Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

The Effectiveness of SPENZALA TenseSmart (STS) in Improving Students' Mastery of English Tenses

Endang Usriyah[1(*)], Ngasbun Egar[1], Rahmawati Sukmaningrum[1]
[1]Universitas PGRI Semarang

Received : 5 Oct 2025
Revised : 15 Nov 2025
Accepted : 22 Des 2025

Abstract

This study investigates the effectiveness of the SPENZALA TenseSmart (STS) application in improving ninth-grade students' mastery of English tenses. Employing a one-group pre-test–post-test design within a blended learning environment, the study involved 31 students from Class IX A at SMP Negeri 1 Welahan. Data were collected using a pre-test, post-test, and a student response questionnaire. The results indicate a substantial improvement in students' grammar achievement, with the mean score increasing from 59.58 to 85.16. The normalized gain (N-gain) value falls into the moderate-to-high category, confirming the effectiveness of the intervention. A paired sample t-test further shows a statistically significant difference between the pre-test and post-test results ($p < 0.05$). Student responses also demonstrate highly positive perceptions of the STS application (overall mean = 4.36), particularly regarding flexibility, ease of use, and usefulness for mastering tenses. The findings suggest that STS is an effective digital learning tool that enhances grammar understanding, supports independent learning, and increases motivation within a blended learning context.

Keywords: SPENZALA TenseSmart; English tenses; mobile-assisted language learning; grammar instruction; blended learning

(*) Corresponding Author: endang.usr67@gmail.com

How to Cite: Usriyah, Endang, Egar, Ngasbun, Sukmaningrum, Rahmawati. (2025). The Effectiveness of SPENZALA TenseSmart (STS) in Improving Students' Mastery of English Tenses. *Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran,* Vol 19 (2): 221-229.

INTRODUCTION

For EFL learners, grammatical proficiency and sentence precision depend heavily on their mastery of English tenses (Azar, 2016; Richards & Reppen, 2014). Students who have a firm grasp of tense patterns are better able to articulate time relationships, make coherent sentences, and communicate both orally and in writing. However, junior high school students usually struggle with tense patterns, verb forms, and contextual usage due to ambiguous explanations, a lack of practice, and a preponderance of traditional teacher-centered teaching. These difficulties frequently result in enduring misunderstandings, frequent grammatical mistakes, and a lack of confidence when using grammar rules in real-world communication tasks. This situation presents challenges for many students in advancing to more complex language skills, highlighting the necessity for more engaging and accessible methods for learning tenses.

More adaptable, accessible, and engaging language learning options are now possible thanks to developments in mobile technology. Students can now interact with learning materials outside of the classroom and at their own pace, thanks to the growing availability of cellphones. Autonomy, motivation, and engagement in grammar acquisition are all increased by mobile-assisted language learning (MALL) (Hwang & Fu, 2019; Kukulska-Hulme & Shield, 2008). Instant feedback and self-paced practice are examples of interactive features that provide students with the chance to go over difficult ideas again and strengthen their comprehension through repeated exposure. In conjunction with classroom instruction, blended learning offers direction and structure while permitting self-directed inquiry (Garrison & Vaughan, 2008; Graham, 2019). With the help of mobile-based review and practice, students can further their grasp of ideas while professors introduce and explain them during in-class instruction.

Despite the widespread use of mobile applications, many grammar learning apps lack pedagogical scaffolding, are not connected with classroom instruction, or do not correspond with school curricula. Because of this, students frequently rely on

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

digital resources that don't meet their unique learning requirements or encourage the methodical development of grammatical competence. According to earlier research, junior high school students want contextualized, curriculum-aligned, and practical digital grammar tools (Shadiev et al., 2020; Philipsen & Tondeur, 2023). According to this research, good digital media must do more than just convey knowledge; it must also lead students through organized practice, relate to learning goals, and offer feedback that encourages deeper comprehension.

The SPENZALA TenseSmart (STS) application was created to help teach English tenses by providing examples, explanations, and interactive exercises. With curriculum-relevant materials and features that encourage self-directed learning and repeated practice, STS was created especially for junior high school students. This study assesses STS based on student perceptions, expert validation, and efficacy. The study looks at how students see the application's usability and utility, if educational experts think it's appropriate for instructional integration, and whether it can significantly increase students' grasp of English tenses.

Thus, the research question is: How well does the SPENZALA TenseSmart program help students become more proficient in English tenses in a mixed learning setting?

In keeping with this goal, the approach for assessing STS's instructional efficacy is described in the next section. The approach explains how the procedures, tools, analytical methods, and participants were chosen to guarantee that STS is thoroughly assessed in an actual classroom environment.

METHOD

This study examined the efficacy of the SPENZALA TenseSmart (STS) application in enhancing students' comprehension of English tenses utilizing a quantitative pre-experimental design with a one-group pre-test-post-test structure (Hake, 1998). Since random assignment and control groups are not always possible in real classroom settings, this design was selected as one of the most practical methods for assessing instructional interventions. Such a strategy still enables researchers to assess learning progress by comparing students' performance before and after the treatment, as argued in classroom-based research, thereby offering significant proof of the effectiveness of education.

Thirty-one ninth-grade students from Class IX A of SMP Negeri 1 Welahan participated in this study. Purposive sampling was used to choose them (Palinkas et al., 2015; Shrestha & Mohan, 2022), which was judged suitable as the chosen class matched the study's goal and offered convenient scheduling for the intervention. Because it allows for the inclusion of students who are directly exposed to the instructional innovation and may thus offer extremely pertinent feedback, purposeful sampling is also beneficial in educational research. Every student took part in the pre-test, the STS application-based intervention sessions, and the post-test phases of data collection. Additionally, three English teachers and two media specialists worked as expert validators, examining the application throughout its development to guarantee its technological usability, pedagogical soundness, and content clarity for junior high school students.

Three main tools were used to gather data: expert validation sheets, test materials, and a student response questionnaire. Thirty multiple-choice questions covering the six main English tenses, simple present, present continuous, simple past, past continuous, present perfect, and simple future, were included in the pre-test and post-test. These tasks were created with curriculum-based content and cognitive levels suitable for ninth-grade students in mind. English teachers verified the test items' content before they were given out to make sure they were accurate, clear, and in line with the learning goals. Ten Likert-scale statements reflecting important aspects of learners' impressions, such as beauty, utility, ease of use, adaptability, and motivational influence, were included in the student response questionnaire. In the meantime, typical educational design research processes were followed for expert validation

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

(McKenney et al., 2021). Both technical and instructional quality indicators, including interface design, navigation flow, explanation clarity, grammatical content accuracy, and appropriateness for the target learners, were evaluated by experts using standardized assessment sheets.

There were three main phases to the data collection process. To ascertain their baseline knowledge of English tenses, students first finished the pre-test. This evaluation served as a benchmark for gauging further learning improvements. Second, the intervention phase was carried out in a mixed learning setting across a number of sessions, integrating independent mobile learning using the STS application with direct classroom instruction. Students interacted with the application's built-in explanations, examples, practice questions, and automated feedback during this phase. Both self-paced investigation outside of class and guided practice under the teacher's supervision were made possible by the incorporation of STS into classroom instruction. Following the intervention time, students answered the questionnaire to share their opinions about the application's usability and educational value and finished the post-test to gauge their progress.

The collected data were analyzed using both descriptive and inferential statistics. Descriptive statistics, including means, medians, standard deviations, and percentages, were used to summarize the performance of the students on the pre-test and post-test. To evaluate the degree of learning improvement, the normalized gain (N-gain) was calculated using the pre-test and post-test results. This made it possible for the researcher to evaluate how much of the prospective learning increment was actually achieved. Inferential analysis was carried out using a paired sample t-test at the 0.05 significance level to ascertain whether the score difference between the pre-test and post-test was statistically significant. Mean scores were used to analyze questionnaire data and categorize students' impressions across the five assessed indicators. Expert validation data were descriptively analyzed with a focus on recurrent themes and agreement among expert assessments in order to determine the overall quality and appropriateness of the STS application for use in the classroom.

All things considered, this methodological approach made sure that the STS application was thoroughly evaluated from a variety of angles, including learner views, student learning results, and expert judgment. A strong basis for evaluating the application's efficacy and instructional value was established by the combination of test-based evidence, attitudinal data, and expert reviews.

FINDINGS AND DISCUSSION

Findings

This study's findings demonstrate a significant enhancement in students' proficiency in English tenses after utilizing the SPENZALA TenseSmart (STS) application. The analysis of test scores indicates a significant increase in students' mean performance, rising from a pre-test score of 59.58 to a post-test score of 85.16, reflecting a notable improvement in grammatical competence. The upward shift indicates that students demonstrated improved comprehension and application of tense rules following the learning intervention.

The normalized gain (N-gain) analysis was utilized to quantitatively assess the application's effectiveness. The N-gain value was categorized as moderate-to-high, signifying that the learning gains were both statistically significant and educationally relevant. This classification indicates the extent of maximum potential improvement attained by students and substantiates the conclusion that the STS application significantly enhanced mastery of tenses.

The results, both descriptive and inferential, indicate that the intervention yielded quantifiable learning benefits for the participants. The outcomes are summarized in Tables 1 and 2, which provide descriptive statistics for the pre-test and post-test scores, along with the N-gain results utilized to assess the extent of improvement.

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

Table 1. Descriptive Statistics of Pre-test and Post-test Scores

No	Descriptive Measure	Pre-Test	Post-Test
1	Mean	59.58	85.16
2	Median	60	85
3	Mode	60	85
4	Minimum Score	40	70
5	Maximum Score	80	100
6	Standard Deviation	9.34	8.21
7	Variance	87.25	67.40

Table 2. Normalized Gain (N-gain) Result

No	Indicator	Value
1	Mean Pre-test Score	59.58
2	Mean Post-test Score	85.16
3	Maximum Possible Gain	40.42
4	Actual Gain	25.58
5	N-gain	0.63 (Moderate-High)

The findings from the paired sample t-test support the efficacy of the SPENZALA TenseSmart (STS) application in improving students' understanding of English tenses. The analysis produced a t-value of –8.546 and a p-value of .000, significantly lower than the conventional significance threshold of 0.05. The statistical analysis reveals a significant difference between students' pre-test and post-test scores, indicating that the observed improvement is attributable to the instructional intervention implemented through STS rather than random variation. The negative t-value indicates a positive direction of improvement, with post-test scores exceeding pre-test scores, thus confirming measurable learning gains after utilizing the application.

The level of statistical significance indicates that the intervention had a substantial and consistent impact on learners' grammar performance. This finding is consistent with the descriptive results and the N-gain analysis, both of which demonstrate significant progress. The data collectively demonstrate that the digital learning environment provided by STS significantly facilitated students' understanding of tense-related structures. Table 3 presents the findings of the paired sample t-test, providing a statistical overview of the impact of the STS application on students' learning outcomes.

Table 3. Paired Sample t-Test Results

No	Statistical Measure	Value
1	Mean Difference (Pretest-Posttest)	-25.581
2	Standard Deviation	16.667
3	Standard Error Mean	2.993
4	t-value	-8.546
5	Degrees of Freedom (df)	30
6	Significance (p-value, two-tailed)	0.000

The results of the student response questionnaire offer further insight into how students view the SPENZALA TenseSmart (STS) application, in addition to the test-based evidence of learning improvements. In general, students expressed very favorable opinions about using the tool to help them comprehend English tenses. The program was viewed as appealing, user-friendly, educationally useful, and inspiring overall, according to the aggregated mean score of 4.36 on a five-point Likert scale. Notably, the flexibility indicator had the highest mean score (M = 4.55), indicating that students placed a high importance on having autonomous access to learning resources at their own convenience. This result supports the idea that one of the main benefits of mobile-assisted learning environments is flexibility, since it allows students to repeat exercises,

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

review material, and control their own learning processes in ways that may not be possible in traditional classroom settings.

Additionally, all questionnaire indicators, practice features, technical smoothness, learning motivation, autonomy, attractiveness, ease of use, usefulness, interface appeal, and future use interest achieved mean scores above 4.0, indicating steady and strong acceptance across various user experience dimensions. Given that students found the program to be both interesting and useful in assisting them in comprehending tense-related ideas, this pattern suggests both high usability and good instructional relevance. The application's suitability for junior high school students is further supported by the positive evaluations given to its technical smoothness (M = 4.29) and ease of use (M = 4.13), which indicate that pupils faced few difficulties using it.

When combined, these results demonstrate how well students responded to the STS application, supporting its function as a helpful learning resource that boosts motivation, encourages independent study, and enhances classroom-based instruction in a blended learning setting. The full distribution of mean scores for each indication is shown in Table 4.

Table 4. Student Questionnaire Results

No	Indicator	Mean	Category
1	Attractiveness	4.48	Very Positive
2	Ease of Use	4.13	Positive
3	Usefulness	4.32	Positive
4	Interface Appeal	4.19	Positive
5	Practice Features	4.42	Very Positive
6	Technical Smoothness	4.29	Positive
7	Learning Motivation	4.48	Very Positive
8	Autonomy	4.39	Very Positive
9	Flexibility	4.55	Very Positive
10	Future Use Interest	4.39	Very Positive

Overall Mean Score = 4.36 (Very Positive)

The results of expert validation offered robust and consistent evidence concerning the overall quality and feasibility of the SPENZALA TenseSmart (STS) application for instructional purposes. Media specialists and pedagogical experts exhibited significant consensus in evaluating the application as valid, well-structured, and pedagogically appropriate for junior high school students. The evaluations highlighted several strengths of the application in technical, visual, and instructional aspects.

Experts emphasized the clarity, accuracy, and appropriateness of the grammatical explanations, noting that the material aligns closely with curriculum standards and effectively supports students' understanding of tense rules and usage. This alignment ensures that STS operates not just as an additional digital tool but as a resource that systematically reinforces concepts previously introduced in the classroom. Reviewers observed that the examples and practice items were organized logically, facilitating incremental cognitive processing and aiding in the internalization of tense patterns.

Experts consistently praised the navigation ease and intuitive interface design from a usability perspective. The application’s layout facilitates a smooth transition for learners among instructional components, including explanations, examples, and interactive exercises, minimizing confusion and cognitive load. The fluidity observed is due to the logical organization of pages, consistent formatting, and clear visual cues, which collectively enhance the user-friendly learning environment. Design features are essential in mobile-assisted language learning, as poorly structured interfaces can lead to cognitive overload and impede learning effectiveness.

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

The experts highlighted the beneficial impact of STS's visual and aesthetic components. The balanced color scheme, legible typography, and organized layout were considered to improve learners' comfort and focus, thus facilitating sustained engagement. The integration of visual appeal and instructional clarity rendered STS both functional and motivating for students.

Expert feedback confirmed that the SPENZALA TenseSmart application satisfies essential criteria for high-quality educational media: validity, demonstrated by the accuracy and relevance of its content; practicality, indicated by ease of use and technical functionality; and pedagogical suitability, evidenced by alignment with instructional goals and learner needs. The evaluations suggest that STS is a viable option for incorporation into secondary-level EFL instruction and possesses significant potential to enhance grammar mastery in blended learning contexts.

Discussion

The findings of this study indicate that the SPENZALA TenseSmart (STS) application effectively improved students' mastery of English tenses. The significant increase in the mean score from the pre-test (59.58) to the post-test (85.16), supported by a moderate to high N-gain value, demonstrates meaningful and measurable learning progress among the students. This pattern of improvement suggests that the intervention provided not only additional exposure but also more structured and cognitively manageable pathways for learners to internalize tense rules and apply them across different grammatical contexts. Furthermore, the results of the paired sample t-test confirmed that the difference between pre-test and post-test scores was statistically significant, indicating that the observed improvement was attributable to the intervention rather than to chance or external factors. The statistical evidence strengthens the claim that STS offers a pedagogically effective supplement to existing instructional practices in junior high school EFL classrooms.

These findings support prior research suggesting that mobile-assisted language learning can enhance grammar mastery by providing learners with accessible, engaging, and individualized practice opportunities (Hwang & Fu, 2019; Shadiev et al., 2020). The present results reinforce the argument that mobile technologies create conditions that promote focused attention, repeated exposure, and self-paced rehearsal, three instructional factors that are particularly important for mastering complex grammatical structures such as English tenses. These findings are also consistent with Arifin (2021), whose study on an Android-based application for learning verb forms demonstrated significant gains in students' grammar accuracy, further confirming that mobile tools can effectively support form-focused instruction in EFL contexts. The alignment between the present findings and previous empirical evidence suggests that STS functions within an emerging pattern of successful mobile-based grammar interventions.

The structure of STS, combining explanations, examples, and interactive exercises, allowed students to repeatedly review and practice tense forms, which helped strengthen their understanding. This design supports the principles of explicit grammar instruction and aligns with Azar (2016) and Ellis (2019), who argue that systematic exposure, scaffolding, and opportunities for controlled practice are essential for effective grammar learning. The multimodal nature of the application, integrating written input, visual cues, and immediate feedback, likely contributed to reduced cognitive load, enabling students to process input more efficiently and consolidate their learning over time. Taken together, the results illustrate that STS not only enhances students' test performance but also embodies key theoretical principles in grammar instruction, making it a valuable tool for both teaching and learning English tenses in junior high school contexts.

The positive student responses documented in Table 4 further reinforce the effectiveness of STS as a pedagogically meaningful digital learning tool. High mean scores across indicators such as attractiveness, ease of use, usefulness, flexibility, and motivation indicate that students not only benefited cognitively but also responded

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

positively in terms of affective engagement and learning satisfaction. These consistently strong ratings suggest that STS created a supportive and enjoyable learning environment, which is particularly important in grammar instruction, where students often perceive the material as challenging or monotonous. Flexibility received the highest mean score (4.55), suggesting that students valued the ability to learn anytime and independently, an element that contributes significantly to sustained engagement and long-term learning retention. This finding is consistent with studies showing that mobile learning increases learner autonomy and motivation because students can control their pace and revisit materials as needed (Kukulska-Hulme & Shield, 2008; Nassaji & Fotos, 2011). When learners perceive that they have control over when and how they practice, they tend to engage more consciously with the material, which contributes to deeper cognitive processing and more durable mastery of grammatical structures.

Another factor contributing to the effectiveness of STS was its integration into a blended learning environment. Students received explanation and guidance during face-to-face sessions, where teachers could clarify misconceptions and provide immediate feedback, and later reinforced their understanding through independent mobile-based practice. This combination of teacher support and self-paced digital learning allows learners to cycle between guided learning and autonomous exploration, maximizing both structure and flexibility. Such an instructional arrangement aligns well with theories of multimodal learning, which argue that varied instructional inputs help reinforce conceptual understanding. This hybrid approach is also consistent with the benefits of blended learning outlined by Graham (2019) and Sung et al. (2016), who found that blended mobile learning environments often produce higher gains than traditional or purely digital instruction. By engaging students in multiple formats, classroom explanation, digital examples, and interactive exercises, STS appears to have strengthened grammar comprehension and promoted a more active learning process.

Expert validation also supported the quality and usability of the STS application. Experts confirmed that the interface design, content clarity, and navigation features were appropriate and user-friendly, demonstrating that the media aligned well with established principles of instructional design. Expert validation confirms that STS meets pedagogical and technical standards (McKenney et al., 2021), suggesting that the development process successfully integrated essential criteria such as content accuracy, interface intuitiveness, and instructional coherence. The experts' evaluations further emphasized that the structure of the application, including its menu organization, visual hierarchy, and interaction flow, facilitated efficient cognitive processing and minimized potential learning barriers for junior high school students. These characteristics likely reduced cognitive load and allowed students to focus more on understanding tense patterns rather than dealing with technical difficulties (Sweller et al., 2019), ensuring that learners could allocate their mental resources to processing linguistic input rather than navigating technological complexities.

In addition, expert feedback indicated that the blend between pedagogical scaffolding and technological features in STS was well-balanced, supporting students at different stages of learning. The inclusion of examples, explanations, and interactive exercises within a coherent instructional sequence was viewed as a major strength, especially in helping students consolidate their understanding of verb forms and tense functions. The alignment between expert feedback and student responses suggests that STS was both pedagogically sound and practically effective. Not only did students perceive the application as engaging and useful, but experts also confirmed its instructional validity and usability, reinforcing its potential as a reliable educational tool.

Overall, the combination of significant learning improvements, strong student perceptions, and positive expert evaluations demonstrates that the SPENZALA TenseSmart application is a valid and effective tool for supporting grammar instruction at the junior high school level. The results indicate that STS can serve as a beneficial supplement to traditional grammar teaching, enhancing engagement, accessibility, and

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

independent learning. These findings collectively highlight the value of integrating mobile-assisted learning tools into blended learning settings, particularly when the media are grounded in sound pedagogical design and validated by field experts.

CONCLUSION

This study's results indicate that the SPENZALA TenseSmart (STS) application effectively enhances ninth-grade students' mastery of English tenses. The notable rise in the average post-test score, corroborated by a moderate-to-high N-gain value and a statistically significant paired-sample t-test, suggests that STS played a substantial role in enhancing students' grammar proficiency. The quantitative findings indicate that students internalized tense structures more effectively after utilizing the application, implying that STS offered the repeated exposure, immediate feedback, and structured practice essential for improving form-focused learning in EFL contexts. Students reported favorable perceptions of the application, especially in terms of its usability, flexibility, and utility for independent learning. This indicates that STS not only enhanced cognitive outcomes but also promoted positive emotional engagement with grammar learning.

Expert validation has confirmed that the application is pedagogically sound and appropriate for classroom use. Experts in media and pedagogy highlighted the importance of clear linguistic explanations, well-organized content, and an intuitive interface, all of which helped to minimize cognitive load and enhance learning efficiency. The evaluations confirm that STS satisfies key criteria for effective instructional media, such as validity, practicality, and usability, thereby enhancing the application's credibility as a dependable digital learning tool.

STS is a valid, practical, and effective digital learning tool for supporting grammar instruction in junior high school contexts. The incorporation of STS within a blended learning framework illustrates that mobile applications can enhance traditional instruction by broadening learning opportunities outside the classroom, promoting learner independence, and facilitating mastery through self-directed review. The findings indicate that digital media, including STS, possess considerable potential to enhance grammar instruction, especially in environments where students need adaptable and accessible practice opportunities.

Findings suggest that teachers should incorporate mobile-based applications like STS into blended learning environments to improve student motivation and offer further opportunities for independent practice. The findings suggest that educational institutions and curriculum designers should incorporate mobile-assisted learning tools into wider efforts aimed at enhancing digital literacy and instructional innovation. Future research could utilize larger and more diverse samples for STS or assess its effectiveness against other instructional methods to enhance understanding of its pedagogical implications. It is advisable to further develop the application by including materials that extend beyond tenses to address wider grammar learning requirements and by integrating adaptive features that cater to students' proficiency levels.

REFERENCES

Arifin, M. (2021). *The development and effectiveness of an Android-based application for learning verb forms in EFL settings.* Journal of English Language Teaching and Linguistics, 6(2), 345–360. https://doi.org/10.21462/jeltl.v6i2.580

Azar, B. S. (2016). *Understanding and using English grammar* (5th ed.). Pearson Education.

Ellis, R. (2019). *Understanding second language acquisition* (2nd ed.). Oxford University Press.

Garrison, D. R., & Vaughan, N. D. (2008). *Blended learning in higher education: Framework, principles, and guidelines.* Jossey-Bass.

Graham, C. R. (2019). Blended learning systems: Definition, current trends, and future directions. In M. G. Moore (Ed.), *Handbook of distance education* (4th ed., pp. 173–188). Routledge.

Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran
Vol. 19, No. 2, Desember 2025, pp. 221-229
p-ISSN: 1978-936X
e-ISSN: 2528-0562
DOI: http://dx.doi.org/10.26877/mpp.v19i2.25919

Hake, R. R. (1998). Interactive-engagement vs traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics, 66*(1), 64–74. https://doi.org/10.1119/1.18809

Hwang, G.-J., & Fu, Q.-K. (2019). Trends in mobile learning: A review of the top 100 highly cited papers. *British Journal of Educational Technology, 50*(2), 612–630. https://doi.org/10.1111/bjet.12713

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile-assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL,* 20(3), 271–289. https://doi.org/10.1017/S0958344008000335

McKenney, S., Reeves, T. C., & Herrington, J. (2021). Educational design research: Foundations, approaches, and processes. *Journal of the Learning Sciences, 30*(4), 623–645. https://doi.org/10.1080/10508406.2021.1913025

Nassaji, H., & Fotos, S. (2011). *Teaching grammar in second language classrooms: Integrating form-focused instruction in communicative context.* Routledge.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed-method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Philipsen, B., & Tondeur, J. (2023). Design principles for technology-enhanced learning in secondary education: A systematic review. *Educational Technology Research and Development, 71*(2), 345–368. https://doi.org/10.1007/s11423-023-10168-3

Richards, J. C., & Reppen, R. (2014). *Grammar* (2nd ed.). Cambridge University Press.

Shadiev, R., Hwang, W.-Y., & Huang, Y.-M. (2020). Review of research on mobile-assisted grammar learning. *Computer Assisted Language Learning, 33*(8), 934–960. https://doi.org/10.1080/09588221.2019.1592421

Shrestha, A., & Mohan, P. (2022). The role of purposive sampling in educational research design. *International Journal of Social Science Research, 10*(1), 45–56. https://doi.org/10.5296/ijssr.v10i1.19353

Sung, Y.-T., Chang, K.-E., & Liu, T.-C. (2016). The effects of mobile-computer-supported collaborative learning: A meta-analysis and critical synthesis. *Educational Research Review, 19, 22–39.* https://doi.org/10.1016/j.edurev.2016.04.001

Sweller, J., Ayres, P., & Kalyuga, S. (2019). *Cognitive load theory* (2nd ed.). Springer. https://doi.org/10.1007/978-1-4939-9877-7