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Innovation in Differentiated Learning Assisted by Digital Media Wordwall in Accommodating Elementary School Learning Needs

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ABSTRACT
Differentiated learning is essential to accommodate students' diversity. Digital technology, such as Wordwall with the "open the box" feature, supports this approach by creating a more interactive and engaging learning experience. Differentiated learning is essential to accommodate students' diversity. Digital technology, such as Wordwall with the "open the box" feature, supports this approach by creating a more interactive and engaging learning experience. This study aims to describe the implementation of differentiated learning in elementary schools through the use of the Wordwall digital media, utilizing the "open the box" game feature. This research employs a qualitative approach with a case study method. Data collection techniques include observation, interviews, and documentation of research subjects. Data validation is conducted using source triangulation techniques to ensure the reliability of findings. Data analysis is carried out through the stages of data reduction, data display, and verification. The results of the study indicate that using Wordwall digital media with the "open the box" feature effectively accommodates students' diverse learning needs and is frequently used in differentiated learning. The utilization of Wordwall digital media with the "open the box" feature addresses students' learning diversity in terms of learning styles, comprehension levels, and learning interests. The implementation stages of this innovation involve planning materials tailored to student learning categories, organizing activities on the Wordwall platform that support varied learning interactions, and reflecting on each implementation stage to enhance the relevance of learning. This media has become a frequently used tool by teachers in carrying out differentiated learning due to its ability to provide various interactive and engaging evaluation forms. This innovation significantly impacts the creation of a learning environment that is responsive to students' diverse learning needs, allows for variations in teaching strategies, and provides teachers with flexibility in delivering material more effectively.
Keywords: *Differentiated Learning Innovation, Wordwall Digital Media, Open The Box Feature, Learning Needs, IPAS, Primary School*

ABSTRAK
Pembelajaran berdiferensiasi penting untuk mengakomodasi keberagaman siswa. Teknologi digital, seperti Wordwall dengan fitur "open the box," mendukung pendekatan ini dengan menciptakan pembelajaran yang lebih interaktif dan menarik. Pembelajaran berdiferensiasi penting untuk mengakomodasi keberagaman siswa. Teknologi digital, seperti Wordwall dengan fitur "open the

box," mendukung pendekatan ini dengan menciptakan pembelajaran yang lebih interaktif dan menarik. Penelitian ini bertujuan mendeskripsikan penerapan pembelajaran berdiferensiasi di Sekolah Dasar melalui penggunaan media digital Wordwall dengan pemanfaatan fitur game *open the box*. Metode Penelitian ini menggunakan pendekatan kualitatif dengan studi kasus. Teknik pengumpulan data berupa observasi, wawancara, dan dokumentasi subjek penelitian. Validasi data menggunakan teknik triangulasi sumber dan teknik untuk memastikan keabsahan temuan. Analisis data dilakukan melalui tahapan reduksi data, penyajian (display) data, dan verifikasi. Hasil penelitian menunjukkan bahwa penggunaan media digital Wordwall dengan pemanfaatan fitur *game open the box* mampu mengakomodasi kebutuhan belajar siswa yang beragam sehingga sering dimanfaatkan dalam pembelajaran berdiferensiasi. Penggunaan media digital Wordwall dengan fitur open the box mampu mengakomodasi keberagaman kebutuhan belajar siswa, baik dari segi gaya belajar, tingkat pemahaman, maupun minat belajar. Tahapan-tahapan keterlaksanaan inovasi ini melibatkan perencanaan materi yang disesuaikan dengan kategori belajar siswa, pengaturan aktivitas di platform Wordwall yang mendukung interaksi belajar yang variatif, serta refleksi dari setiap tahap implementasi untuk meningkatkan relevansi pembelajaran. Media ini menjadi alat yang sering dimanfaatkan oleh guru dalam menjalankan pembelajaran berdiferensiasi karena kemampuannya untuk memberikan berbagai bentuk evaluasi yang interaktif dan menarik. Inovasi ini memiliki dampak signifikan dalam menciptakan lingkungan belajar yang responsif terhadap berbagai kebutuhan belajar siswa, memungkinkan adanya variasi dalam strategi pengajaran, serta memberikan guru fleksibilitas dalam menyajikan materi secara lebih efektif.
Kata Kunci: Kata Kunci: Inovasi Pembelajaran Berdiferensiasi; Media Digital Wordwall; Fitur Open The Box; Kebutuhan Belajar, IPAS; Sekolah Dasar

INTRODUCTION

Differentiated learning is an educational approach that is gaining increasing attention, particularly in efforts to accommodate diverse student learning needs. It is a teaching strategy designed to meet individual student needs based on learning styles, levels of understanding, interests, and talents (Tomlinson, 2021). At the elementary school level, implementing this approach is crucial, as students come from diverse backgrounds and have varying academic abilities that require a flexible and responsive approach (Rosyida et al., 2022; Mariyatul et al., 2024). Research by Supriyanto & Lian (2021) highlights that effective school principal management strategies—such as adaptive curriculum development, teacher competency improvement through training, and fostering an inclusive school culture—significantly contribute to the successful implementation of differentiated learning. These strategies help create a learning environment that is responsive to individual student needs.

The advancement of digital technology has created significant opportunities to enhance differentiated learning, particularly through interactive digital media. Digital platforms such as Wordwall, with features like "Open the Box," provide engaging and flexible learning experiences (Savira & Gunawan, 2022; Abdillah & Syaban, 2023; Erlin et al., 2025). Research by (Labadze, Grigolia, & Machaidze, 2023) indicates that digital media in learning increases student engagement, facilitates varied teaching methods, and enables teachers to tailor instruction to individual needs. However, despite its potential, Wordwall remains underutilized in differentiated learning at the elementary level (Desstya, 2018; Serrano et al., 2019;Ullah & Anwar, 2020; (Sholeh & Rofiki, 2024; Haleem et al., 2022; Adiyono et al., 2024). The "Open the Box" feature provides students with interactive and enjoyable learning experiences while allowing teachers to customize materials and assessments to better align

with student needs. Gamification elements on the Wordwall platform positively impact student understanding, particularly in thematic learning (Aziz & Astutik, 2023).

Despite the emphasis on differentiated learning in Indonesia's Kurikulum Merdeka (Kemendikbud, 2020), the practical implementation of this policy faces several challenges. Many teachers still rely on traditional, one-way teaching methods, limiting their ability to adapt instruction to diverse student needs (Sakti & Luthfiyah, 2024; Sitepu, 2019)(Kadi & Awwaliyah, 2017)(Mustofa & Riyanti, 2019). The adoption of digital learning tools remains inconsistent, often constrained by inadequate infrastructure, teacher competency gaps, and unequal access to technology, particularly in remote schools (Scherer et al, 2019). While the government encourages technology integration as part of the digital revolution in education (Kemendikbud, 2020), resource limitations hinder the full optimization of digital media in differentiated learning.

However, in reality, the implementation of this policy on the ground still faces many challenges. One of the main issues at SDN 01 Anggrasmanis is the lack of optimal utilization of digital technology to support differentiated learning, even though digital media can be an effective tool to accommodate the diverse learning needs of students. This aligns with Hidayat et al (2025), who found that digital competency among preservice teachers in Indonesia remains uneven, highlighting the need for better integration of digital tools in the learning process. Therefore, digital technology-based learning is crucial in this era of globalization, with the advancements in science and technology we are witnessing today . The use of technology in education can help overcome the limitations of available resources and provide solutions for creating more engaging learning experiences that are tailored to the individual needs of each student . With the development of digital platforms like Wordwall, there is great potential to enhance the effectiveness of differentiated learning, particularly with features that allow for customization of materials and assessments to better align with the characteristics and abilities of students.

Existing studies highlight the benefits of technology in education but lack specific insights into Wordwall's application in differentiated learning (Sakti & Luthfiyah, 2024; Feriyanti, 2019). While previous research has examined the impact of digital technology on student engagement, little has been done to explore how digital tools can support differentiated instruction. This is where the novelty of this study lies, as it specifically investigates the use of Wordwall's "Open the Box" feature to accommodate diverse learning needs. Furthermore, research on augmented reality has shown its potential in enhancing students' critical thinking skills, demonstrating that digital innovations play a crucial role in modern education (Sulistyanto et al., 2024). These findings reinforce the need to explore how interactive tools like Wordwall can further support personalized learning approaches.

This study also examines the stages of implementing digital media in learning, which have not been extensively outlined in previous research. Despite the rapid development of educational technology, many teachers still lack the knowledge and skills necessary to apply differentiated learning using digital media. This gap between progressive educational policies and actual classroom practices is further constrained by infrastructure limitations and teacher competence (Mustofa & Riyanti, 2019) . In a similar context, Yulianti & Minsih, (2020) explore the development of educational media, such as the Pak Alam card-based game

for Social Studies in elementary schools, which also highlights the challenges teachers face in integrating digital tools into their teaching practices. Additionally, Romadhon et al. (2021) discusses the implementation of Google Classroom as a solution for online learning in elementary schools, addressing how digital platforms can enhance accessibility and learning efficiency. Hadiyanti (2021) further investigates the development of digital science learning modules based on flipbooks for online learning, providing insights into how digital media can be used to support remote education in elementary schools. Lastly, Alviana Metasari & Nur Amalia (2024) conducted an analytical study on the use of digital technology-based learning media at Alam Surya Mentari Elementary School, demonstrating the effectiveness of integrating such tools to improve student engagement and learning outcom.

Based on these issues, this study aims to describe the implementation of differentiated learning in elementary schools using Wordwall's "Open the Box" feature. It examines how this tool supports personalized learning, enhances student engagement, and addresses challenges in differentiated instruction. Additionally, this research aims to identify the impact of Wordwall on students' learning motivation and its role in creating more engaging and individualized learning experiences. The findings are expected to provide insights for educators on optimizing digital technology in teaching and learning.

METHODS

Types and Design

This study employs a qualitative case study method to deeply understand and describe the implementation of differentiated learning supported by the Wordwall digital media, particularly the Open the Box feature, in elementary schools. The case study approach was chosen as it allows for an in-depth exploration of a specific phenomenon within its real-life context without manipulating variables (Costigliola, 2019) Through this method, the researcher can analyze participants' experiences, views, and perceptions directly in the field.
Data collection techniques include observations, semi-structured interviews, and document analysis to ensure a comprehensive understanding of the implementation process. Observations are conducted in classrooms to examine how teachers integrate Wordwall into their differentiated learning strategies. Semi-structured interviews with teachers and students help capture their experiences and challenges in using digital media for learning. Additionally, document analysis of lesson plans and student learning outcomes provides further insight into the effectiveness of this approach. The research subjects consist of one 6th-grade teacher and 27 students from SDN 01 Anggrasmanis, located in Anggrasmanis Village, Jenawi District, during the 2024/2025 academic year. The teacher and students were selected purposively based on relevant criteria, including the teacher's experience using Wordwall and the availability of adequate technology and digital infrastructure. This research is conducted in a public elementary school in Anggrasmanis Village, which provides a suitable context for studying the integration of digital tools in differentiated learning.

Data and Sources

Research data were obtained from participants consisting of teachers and students at elementary schools that have implemented differentiated learning using Wordwall. Teachers provided data regarding the challenges, opportunities, and benefits of using Wordwall, while students shared their perceptions of the effectiveness of this digital media. The research

location was selected considering accessibility to digital technology, which is relevant to the focus of the study.

Data Collection

Data collection was conducted using three main techniques: observation, semi-structured interviews, and document analysis. Observations were carried out in the classroom to directly examine how teachers implement differentiated learning using Wordwall, particularly the Open the Box feature. Key aspects observed included teacher strategies, student engagement, and challenges encountered during the learning process. Semi-structured interviews were conducted with teachers to explore their experiences, instructional approaches, and obstacles in integrating Wordwall, while student interviews focused on their engagement, understanding, and perceived effectiveness of the digital tool. Additionally, document analysis, including lesson plans, student work, and assessment results, was used to cross-check and complement findings from observations and interviews. These documents provided valuable insights into how digital tools were integrated into the learning process and the outcomes they produced in the classroom.

Analysis Techniques

The data were analyzed using Miles and Huberman's interactive model, which consists of three stages: data reduction, data presentation, and verification. In the data reduction stage, relevant information was selected based on specific criteria, such as alignment with research objectives, emerging patterns, and the depth of insights provided. The data presentation stage involved organizing the findings in various formats, including descriptive narratives, tables, and thematic coding (e.g., "Engagement," "Teacher Strategies," "Challenges"). To ensure validity, the verification stage employed triangulation through multiple sources (teachers, students, and documents), multiple methods (observation, interviews, and document analysis), and expert review. This approach ensured that the findings accurately represent the implementation of Wordwall in differentiated learning..

RESULTS AND DISCUSSION

The results of this study describe the implementation of differentiated learning in elementary schools through the use of the Wordwall digital media with the *Open the Box* feature. From interviews with teachers who have used Wordwall in differentiated learning, it was found that this media greatly assists them in accommodating students' learning needs. Below is a table excerpt from interviews with teachers who have used Wordwall with the *Open the Box* feature in the learning process:

Table 1. Interview Results on the Implementation of Wordwall in Differentiated Learning

NO	INFORMANT CATEGORY	INITIALS	ASPECTS ASKED	INTERVIEW RESULTS	RESULTS DESCRIPTION
1	Teacher	G1	Experience Using Wordwall	"I feel that Wordwall is very helpful in teaching."	Wordwall helps teachers present interactive material.

2	Teacher	G2	Impact on Student Engagement	"Students are more active when using this media."	Wordwall increases student participation.
3	Teacher	G3	Suitability with Learning Styles	"This media is suitable for all students with different learning styles."	Wordwall supports various learning styles of students.
4	Teacher	G4	Difficulties Faced	"Some students have difficulty with technology."	Challenge: students who are not familiar with technology.
5	Teacher	G5	Learning Evaluation	"Immediate feedback helps me."	Wordwall features support adaptive evaluation.
6	Student	S1	Experience Using Wordwall	"I like learning with games on Wordwall."	Wordwall makes learning more enjoyable for students.
7	Student	S2	Engagement in Learning	"I can learn while playing."	The interactive approach of Wordwall enhances engagement.
8	Student	S3	Suitability with Learning Interests	"I like lessons that use technology."	Wordwall attracts students who are interested in technology.
9	Student	S4	Difficulties in Learning	"Sometimes it's hard to understand new features."	Some students face technical challenges.

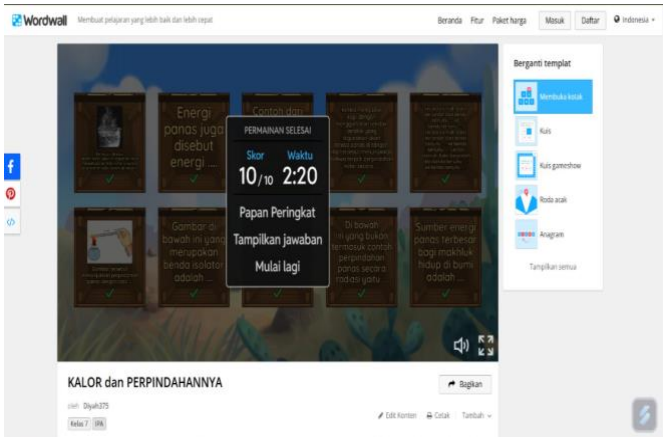
Below are the results of the observation that describe various important aspects related to the implementation of Wordwall in differentiated learning. This observation includes student engagement, the media's adaptation to learning styles, ease of technology use, and the creativity of teachers in designing learning activities. The details of the observation results are presented in Table 2 below:

Table 2. Observation Results of Wordwall Implementation in Differentiated Learning."

NO	OBSERVED ASPECT	OBSERVATION RESULTS

NO	OBSERVED ASPECT	OBSERVATION RESULTS
1	Student Engagement	Students appeared enthusiastic, asked questions frequently, and actively participated in Wordwall activities.
2	Media Adaptation to Learning Styles	Wordwall supports various learning styles, particularly visual and kinesthetic, through interactive elements and attractive colors.
3	Ease of Technology Use by Students	Some students faced initial difficulties operating the features but adapted quickly after the teacher's explanation.
4	Student Response to the Presented Material	Students seemed to enjoy the learning and expressed a desire to use Wordwall more often.
5	Media Influence on Material Understanding	Students with slower comprehension felt more supported through the games feature in Wordwall.
6	Student Interaction	Students frequently discussed and collaborated when answering questions or challenges on Wordwall.
7	Teacher Creativity in Designing Activities	Teachers used the "open the box" feature to create questions with varying difficulty levels based on students' abilities.
8	Teacher Reflection After Learning	Teachers recorded student feedback and evaluation results to improve the relevance of the material and activities on Wordwall.

Based on the results of interviews with teachers and 6th-grade students, supported by observations and complemented with documentation regarding the implementation of the learning process, it is evident that the use of the digital media Wordwall with the "Open the Box" feature is effective in supporting differentiated learning in elementary schools. The research results show that, according to the interviews with teachers, this media greatly helps them present material interactively and adjust the difficulty level of the questions to match the students' abilities. Teachers noted that the use of Wordwall increased student engagement, especially for those who were previously less active in the learning process. Interviews with students revealed that they found the learning process more enjoyable and engaging, with many expressing a preference for interactive activities over traditional methods. However, some teachers also mentioned challenges, particularly in helping students who were not accustomed to technology to adapt. One teacher stated: "This feature is very interactive and helps me teach students with different abilities." Similarly, a student mentioned, "I like playing the game and learning at the same time, it makes learning fun." This triangulation of data—interviews with both teachers and students, observations, and documentation—strengthens the findings and provides a comprehensive understanding of how the digital tool supports differentiated learning in the classroom.



Picture 1. Wordwall Media

The views of the interviewed students indicate that learning using Wordwall felt more engaging and enjoyable. They appreciated the gamification approach, which allowed them to learn while playing. However, some students admitted to facing difficulties in understanding new features during the initial stages of use. Meanwhile, the principal stated that this innovation not only enhanced teachers' creativity in designing materials but also successfully motivated students to be more active in the learning process.

Figure 2. Teacher Teaching with Wordwall Media

The observation results support the findings from the interviews, where students displayed high enthusiasm while using Wordwall. They appeared active in participating, discussing, and collaborating in answering questions. Teachers utilized Wordwall's features to create questions with varying difficulty levels, ensuring that the material provided met the students' learning needs. The reflections conducted by the teachers also showed that feedback from students became an essential foundation for improving the material and learning activities in the next session.

Figure 3. Students Learning with Wordwall

The findings of this study demonstrate that the use of Wordwall digital media, particularly its "Open the Box" feature, effectively supports differentiated learning in elementary schools by accommodating students' diverse learning needs. This aligns with Abdillah & Syaban (2023), who developed an application-based Wordwall game for Natural Science subjects in elementary schools and found that the platform significantly enhances students' engagement and understanding through interactive digital tools. Similarly, Savira & Gunawan (2022) also highlighted the positive impact of Wordwall on elementary students' learning outcomes in science subjects, demonstrating how digital tools can enhance engagement and comprehension. The findings in this study reaffirm these conclusions, emphasizing that Wordwall provides opportunities for students to learn at their own pace and level, which is essential in a differentiated learning environment.

Furthermore, the gamification approach embedded in Wordwall aligns with Huizenga et al., (2019), who argued that gamification in education can boost student motivation and encourage passive students to become more actively engaged in the learning process. This study confirms that students become more confident in selecting questions suited to their abilities, creating a personalized and relevant learning experience. The interactive nature of Wordwall also resonates with the findings of Adiyono et al. (2024), who emphasized the role of technological innovations in enhancing student engagement and interaction in the digital era. Additionally, Mustofa & Riyanti (2019) explored e-learning as an innovation in digital education, reinforcing the idea that digital tools like Wordwall are crucial for modern pedagogy and student-centered learning.

Beyond engagement and comprehension, the use of digital tools like Wordwall also contributes to the development of higher-order thinking skills. (Sulistyanto, et al. (2024) demonstrated that the integration of augmented reality in education enhances students' critical thinking abilities, indicating that interactive digital tools play a crucial role in fostering deeper cognitive engagement. While this study does not specifically examine augmented reality, the findings suggest that Wordwall's interactive features similarly encourage students to think critically when selecting, answering, and reflecting on questions. By engaging students in active learning, Wordwall contributes to the development of analytical and problem-solving skills, reinforcing the importance of technology in supporting cognitive growth.

Despite these advantages, this study also identifies challenges, particularly in students' adaptation to technology. This finding aligns with Haleem et al. (2022) who reviewed the role of digital technologies in education and noted that while they provide numerous benefits, technological adaptation remains a challenge for some students and educators. Addressing these challenges requires intensive guidance and structured implementation strategies, as suggested by Rosyida et al. (2022), to maximize the effectiveness of digital learning tools. Additionally, the principles of differentiated learning emphasized by Tomlinson (2021) are reflected in this study, as Wordwall allows teachers to tailor questions based on students' abilities, interests, and learning styles. This concept is further reinforced by Mariyatul et al., (2024), who discussed the implementation of differentiated learning to meet the diverse needs of students.

Continuous evaluation and material adjustments are also necessary for optimizing the effectiveness of differentiated learning. Sakti & Luthfiyah (2024) emphasized the importance of ongoing assessment and revision in differentiated learning, which aligns with the findings of this study. By continuously refining content based on student feedback, teachers can ensure that digital tools like Wordwall remain effective in catering to different learning needs. Moreover, Ullah & Anwar (2020) highlighted the role of interactive technology in fostering student collaboration and active participation, which is evident in this study. The use of Wordwall encourages students to engage in discussions, answer questions collaboratively, and interact with digital content in a dynamic learning environment. This is consistent with the findings of Serrano et al. (2019) who emphasized that technology-enhanced learning significantly boosts student engagement and promotes deeper understanding through interactive activities.

In conclusion, this study contributes to the growing body of research on digital learning tools in education. By integrating findings from previous studies, it highlights the effectiveness of Wordwall in supporting differentiated learning, increasing student motivation, and fostering interactive learning experiences. The insights from Sulistyanto et al, 2024) further support the argument that digital tools play a vital role in enhancing critical thinking skills, underscoring the broader impact of technology in education. While challenges in technological adaptation exist, continuous reflection and material adjustment, as suggested by Sakti & Luthfiyah (2024), can enhance the overall effectiveness of digital learning in elementary education. The integration of Wordwall into the learning process serves as an innovative approach that aligns with contemporary educational strategies, ensuring that digital media continues to be a valuable tool in facilitating engaging and effective learning experiences for students.

CONCLUSION

The use of the digital media Wordwall with the "Open the Box" feature is effective in supporting differentiated learning in elementary schools. This media helps teachers present materials interactively, increase student engagement, and adjust the difficulty level of questions to match their abilities. Students have shown increased enthusiasm and participation in learning, although some initially faced challenges in adapting to the technology. Teachers also find Wordwall's features useful in designing activities that cater to

students' diverse learning needs. Additionally, the gamification-based approach implemented in Wordwall has been shown to enhance students' motivation to learn and enable more personalized and adaptive learning experiences. While challenges remain, such as technology adaptation for some students, this study highlights that digital innovations like Wordwall can effectively support 21st-century education, making learning more flexible, creative, and centered on the individual needs of students.

REFERENCES

Abdillah, F., & Syaban, M. B. A. (2023). Development of Application-Based Word Wall Game Media on Natural Science Subjects for Elementary School Students. *Jurnal Cakrawala Pendas*, *9*(1), 70–76. https://ejournal.unma.ac.id/index.php/cp/article/view/3786%0Ahttps://ejournal.unma.ac.id/index.php/cp/article/download/3786/2522

Adiyono, A., Hayat, E. W., Oktavia, E. D., & Prasetiyo, N. T. (2024). Learning interaction in the digital era: Technological innovations and education management strategies to enhance student engagement. *Journal of Research in Instructional*, *4*(1), 205–221. https://doi.org/10.30862/jri.v4i1.333

Alviana Metasari, & Nur Amalia. (2024). Analytical Study: the Use of Digital Technology-Based Learning Media at Alam Surya Mentari Elementary School. *Jurnal Elementaria Edukasia*, *7*(2), 2724–2735. https://doi.org/10.31949/jee.v7i2.9302

Aziz, A., & Astutik, A. P. (2023). Efektivitas Media Scramble dalam Meningkatkan Fokus Pembelajaran Siswa pada Mata Pelajaran PAI dan Budi Pekerti. *Intizar*, *29*(2), 147–162. https://doi.org/10.19109/intizar.v29i2.20765

Costigliola, F. C. (2019). Library of Congress Cataloging in Publication Data. *Awkward Dominion*, 381–382. https://doi.org/10.7591/9781501721144-016

Desstya, A. (2018). Validitas Reliabilitas Instrument Technologycal Pedagogical Content Knowledge (TPACK) Guru Sekolah Dasar Muatan Pelajaran IPA. *AL-ASASIYYA: Journal Of Basic Education*, *3(1)*, 126-139.

Erlin, Y., Angraini, N., & Iman, J. N. (2025). *Enriching Efl Learners ' Vocabulary Through Word Wall For Seventh Grade at SMPN 3 Abab*. *4*(2), 645–651.

Feriyanti, N. (2019). Pengembangan E-modul Matematika untuk Siswa SD (The Development of E-Modul Mathematics For Primary Students). *Jurnal Teknologi Pendidikan Dan Pembelajaran*, *6*(1), 1–12.

Hadiyanti, A. H. D. (2021). Pengembangan Modul Pembelajaran IPA Digital Berbasis Flipbook Untuk Pembelajaran Daring di Sekolah Dasar. *Jurnal Elementaria Edukasia*, *4*(2), 284–291. https://doi.org/10.31949/jee.v4i2.3344

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, *3*(February), 275–285. https://doi.org/10.1016/j.susoc.2022.05.004

Hidayat, M. L., Abdurahman, S. G., Astuti, D. S., Anif, S., Zannah, F., Technology, I., Arabia, S., Surakarta, U. M., Negeri, U., Maret, S., Training, T., Sorong, U. M., Muhammadiyah, U., & Raya, P. (2025). *http://journals.ums.ac.id/index.php/ijolae Pilot Study of Digital Competency Mapping of Indonesian Preservice Teachers: Rasch Model Analysis*. *7*(1), 100–116. https://doi.org/10.23917/ijolae.v7i1.23935

Huizenga, J., Admiraal, W., Dam, G. ten, & Voogt, J. (2019). Mobile game-based learning in secondary education: Students' immersion, game activities, team performance and learning outcomes. *Computers in Human Behavior*, *99*(November 2018), 137–143. https://doi.org/10.1016/j.chb.2019.05.020

Kadi, T., & Awwaliyah, R. (2017). Inovasi Pendidikan : Upaya Penyelesaian Problematika Pendidikan Di Indonesia. *Jurnal Islam Nusantara*, *1*(2), 144–155. https://doi.org/10.33852/jurnalin.v1i2.32

Kemendikbud. (2020). *Kurikulum Merdeka: Pembelajaran yang fleksibel dan berbasis kompetensi*. Kementerian Pendidikan dan Kebudayaan.

Labadze, L., Grigolia, M., & Machaidze, L. (2023). Role of AI chatbots in education: systematic literature review. *International Journal of Educational Technology in Higher Education*, *20(1)*, 56.

Mariyatul, S., Amalia, N., Prastini, E., & Karta, S. (2024). *Implementasi Pembelajaran Berdiferensiasi untuk Memenuhi Kebutuhan Belajar Siswa yang Beragam*. *2*(2), 58–66.

Mustofa, R. H., & Riyanti, H. (2019). Perkembangan E-Learning Sebagai Inovasi Pembelajaran Di Era Digital. *Wahana Didaktika : Jurnal Ilmu Kependidikan*, *17*(3), 379. https://doi.org/10.31851/wahanadidaktika.v17i3.4343

Romadhon, M., MS, Z., & Fahrurrozi, F. (2021). Google Classroom Sebagai Solusi Pembelajaran Online di Sekolah Dasar. *Jurnal Elementaria Edukasia*, *4*(1), 151–159. https://doi.org/10.31949/jee.v4i1.3097

Rosyida, A., Nurjanah, S., Wicaksono, A., Maulana, I., & Fathoni, A. (2022). Optimalisasi Kebutuhan Belajar Siswa Melalui Pembelajaran Berdiferensiasi. *ELEMENTA: Jurnal PGSD STKIP PGRI Banjarmasin*, *4*(2), 63–71. https://doi.org/10.33654/pgsd

Sakti, N. C., & Luthfiyah, A. (2024). Implementasi Pembelajaran Berdiferensiasi dengan Metode Problem Based Learning (PBL) dalam Meningkatkan Hasil Belajar. *Jurnal Ilmiah Profesi Pendidikan*, *9*(2), 694–698. https://doi.org/10.29303/jipp.v9i2.1935

Savira, A., & Gunawan, R. (2022). Pengaruh Media Aplikasi Wordwall dalam Meningkatkan Hasil Belajar Mata Pelajaran IPA di Sekolah Dasar. *Edukatif : Jurnal Ilmu Pendidikan*, *4*(4), 5453–5460. https://doi.org/10.31004/edukatif.v4i4.3332

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, 128, 13-35.

Serrano, D. R., Dea-Ayuela, M. A., Gonzalez-Burgos, E., Serrano-Gil, A., & Lalatsa, A. (2019). Technology-enhanced learning in higher education: How to enhance student engagement through blended learning. *European Journal of Education*, *54*(2), 273–286. https://doi.org/10.1111/ejed.12330

Sholeh, M., & Rofiki, I. (2024). Penerapan Pembelajaran Berdiferensiasi Berbantuan Media Teknologi pada Materi Teks Nonfiksi untuk Siswa Kelas VI Sekolah Dasar. *Elementeris: Jurnal Ilmiah Pendidikan Dasar Islam*, *6*, 10–23.

Sitepu. (2019). *Pengembangan Kreativitas Siswa*. Guepedia.

Sulistyanto, H., Prayitno, H. J., Narimo, S., Anif, S., Sumardjoko, B., & Wardhani, N. W. (2024). A Study of The Use of Augmented Reality in Learning: Impacts on Increasing Students' Critical Thinking Skills. *Asian Journal of University Education*, *20(2)*, 369-379.

Supriyanto, A., & Lian, B. (2021). Manajemen kepala sekolah dalam meningkatkan kualitas pendidikan di sekolah dasar. *Jurnal Manajemen Pendidikan*, *8*(2), 123–135.

Tomlinson. (2021). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). VA: ASDC.

Ullah, A., & Anwar, S. (2020). The effective use of information technology and interactive activities to improve learner engagement. *Education Sciences*, *10*(12), 1–20. https://doi.org/10.3390/educsci10120349

Yulianti, D., & Minsih, M. (2020). Pengembangan media pembelajaran kartu Pak Alam berbasis game edukatif IPS di Sekolah Dasar. *Jurnal Basicedu*, *6*(3), 5086–5096. https://journal.uii.ac.id/ajie/article/view/971