing. Lingua Cultura, 12(4), 395-403. https://doi.org/10.21512/lc.v12i4.4582

Godwin-Jones, R. (2017). Smartphones and language learning. Language Learning & Technology, 21(2), 3-17. https://doi.org/10.64152/10125/44607

Hamid, M. O., & Baldauf, R. B. (2008). Will CLT bail out the bogged-down ELT in Bangladesh? English Today, 24(3), 16-24. https://doi.org/10.1017/S0266078408000234

Krashen, S. D. (1982). Principles and practice in second language acquisition. Pergamon Press.

Kukulska-Hulme, A. (2009). Will mobile learning change language learning? ReCALL, 21(2), 157-165. https://doi.org/10.1017/S0958344009000202

Kukulska-Hulme, A., & Viberg, O. (2018). Mobile collaborative language learning: State of the art. British Journal of Educational Technology, 49(2), 207-218. https://doi.org/10.1111/bjet.12580

Li, Z., & Hegelheimer, V. (2013). Mobile-assisted grammar exercises: Effects on self-editing in L2 writing. Language Learning & Technology, 17(3), 135-156. https://doi.org/10.64152/10125/44343

Luo, Y., & Watts, M. (2026). Students' readiness for and adoption of smartphones for language learning: Extending the unified theory of acceptance and use of technology. Computer Assisted Language Learning. Advance online publication. https://doi.org/10.1080/09588221.2025.2611001

Naveed, Q. N., Choudhary, H., Ahmad, N., Alqahtani, J., & Qahmash, A. I. (2023). Mobile learning in higher education: A systematic literature review. Sustainability, 15(18), 13566. https://doi.org/10.3390/su151813566

O'Neill, R., & Russell, A. (2019). Stop! Grammar time: University students' perceptions of the automated feedback program Grammarly. Australasian Journal of Educational Technology, 35(1), 42-56. https://doi.org/10.14742/ajet.3795

Ranalli, J. (2018). Automated written corrective feedback: How well can students make use of it? Computer Assisted Language Learning, 31 (7), 653-674. https://doi.org/10.1080/09588221.2018.1428994

Shadiev, R., Hwang, W.-Y., & Huang, Y.-M. (2017). Review of research on mobile language learning in authentic environments. Computer Assisted Language Learning, 30(3-4), 284-303. https://doi.org/10.1080/09588221.2017.1308383

Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of platform. Language Learning & Technology, 14(2), 95-110. https://doi.org/10.64152/10125/44216

Sung, Y.-T., Chang, K.-E., & Yang, J.-M. (2015). How effective are mobile devices for language learning? A meta-analysis. Educational Research Review, 16, 68-84. https://doi.org/10.1016/j.edurev.2015.09.001

Valencia-Arias, A., Cardona-Acevedo, S., Gomez-Molina, S., Velez Holguin, R. M., & Valencia, J. (2024). Adoption of mobile learning in the university context: Systematic literature review. PLOS ONE, 19 (6), e0305986. https://doi.org/10.1371/journal.pone.0305986

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press.

Zhang, R., & Zou, D. (2022). Types, purposes, and effectiveness of state-of-the-art technologies for second and foreign language learning. Computer Assisted Language Learning, 35(4), 696-742. https://doi.org/10.1080/09588221.2020.1744666