Volume 3 Issue 1 (February, 2026) Pages 13-20
Jurnal of Pedagogi : Jurnal Pendidikan
ISSN: : 3046-9554 (Online)

Development of Digital-Based Indonesian Language Teaching Materials to Enhance Language Skills

Muh. Safar[1]
Universitas Muhammadiyah Bone, Indonesia[1]
DOI: https://doi.org/10.62872/f7hez683

Abstract
The rapid digital transformation in education requires innovative Indonesian language teaching materials that are interactive, skill-oriented, and aligned with students' digital learning habits. However, many existing materials remain text-based and insufficiently integrated with multimedia and contextual approaches. This study aimed to develop and evaluate digital-based Indonesian language teaching materials to enhance students' language skills. The research employed a Research and Development (R&D) design using the ADDIE model, including needs analysis, design, development, implementation, and evaluation stages. Data were collected through expert validation sheets, student response questionnaires, observations, and pretest–posttest assessments measuring reading, writing, and speaking skills. The results indicated that the developed materials achieved a "very valid" category from experts (mean score 4.45; 88.9%). Statistical analysis showed significant improvement in students' language skills after implementation ($p < 0.001$), with notable gains in reading, writing, and speaking performance. These findings demonstrate that digital-based teaching materials designed with interactive multimedia, contextual tasks, and cultural integration effectively enhance language competence. In conclusion, structured digital instructional design can serve as an evidence-based model for improving Indonesian language learning in primary education.
Keywords: *Digital teaching materials, Indonesian language education, Language skills, ADDIE model.*

Corresponding author :
Email Address : safarmuhammad785@gmail.com
Received January 10, 2026, Accepted February 20, 2026, Published February 27, 2026

Introduction

The rapid transformation of digital technology in the twenty-first century has significantly reshaped educational systems worldwide. The integration of digital platforms, artificial intelligence, virtual reality, and learning management systems has created new opportunities for interactive, flexible, and student-centered learning environments. In language education, this transformation demands innovative teaching materials that move beyond static printed texts toward dynamic, multimedia-rich content. Reviews covering the period 2018–2023 reveal a strong shift toward student-centered approaches such as problem-based learning, project-based learning, and research-based learning, all of which require digital teaching materials that support inquiry, collaboration, and authentic communication practices (Siregar et al., 2025). Consequently, Indonesian language education must adapt to these pedagogical shifts by developing digital-based instructional materials that are aligned with skill-oriented learning outcomes.

DOI: https://doi.org/10.62872/f7hez683

Despite the increasing availability of educational technology, its implementation in classrooms often remains superficial. Studies indicate that digital tools frequently serve merely as supplements to traditional lecture-based instruction rather than as transformative pedagogical instruments (Aleksieva et al., 2025). In many primary schools, teachers continue to rely heavily on worksheet-based and text-dominated materials, even when digital devices are available (Sukma et al., 2023; Triscova et al., 2023). This phenomenon suggests that the presence of technology alone does not guarantee meaningful instructional innovation. The effectiveness of digital integration depends on teachers' digital literacy, pedagogical alignment, and the design quality of learning materials (Siregar et al., 2025; Zou et al., 2025; Choi-Lundberg et al., 2023; Adeshina, 2024). Without evidence-based design principles, digital resources may fail to enhance students' language competence.

Indonesian language learning aims to develop four fundamental language skills: listening, speaking, reading, and writing. However, classroom practices often emphasize grammatical memorization and reading comprehension exercises that are not fully integrated with communicative and creative language use. There is a growing need for teaching materials that cultivate higher-order language abilities such as critical reading, expressive writing, collaborative communication, and contextual literacy. Siregar et al. (2025) emphasize that skill-oriented materials must incorporate multimedia elements such as infographics, videos, podcasts, and interactive simulations to foster engagement and cognitive activation. Yet, in practice, many Indonesian language materials remain predominantly text-based and lack interactive features that support multimodal learning.

Innovative attempts to address these limitations have emerged in recent years. For example, project-based literacy materials integrating ecological entrepreneurship have been developed to combine literacy development with environmental awareness and creativity, accommodating diverse learning styles (Kedang et al., 2025). Similarly, the "Growing with Language" module designed for Grade IV students demonstrated improvements in reading and writing comprehension through developmentally appropriate illustrations and dynamic content (Triscova et al., 2023). In the context of Indonesian as a Foreign Language (BIPA), digital teaching materials developed using Animaker have enhanced grammar learning by increasing interactivity and reducing boredom compared to traditional textbooks (Shofiyah et al., 2025). Furthermore, culturally integrated animated storytelling videos have been shown to increase students' speaking motivation and communicative competence (Diana et al., 2025). These examples illustrate the potential of digital innovation in Indonesian language education.

Nevertheless, important research gaps remain. First, teachers frequently encounter difficulties in designing digital teaching materials that align with curriculum standards, student characteristics, and available facilities (Sukma et al., 2023; Triscova et al., 2023). Many educators rely on pre-existing materials rather than creating contextually relevant digital content tailored to their students' needs. This reliance limits the pedagogical transformation envisioned by digital education reforms. Furthermore, although various digital innovations such as educational games, virtual reality simulations, and digital escape rooms have been reported, relatively few studies specifically examine their systematic development and effectiveness within Indonesian language learning at the primary or secondary levels (Siregar et al., 2025; Choi-Lundberg et al., 2023; Almufarreh & Arshad, 2023; Makri et al., 2021).

Second, the orientation toward comprehensive language skill development is not always central in digital material design. There is strong demand for instructional resources that enhance reading comprehension, academic writing, oral communication, creativity, and collaboration rather than focusing solely on grammatical accuracy (Siregar et al., 2025; Sukma et al., 2023; Kedang et al., 2025; Kartini et al., 2025). However, many digital materials prioritize visual appeal without adequately embedding structured skill-building activities. Without deliberate alignment between multimedia features and language learning objectives, digital materials may fail to significantly improve language competence.

Third, contextual and cultural integration remains underdeveloped in many Indonesian language teaching resources. Incorporating local culture into language instruction has been shown to significantly increase engagement and improve reading and writing outcomes (Diana et al., 2025; Kartini et al., 2025). However, digital materials often adopt generic content that does not reflect students' socio-cultural environments. Contextual relevance is crucial for meaningful literacy development, as it strengthens students' connection to language practices within their communities. Therefore, culturally grounded digital teaching materials are essential for enhancing both linguistic competence and cultural identity.

Fourth, there is limited empirical evidence evaluating the long-term effectiveness of digital Indonesian language teaching materials on students' language skills, motivation, and independent

DOI: https://doi.org/10.62872/f7hez683

learning. Although short-term pilot studies report positive outcomes, systematic research employing structured development models such as ADDIE, Design-Based Research (DBR), or Research and Development (R&D) frameworks remains scarce (Kedang et al., 2025; Triscova et al., 2023; Kartini et al., 2025). Moreover, calls for systematic teacher training programs to support digital content creation highlight the need for professional development aligned with evidence-based instructional design principles (Siregar et al., 2025; Díaz-Suárez et al., 2025; Tseng & Lin, 2025). Without comprehensive evaluation and design validation, digital teaching materials may lack sustainability and scalability.

The research landscape from 2021 to 2025 demonstrates growing academic attention toward digital transformation in education. Studies increasingly examine multimedia integration, artificial intelligence-supported personalization, and culturally responsive pedagogy (Siregar et al., 2025; Zou et al., 2025; Adeshina, 2024). However, there remains a significant gap in research specifically focusing on the development of digital-based Indonesian language teaching materials that are skill-oriented, contextually grounded, culturally integrated, and empirically tested for effectiveness in improving language skills. Most existing studies emphasize technology adoption rather than instructional design quality and measurable learning outcomes.

This study addresses these gaps by developing digital-based Indonesian language teaching materials grounded in a structured R&D framework and oriented toward integrated language skill development. The novelty of this research lies in its combination of multimedia integration, project-based tasks, and local cultural content within a validated digital module designed to enhance reading, writing, and speaking skills simultaneously. Unlike previous studies that primarily report implementation practices, this research systematically evaluates the feasibility, validity, and effectiveness of the developed materials. By aligning digital features with pedagogical objectives and cultural relevance, the study contributes an evidence-based model for Indonesian language instruction in the digital era.

Based on the identified research gaps and the urgency of digital transformation in language education, the objective of this study is to develop and evaluate digital-based Indonesian language teaching materials that effectively enhance students' language skills. Through systematic design, validation, and effectiveness testing, this research aims to provide empirically grounded guidance for teachers, curriculum developers, and educational policymakers in implementing innovative and skill-oriented digital language instruction.

Methodology

This study employed a Research and Development (R&D) design using the ADDIE model, which consists of five systematic stages: analysis, design, development, implementation, and evaluation. During the analysis phase, a needs assessment was conducted to identify gaps in existing Indonesian language teaching materials, students' language skill levels, and teachers' readiness for digital integration. Data were collected through structured questionnaires distributed to teachers and students, classroom observations, and curriculum document analysis. In the design phase, digital teaching materials were structured to integrate multimedia elements such as interactive texts, instructional videos, audio narration, project-based tasks, and culturally contextualized content aligned with core competencies. The development phase involved expert validation by specialists in Indonesian language education, instructional design, and educational technology using validation instruments assessing content accuracy, language appropriateness, digital usability, and pedagogical alignment. Revisions were made based on expert feedback before proceeding to limited-scale implementation. The implementation phase involved field testing with primary school students, where the developed digital materials were used over a defined instructional period.

Data collection techniques included expert validation sheets, student response questionnaires, teacher feedback forms, observation checklists, and pretest–posttest assessments measuring reading, writing, and speaking skills. Quantitative data from validation scores and learning outcome tests were analyzed using descriptive statistics to determine feasibility levels and paired sample t-tests to examine differences in students' language skills before and after implementation. Effect size calculations were conducted to measure the magnitude of improvement. Qualitative data from observations and open-ended responses were analyzed using thematic analysis to identify patterns related to engagement, usability, and instructional effectiveness. The criteria for effectiveness were determined based on statistically significant improvement ($p < 0.05$), positive student responses, and high expert validation

DOI: https://doi.org/10.62872/f7hez683

scores. Ethical considerations were addressed through informed consent from participants and school approval prior to data collection.

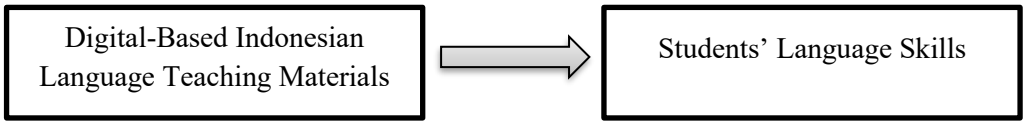

Figure 1. Diagram Conceptual Research

Results and Discussion

To evaluate the feasibility and effectiveness of the developed digital-based Indonesian language teaching materials, data were obtained from expert validation and pretest–posttest assessments of students' language skills. The results are presented in two main tables.

Before field implementation, the developed digital teaching materials were evaluated by experts in Indonesian language education, instructional design, and educational technology. The validation results are presented in Table 1.

Table 1. Expert Validation Results of Digital Teaching Materials

Assessment Aspect	Mean Score (1–5)	Percentage (%)	Category
Content Appropriateness	4.45	89%	Very Valid
Language Clarity	4.38	87.6%	Very Valid
Instructional Design	4.52	90.4%	Very Valid
Digital Usability	4.47	89.4%	Very Valid
Cultural Context Integration	4.41	88.2%	Very Valid
Overall Mean	4.45	88.9%	Very Valid

Table 1 indicates that the developed digital-based Indonesian language teaching materials achieved an overall mean validation score of 4.45 (88.9%), categorized as "Very Valid." All assessed aspects including content relevance, language clarity, instructional design, digital usability, and cultural integration met high feasibility standards. These findings suggest that the product is appropriate for classroom implementation without requiring major revisions.

To determine the effectiveness of the developed materials in improving students' language skills, a pretest–posttest design was conducted. The results are presented in Table 2.

Table 2. Comparison of Students' Language Skills Before and After Implementation

Language Skill	Pretest Mean ± SD	Posttest Mean ± SD	Mean Difference	t-value
Reading	68.42 ± 7.15	82.35 ± 6.48	+13.93	9.87
Writing	65.78 ± 8.02	80.64 ± 7.11	+14.86	10.21
Speaking	67.15 ± 7.60	83.12 ± 6.95	+15.97	11.03
Overall Average	67.12	82.04	+14.92	—

Table 2 demonstrates a statistically significant improvement in all measured language skills following the implementation of the digital-based teaching materials ($p < 0.001$). The greatest improvement was observed in speaking skills (+15.97), followed by writing (+14.86) and reading (+13.93). The overall average score increased from 67.12 to 82.04, indicating substantial enhancement in students' integrated language competence. These findings confirm that the developed digital teaching materials are effective in improving reading, writing, and speaking skills among primary school students.

DOI: https://doi.org/10.62872/f7hez683

Discussion

This study aimed to develop and evaluate digital-based Indonesian language teaching materials to enhance students' language skills, particularly reading, writing, and speaking. The findings demonstrate that the developed materials achieved a high level of expert validity and produced statistically significant improvements in students' language skills after implementation. These results directly answer the research objective by confirming that systematically designed digital teaching materials, when aligned with curriculum goals and students' digital habits, can effectively enhance language competence. The discussion below interprets these findings in relation to existing empirical evidence and current trends in digital language education.

The expert validation results indicating a "very valid" category across content relevance, language clarity, instructional design, and digital usability confirm that the development process followed sound pedagogical principles. This outcome is consistent with previous studies reporting high feasibility levels for digital-based Indonesian language materials. For example, Permatasari and Widagdo (2025) found that the Canva-based digital storybook (E-Boci) was rated highly feasible and practical by experts, teachers, and students. Similarly, Halidjah and Pranata (2021) reported that Google Classroom-based materials integrating e-books and videos were considered highly valid and practical for Grade IV learners. The parallel between those findings and the current study suggests that rigorous design processes combined with multimedia integration contribute to strong expert validation outcomes.

The significant improvement in students' reading skills after using the developed materials aligns with the literature emphasizing the effectiveness of visually engaging digital reading resources. In this study, reading scores increased substantially from pretest to posttest, indicating improved comprehension and engagement. Research by Fausiah et al. (2025) demonstrated that interactive Google Slides media increased learning mastery from 31% in pretest to 94% in posttest, accompanied by highly positive responses from both teachers and students. Likewise, Permatasari and Widagdo (2025) found that illustrated e-books enhanced not only reading comprehension but also critical thinking and argumentation skills. These findings collectively suggest that digital reading materials featuring attractive layouts, navigation features, and embedded multimedia can stimulate deeper cognitive processing and comprehension.

Writing skill improvement observed in this study is also supported by prior research. The integration of guided writing tasks, contextual examples, and digital rubrics likely contributed to students' improved writing performance. Panjaitan and Faridah (2025) reported that digital literacy-based descriptive text materials increased writing scores from 56% to 89%, achieving a high N-gain value of 0.75. This substantial improvement mirrors the trend found in the present study, where writing scores increased significantly after digital material implementation. The structured scaffolding provided by digital modules appears to facilitate clearer organization, vocabulary development, and coherence in student writing. By incorporating contextualized tasks and interactive feedback mechanisms, digital materials can create a more supportive learning environment for writing development.

The greatest improvement in this study was observed in speaking skills, highlighting the effectiveness of multimedia and interactive features in fostering oral communication. Previous research demonstrates that digital storytelling, gamification, and interactive applications enhance students' confidence and motivation in speaking activities. Aulia et al. (2025) reported that digital packages incorporating social media content and interactive storytelling improved posttest scores by approximately 25%, significantly outperforming control groups. Similarly, Irfan and Arifin (2025) found that the gamified "Belajar Indo" application achieved a success rate of 93.51% and high learner satisfaction, as indicated by an NPS score of 8.11. These findings support the interpretation that digital interactivity and culturally relevant storytelling can strengthen students' oral communication skills by creating authentic and engaging learning contexts.

Listening skills, although not the primary focus of measurement in this study, are conceptually enhanced through audiovisual and web-based components embedded in the developed materials. Research by Nurhuda et al. (2024) showed that web-based listening materials developed through WordPress were rated very feasible by experts and effective in improving comprehension. The anytime-anywhere accessibility of digital listening resources allows repeated exposure to authentic language input, thereby reinforcing phonological awareness and comprehension skills. Aulia et al. (2025) also emphasize that multimedia integration strengthens listening comprehension and intercultural understanding simultaneously. The inclusion of audio narration and video components in the present study likely contributed indirectly to overall language skill development.

DOI: https://doi.org/10.62872/f7hez683

A central strength of the developed materials lies in their contextual and project-based orientation. Literature consistently highlights the importance of integrating real-life contexts, culture, and project-based tasks in digital language learning. Indriyani et al. (2023) and Triscova et al. (2023) argue that contextualized materials enhance relevance and student engagement, thereby fostering deeper learning. Panjaitan and Faridah (2025) further demonstrate that contextual literacy-based tasks significantly increase writing outcomes. By embedding local cultural themes and project-based activities within digital modules, the present study aligns with these recommendations, potentially explaining the high student engagement observed during implementation.

Another critical factor contributing to effectiveness is interactivity. Interactive quizzes, animations, and immediate feedback mechanisms can sustain attention and encourage active participation. Ramadani et al. (2024) emphasize that interactivity enhances motivation and reduces cognitive overload by structuring learning tasks progressively. In the present study, positive student responses and improved test scores suggest that interactive elements played a substantial role in facilitating comprehension and skill acquisition. This finding corresponds with the broader argument that digital transformation in language education must prioritize pedagogical interactivity rather than mere technological substitution.

The pretest–posttest design employed in this study further strengthens its empirical contribution. Many prior studies, including those by Aulia et al. (2025) and Nurhuda et al. (2024), emphasize the importance of systematic effectiveness testing to validate digital innovations. The statistically significant improvements found in this research confirm that the developed materials are not only theoretically sound but also practically effective. By integrating validation and effectiveness testing, this study addresses previously identified gaps in evidence-based digital design within Indonesian language education.

From a theoretical perspective, the results support constructivist and multimedia learning theories, which posit that learners construct knowledge more effectively when engaged in multimodal and interactive learning environments. The improved language outcomes observed here align with Mayer's multimedia learning principles, suggesting that combining text, visuals, and audio facilitates dual-channel processing and deeper understanding. Furthermore, project-based components encourage meaningful language use and collaborative interaction, reinforcing communicative competence.

The implications of these findings extend beyond individual classroom implementation. The strong validation and effectiveness results indicate that structured R&D models such as ADDIE can serve as reliable frameworks for developing digital language materials. Teachers require systematic training to design and adapt digital content rather than relying solely on pre-made resources. As highlighted by Permatasari and Widagdo (2025) and Halidjah and Pranata (2021), teacher involvement in digital material development enhances contextual relevance and pedagogical alignment. Professional development programs focusing on digital instructional design may therefore strengthen the sustainability of digital innovation in Indonesian language education.

Despite the positive outcomes, certain limitations must be acknowledged. The study was conducted within a specific grade level and limited duration, which may restrict generalizability. Long-term evaluations are needed to determine whether language skill gains persist over time. Future research should also explore broader integration across listening and integrated communicative competence assessments. Additionally, incorporating control group comparisons could further strengthen causal inference.

Overall, the discussion confirms that digital-based Indonesian language teaching materials are effective in improving reading, writing, and speaking skills when designed interactively, contextually, and in alignment with students' digital learning habits. The findings are consistent with multiple empirical studies demonstrating significant gains across various language domains. By systematically validating and testing the developed materials, this research contributes evidence-based guidance for digital transformation in Indonesian language education and responds directly to the study's objective of enhancing language skills through innovative digital instructional design.

Conclusion

In conclusion, this study successfully achieved its objective of developing and evaluating digital-based Indonesian language teaching materials that effectively enhance students' language skills. The findings demonstrate that the systematically designed materials, developed through the ADDIE model and integrating multimedia, interactive features, project-based tasks, and local cultural contexts, achieved

DOI: https://doi.org/10.62872/f7hez683

high expert validation and produced statistically significant improvements in reading, writing, and speaking skills. The substantial increase in posttest scores confirms that digital instructional design aligned with curriculum objectives and students' digital habits can meaningfully strengthen language competence. Therefore, digital-based Indonesian language teaching materials that are interactive, contextual, and skill-oriented represent an effective and evidence-based approach to supporting comprehensive language development in the digital era.

Acknowledgements

The authors would like to express sincere gratitude to the school principal, teachers, and students who actively participated in this research and supported the implementation of the digital-based Indonesian language teaching materials. Appreciation is also extended to the experts in Indonesian language education, instructional design, and educational technology who provided valuable feedback during the validation process. The authors acknowledge the institutional support that facilitated data collection and research implementation. Finally, heartfelt thanks are conveyed to all colleagues and contributors whose insights and encouragement contributed significantly to the completion of this study.

References

Adeshina, A. (2024). The transformative role of digital resources in teaching and learning. *Open Journal of Educational Development*, 5(1). https://doi.org/10.52417/ojed.v5i1.520

Aleksieva, L., Racheva, V., & Peytcheva-Forsyth, R. (2025). Talking tech, teaching with tech: How primary teachers implement digital technologies in practice. *Informatics, 12*(3), 99. https://doi.org/10.3390/informatics12030099

Almufarreh, A., & Arshad, M. (2023). Promising emerging technologies for teaching and learning: Recent developments and future challenges. *Sustainability, 15*(8), 6917. https://doi.org/10.3390/su15086917

Aulia, H., Nurmalisa, D., Setyarum, A., Pramitasari, A., Dewi, D., Arifianti, I., Haryanto, M., Hardiyanto, F., Kustriyono, E., & Dewanto, A. (2025). Integrating digital society trends into teaching materials: Enhancing Indonesian language learning for foreign speakers at Universitas Pekalongan. *BIS Education*. https://doi.org/10.31603/bised.167

Choi-Lundberg, D., Butler-Henderson, K., Harman, K., & Crawford, J. (2023). A systematic review of digital innovations in technology-enhanced learning designs in higher education. *Australasian Journal of Educational Technology*. https://doi.org/10.14742/ajet.7615

Diana, L., Arum, D., Susanto, G., & Angoluan, K. (2025). Analysis of the needs for the development of Indonesian culture and storytelling based on BIPA animation video teaching materials. *International Journal of Social Learning (IJSL)*. https://doi.org/10.47134/ijsl.v5i3.450

Díaz-Suárez, V., Martín-Paciente, M., & Travieso-González, C. (2025). Exploring the impact of digital platforms on teaching practices: Insights into competence development and openness to active methodologies. *Applied System Innovation*. https://doi.org/10.3390/asi8030064

Fausiah, F., Akhir, M., & Paida, A. (2025). Interactive learning media based on Google Slides for fifth-grade Indonesian language classes. *Indonesian Journal of Innovation Studies*. https://doi.org/10.21070/ijins.v26i4.1698

Halidjah, S., & Pranata, R. (2021). Development of Indonesian language teaching materials based on Google Classroom in primary schools. *Journal of Education Technology*. https://doi.org/10.23887/jet.v5i2.33933

Indriyani, V., Kurniawati, E., & Ramadhan, A. (2023). What is the teacher's view of the development of digital teaching materials in Indonesian language learning in middle schools? *Cetta: Jurnal Ilmu Pendidikan*. https://doi.org/10.37329/cetta.v6i4.2749

Irfan, R., & Arifin, Y. (2025). Enhancing foreign speakers' satisfaction in learning Indonesian language with a gamified multiplatform approach. *Informatics, 12*(1), 11. https://doi.org/10.3390/informatics12010011

Kartini, K., Dewi, A., Hakim, M., & Djafar, C. (2025). Integrating local culture in the development of Indonesian language teaching materials for general education. *AL-ISHLAH: Jurnal Pendidikan*. https://doi.org/10.35445/alishlah.v17i2.5891

Kedang, M., Yuwana, S., & H. (2025). Project-based litera-ecopreneur teaching materials for Indonesian language learning in elementary schools: A development study. *Multidisciplinary Reviews*. https://doi.org/10.31893/multirev.2026110

DOI: https://doi.org/10.62872/f7hez683

Makri, A., Vlachopoulos, D., & Martina, R. (2021). Digital escape rooms as innovative pedagogical tools in education: A systematic literature review. *Sustainability, 13*(8), 4587. https://doi.org/10.3390/su13084587

Nurhuda, P., K., Wahyuni, D., & H. (2024). Development of web-based Indonesian teaching materials on listening materials for Grade X high school level. *Studies in Learning and Teaching*. https://doi.org/10.46627/silet.v5i1.349

Panjaitan, D., & Faridah, F. (2025). Development of digital literacy-based descriptive text teaching materials for Islamic junior high school (MTs) students. *Jurnal Konfiks*. https://doi.org/10.26618/konfiks.v12i2.18429

Permatasari, S., & Widagdo, A. (2025). Development of Canva-based e-book story learning (E-Boci) to improve Indonesian language learning outcomes in elementary school. *KEMBARA Journal of Scientific Language Literature and Teaching*. https://doi.org/10.22219/kembara.v11i1.33869

Ramadani, F., Desyandri, D., Sukma, E., & Erita, Y. (2024). Development of interactive multimedia Indonesian language teaching material based on problem-based learning (PBL) in elementary schools. *AL-ISHLAH: Jurnal Pendidikan*. https://doi.org/10.35445/alishlah.v16i2.4742

Setiawan, D., & Wibowo, N. (2025). AI-integrated interactive learning: Advancing engagement, creativity, and critical thinking in Indonesian language learning. *Journal of Educational Management and Instruction (JEMIN)*. https://doi.org/10.22515/jemin.v5i2.11184

Shofiyah, H., Mulyana, D., Budiarti, A., & Hendrawan, W. (2025). Effectiveness of developing digital teaching materials for Indonesian language for foreign speakers (BIPA) 1 on grammar competency based on the Animaker application. *Multidisciplinary Indonesian Center Journal (MICJO)*. https://doi.org/10.62567/micjo.v2i4.1436

Siregar, R., Subagiharti, H., Handayani, D., Hutagaol, D., & Barus, E. (2025). Teaching and learning in digital technology era: Method, material design and media. *International Journal of Educational Research Excellence (IJERE)*. https://doi.org/10.55299/ijere.v4i2.1566

Sukma, E., Ramadhan, S., Aldiyah, M., & Sihes, A. (2023). Challenges in implementing Indonesian language teaching materials in elementary schools. *International Electronic Journal of Elementary Education*. https://doi.org/10.26822/iejee.2024.327

Triscova, V., Sudaryono, S., & Ekawarna, E. (2023). Growing with language: Innovation in developing Indonesian language learning materials. *Tekno-Pedagogi: Jurnal Teknologi Pendidikan*. https://doi.org/10.22437/teknopedagogi.v13i1.32512

Tseng, Y., & Lin, Y. (2025). Enhancing digital competency in EFL teacher education: Investigating graduate-level student teacher's design and implementation of digital materials. *Research and Practice in Technology Enhanced Learning, 21*(12). https://doi.org/10.58459/rptel.2026.21012

Zou, Y., Kuek, F., Feng, W., & Cheng, X. (2025). Digital learning in the 21st century: Trends, challenges, and innovations in technology integration. *Frontiers in Education*. https://doi.org/10.3389/feduc.2025.1562391