

Needs Analysis of HeKaO Interactive Digital Learning Media Supported by Educational Games for Third-Grade Elementary School Students

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Abstract

Science and Social Studies learning, particularly on the topic of classifying animals based on their diets, requires students to understand concrete concepts. Therefore, learning media capable of presenting content in a visual and interactive manner are essential to accommodate the characteristics of elementary school students. However, the use of digital learning media in classroom instruction has not yet been optimized. This study aimed to analyze the need for developing interactive digital learning media supported by educational games for Science and Social Studies learning among third-grade elementary school students. A descriptive research method was employed, with data collected through observations, interviews, and questionnaires and analyzed using descriptive percentages. The research participants consisted of one teacher and 29 third-grade students at SD Negeri Maguan, Nganjuk Regency. The findings indicated that most students still experienced difficulties in understanding the learning material and showed strong interest in learning media integrated with educational games and smartphone-based media. These findings served as the basis for developing the HeKaO (Herbivore, Carnivore, Omnivore) interactive digital learning media, which incorporates learning materials, instructional videos, quizzes, and educational games. This study provides an empirical foundation for the development of digital learning media that align with students' learning needs and recommends the use of interactive digital learning media as an alternative for teachers to create more engaging, active, and meaningful Science and Social Studies learning experiences.

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Introduction

Learning is an interactive process involving teachers, students, learning materials, and the learning environment to achieve predetermined educational objectives (Taqiyyuddin et al., 2025; Peni et al., 2022; Silaen, 2021). To achieve these objectives effectively, learning should be designed to be interactive, engaging, effective, and efficient in order to enhance students' knowledge and skills (Nurhidayati et al., 2023; Fitri, 2022; Citra, 2022). Learning media are one of the essential components that support the implementation of effective learning. They facilitate students' understanding of concepts by presenting learning content in meaningful and engaging ways (Handayani, 2024; Taswira et al., 2024; Ahmad et al., 2024). When appropriately integrated into the learning process, learning media can increase students' attention, motivation, and active participation during classroom activities (Harini & Sulistiono, 2015; Ginting, 2021; Pagarra et al., 2024). The effective use of learning media also plays a significant role in fostering students' interest, motivation, and engagement, which positively influences learning outcomes by encouraging students to actively observe, explore, and comprehend the learning materials. Consistent with this view, Rosmana et al. (2024) reported that the implementation of digital learning media significantly improved the learning outcomes of elementary school students. Furthermore, digital learning media have been shown to enhance students' learning interest, science process skills, and critical thinking abilities by presenting learning content in a more interactive and engaging manner (Aulya et al., 2024; Ningrum et al., Gaol., Nur., et al).

From a pedagogical perspective, elementary school teachers should not only use technology as a medium for delivering instructional content but also design interactive and contextual learning experiences that actively engage students through exploratory activities and educational games (Khasanah et al., 2025; Putri et al., 2024). Miftah (2022) emphasized that information and communication technology (ICT)-based learning media should be implemented systematically while considering students' characteristics to enhance learning effectiveness. Similarly, Nisa et al. (2023) argued that the integration of digital technology into classroom instruction promotes students' active participation and supports more meaningful learning experiences. In addition, Dicki et al., (2023) reported that digital learning media can enhance student interaction and learning motivation by presenting instructional content in a more engaging and accessible manner. Empirical evidence indicates that access to and the use of digital technology in education have continued to increase alongside the development of the digital education ecosystem, including the widespread use of digital devices and learning platforms among students across various educational levels (OECD, 2023). In student-centered learning environments, technology enables students to learn more actively by exploring diverse learning resources, personalizing learning according to their individual needs, and strengthening interaction and collaboration throughout the learning process (UNESCO, 2023). Furthermore, the OECD (2023) reported that the ongoing digital transformation in education has the potential to create learning experiences that are more active, flexible, and responsive to students' needs. However, this condition has not yet been fully reflected at Maguan State Elementary School, Nganjuk Regency, Indonesia. Based on the results of classroom observations and interviews, the use of technology-based learning media in Science and Social Studies

instruction remains suboptimal. This finding indicates a gap between the globally recommended direction of digital transformation in education and its implementation in classroom practice.

Interactive digital learning media are learning tools that integrate various multimedia components, including instructional materials, images, audio, videos, animations, and user interaction (Hukubun et al., 2025 ; Artina, 2021). These media are designed to create learning experiences that are more engaging, interactive, and easier for students to understand (Mayonva & Faiza, 2023; Syamsuriyanti et al., 2024; Sulistyowati et al., 2025). Recent technological advancements have led to the widespread development of interactive learning applications aimed at fostering students' curiosity and active participation in the learning process (Musthofa et al., 2025; Sesanti et al., 2025; Ain et al., 2025; Palui et al. 2021). Effective interactive digital learning media for elementary school students should be designed according to their developmental characteristics, featuring visually appealing interfaces, user-friendly navigation, interactive elements, and immediate feedback (Rahayu et al., 2024; Hasbin et al., 2024; Rahayu et al., 2022). Furthermore, integrating digital learning media with educational games has been shown to provide more engaging and enjoyable learning experiences, enhance students' learning motivation, and facilitate their understanding of instructional content (Solikah et al., 2024; Aginsha., 2021; Zahra., 2024; Assidik., 2024). Consistent with these findings, Ulfiah (2023) reported that incorporating educational games into classroom instruction significantly increases students' motivation and participation by creating a more interactive, challenging, and enjoyable learning environment. This approach is aligned with game-based learning, which utilizes games as a means of achieving instructional objectives while promoting students' active engagement throughout the learning process (Islam et al., 2024; Iswahyudi et al., 2025; Kadir et al., 2025). In addition, gamification integrates game elements, such as points, levels, challenges, and rewards, into instructional activities to enhance students' motivation and engagement (Valentinna et al., 2024). Through the implementation of gamification and game-based learning, students experience more engaging learning environments that encourage active participation and foster higher levels of learning motivation (Megawati., et al 2022; Sebastiana., et al 2023).

Despite the numerous advantages of interactive digital learning media supported by educational games, the results of observations, interviews, and questionnaires conducted at Maguan State Elementary School, Nganjuk Regency, Indonesia, revealed that Science and Social Studies instruction on the topic of classifying animals based on their diets continues to face several challenges, particularly regarding the use of learning media to support the instructional process. The limited use of appropriate learning media has resulted in several learning difficulties, including students' inability to maintain attention during lessons, low learning motivation, and limited active participation in classroom activities. Consequently, many students continue to experience difficulties in understanding the concept of classifying animals according to their feeding habits. The needs analysis further revealed that 58.6% of the students perceived Science and Social Studies as a difficult subject, while 65% reported difficulties in understanding the topic of animal classification based on feeding habits. These findings indicate that students' conceptual understanding of the topic requires further improvement. Moreover,

the learning media currently used are insufficient to present conceptual content in an engaging and interactive manner, making it difficult for students to comprehend and retain the information presented. Consistent with this finding, Rosmana et al. (2024) reported that the limited use of diverse learning media can reduce students' motivation, attention, and participation during classroom instruction, ultimately leading to lower conceptual understanding and poorer learning outcomes. Therefore, the development of more creative and engaging learning media is necessary to facilitate students' meaningful understanding of Science and Social Studies concepts.

Several previous studies have demonstrated that interactive digital learning media integrated with educational games provide significant benefits for the learning process. Maulidia et al. (2023) reported that interactive multimedia based on educational games is highly feasible and effective in increasing students' learning interest. Similarly, Siswoyo et al. (2023) found that the developed interactive multimedia-based educational game met the criteria of validity, attractiveness, and feasibility for use by elementary school students. Furthermore, Susanti et al. (2024) revealed that game-based learning media effectively enhanced students' learning interest and improved their understanding of instructional content. Collectively, these studies indicate that the integration of interactive digital learning media with educational games contributes positively to learning quality by increasing students' interest, motivation, and conceptual understanding. Despite these promising findings, previous studies have primarily focused on the general development of digital learning media and have not integrated multiple instructional components into a single comprehensive platform. Most existing media provide only instructional content without incorporating enrichment features, such as additional information and educational videos about animals beyond the core learning material. Moreover, the educational games developed in previous studies are generally designed for individual use and do not facilitate real-time competition among students during classroom activities. To address these limitations, this study developed the HeKaO interactive digital learning media supported by educational games based on the identified needs of teachers and students. Unlike previously developed learning media, HeKaO integrates instructional materials, learning videos, supplementary information about animals as enrichment content, quizzes, and educational games that can be played simultaneously by students. This integrated design has the potential to foster healthy competition, enhance students' learning motivation, and promote more active classroom participation. Therefore, HeKaO is expected to support Science and Social Studies instruction on the topic of classifying animals based on their feeding habits in accordance with the learning needs of third-grade elementary school students.

Although the development of interactive digital learning media and educational games has been widely explored, studies integrating interactive digital learning media with educational games that can be played simultaneously while incorporating multiple instructional features, such as an introductory story before the lesson and supplementary information related to the topic of classifying animals based on their feeding habits for third-grade elementary school students, remain limited. Therefore, this study is expected to contribute to the development of more effective Science and Social Studies learning media by providing empirical evidence regarding the needs of teachers and students. These findings will serve as the foundation for

developing the HeKaO interactive digital learning media, which integrates educational games and is designed in accordance with the characteristics and learning needs of third-grade elementary school students. From a theoretical perspective, this study is expected to enrich the body of knowledge on the development of interactive digital learning media supported by educational games for Science and Social Studies instruction at the elementary school level. In addition, the findings are expected to serve as a reference for developing more innovative, interactive, and technology-oriented learning media. The results of the needs analysis are also expected to provide a foundation for designing learning media that align with the characteristics, learning needs, and learning contexts of elementary school students. Accordingly, this study aims to identify the needs for developing interactive digital learning media supported by educational games for Science and Social Studies instruction among third-grade elementary school students.

Method

This study employed a descriptive research approach to identify the needs for developing interactive digital learning media supported by educational games for Science and Social Studies instruction at the elementary school level. This approach was selected because it provides a comprehensive understanding of the existing learning conditions, as well as the needs and challenges experienced by teachers and students, thereby serving as the basis for developing the learning media. The study was conducted at Maguan State Elementary School, Nganjuk Regency, East Java, Indonesia. The research participants consisted of one third-grade teacher, selected through purposive sampling, and all 29 third-grade students, who were selected using total sampling. Data were collected through classroom observations, interviews, and questionnaires. Observation and interview data were used to examine the learning conditions, identify instructional challenges, and explore the needs of both teachers and students. Questionnaire data were analyzed using descriptive percentages to identify students' needs and preferences regarding the proposed interactive digital learning media. The observation, interview, and questionnaire instruments were adapted from previous studies on needs analysis for learning media development and were subsequently modified to align with the characteristics of Science and Social Studies instruction and the objectives of this study. Data trustworthiness was established through methodological triangulation by comparing findings obtained from observations, interviews, and questionnaires, thereby ensuring greater accuracy and credibility of the data. The collected data were analyzed using descriptive percentage analysis to determine the extent of students' needs for interactive digital learning media supported by educational games. The percentage was calculated using the following formula: $P = \frac{f}{N} \times 100\%$, where P represents the percentage, f denotes the frequency of responses, and N represents the total number of respondents. This analytical technique was employed to describe users' needs for the learning media to be developed (Nikmah & Rahmawati, 2022).

Results and Discussion

Results

To examine the learning conditions of Science and Social Studies in the third grade at Maguan State Elementary School, Nganjuk Regency, East Java, Indonesia, classroom observations were conducted during the teaching and learning process. The observations aimed to examine the learning environment, the use of learning media, students' learning activities, and the availability of instructional facilities. The findings served as the basis for analyzing the need to develop interactive digital learning media supported by educational games. The results of the classroom observations are presented in Table 1.

Table 1. Observation results

No.	Indicator	Observation Results	
		YES	NO
1	The teacher used learning media appropriate to the instructional topic.		√
2	The instructional content was aligned with the curriculum and intended learning outcomes.	√	
3	The teacher employed a variety of teaching models and instructional methods.		√
4	Technology-based instructional facilities (e.g., laptops, computers, or projectors) were available.	√	
5	Students actively participated in classroom learning activities.		√
6	Effective interaction was established between the teacher and students during the learning process.		√
7	The teacher managed the classroom effectively, creating a conducive learning environment.	√	
8	Students demonstrated interest in and paid attention to the instructional content.		√
9	The teacher utilized a variety of learning resources during instruction.		√
10	Instructional time was used effectively by both the teacher and the students.	√	

As presented in Table 1, the learning process was supported by adequate technological facilities and a conducive learning environment. However, the use of learning media and the variety of instructional methods remained suboptimal, resulting in limited student engagement during Science and Social Studies instruction. These findings suggest that the challenges encountered in the learning process were primarily associated with the underutilization of learning media capable of promoting students' active participation rather than with the availability of instructional facilities.

To complement the classroom observation findings, interviews were conducted with the third-grade teacher as the primary source of information. The interviews aimed to obtain detailed information regarding the implementation of classroom instruction, students' learning difficulties, the use of learning media, and the teacher's needs for learning media to support

Science and Social Studies instruction. The results of the teacher interview are presented in Table 2.

Table 2. Results of the Teacher Interview

No	Questions	Responses
1	Has the teacher taught the topic of classifying animals based on their feeding habits? What learning media were used?	Yes. The teacher used the student textbook and worksheet (LKS), utilizing the illustrations provided in these materials to explain the topic.
2	How is the topic of classifying animals based on their feeding habits usually taught?	The teacher explained the material orally while using animal illustrations from the textbook and asked questions to assess students' understanding.
3	How do students respond when learning is supported only by materials from the textbook?	Students tended to lose focus easily, became bored, and often engaged in side conversations during the lesson.
4	Do students experience difficulties in understanding the topic?	Yes. Some students experienced difficulties, particularly in distinguishing the characteristics of herbivores, carnivores, and omnivores.
5	Would students prefer learning activities that incorporate games or interactive activities?	Yes. According to the teacher, third-grade students are more engaged when learning activities include games because they naturally enjoy playing and have relatively short attention spans.
6	Has the teacher used technology-based learning media during instruction?	Technology-based learning media have not been used optimally, although the necessary technological facilities are available at the school.
7	Do students need more varied learning media for this topic?	Yes. Students show greater interest when technology-based learning media are used.
8	Do students have access to smartphones at home? Have smartphone-based learning media been used?	Most students have access to smartphones at home; however, these devices have not been utilized for learning, and the teacher has not yet incorporated smartphone-based learning media into classroom instruction.
9	Would technology-based learning media improve students' understanding of the topic?	Yes. The teacher believed that attractive technology-based learning media would increase students' enthusiasm and facilitate their understanding of the topic.
10	Does the teacher support the development of interactive digital learning media supported by educational games?	Yes. The teacher agreed that such learning media would increase students' enthusiasm and support the learning process

As shown in Table 2, the teacher reported that classroom instruction primarily relied on the student textbook and worksheets (LKS), which limited students' understanding of the topic of classifying animals based on their feeding habits. Although the school was equipped with adequate technological facilities and most students had access to smartphones at home, these resources had not been effectively integrated into the learning process. The teacher also indicated that interactive digital learning media incorporating interactive activities and educational games had the potential to enhance students' learning motivation and improve their understanding of Science and Social Studies.

To validate and strengthen the findings obtained from the classroom observations and teacher interview, questionnaires were administered to 29 third-grade students. The questionnaires were designed to examine students' learning experiences, the difficulties they encountered during learning, their interest in the use of learning media, and their need for interactive digital learning media supported by educational games. The questionnaire results are presented in Table 3.

Table 3. Results of the Student Questionnaire

No	Statement	Number of "YES" responses	Persentase
1	Do you consider Science and Social Studies a difficult subject?	17	58,6%
2	Have you learned about the topic of classifying animals based on their feeding habits?	29	100%
3	Do you consider the topic of classifying animals based on their feeding habits difficult?	19	65,5%
4	Can you distinguish animals based on their feeding habits (herbivores, carnivores, and omnivores)?	18	62%
5	Has your teacher used learning media when teaching the topic of classifying animals based on their feeding habits in Science and Social Studies?	4	13,7%
6	Would you be interested in learning by using learning media?	23	79,3%
7	Do you have access to a smartphone at home?	20	68,9%
8	Do you use a smartphone for learning after school?	12	41,3%
9	Do you have learning applications containing instructional materials, exercises, and videos on your smartphone?	2	6,8%
10	Do you enjoy learning through educational games?	23	79,3%
11	Do you become bored more quickly when learning only involves instructional materials without engaging activities?	25	86,2%
12	Do you agree with using smartphones for Science and Social Studies learning both at school and at home?	19	82,6%
13	Do you agree that the topic of classifying animals based on their feeding habits should be presented on your smartphone?	20	68,9%
14	Do you agree with using learning media on smartphones that integrate instructional materials, educational games, quizzes, and instructional videos for Science and Social Studies learning?	22	75,8%

As presented in Table 3, the questionnaire results indicated that 65.5% of the students experienced difficulties in understanding the topic of classifying animals based on their feeding habits. In addition, 79.3% of the students expressed interest in learning through interactive learning media integrated with educational games. Furthermore, 75.8% agreed with the use of smartphone-based learning media for Science and Social Studies that integrate instructional materials, instructional videos, quizzes, and educational games. These findings indicated that the students demonstrated both a need for and a positive interest in interactive digital learning media. Therefore, the development of the HeKaO interactive digital learning media supported by educational games was considered appropriate to support Science and Social Studies instruction by providing a more engaging, interactive, and meaningful learning experience for students.

Discussion

The needs analysis indicated that the low level of student engagement in Science and Social Studies learning was not primarily caused by limited technological facilities but rather by the suboptimal use of digital learning media. Although the school was equipped with technological resources that supported classroom instruction, such as laptops and projectors, teaching practices remained largely dependent on textbooks and teachers' verbal explanations. Consequently, students tended to lose focus, become easily bored, and participate less actively during the learning process. These findings suggest that the availability of technological facilities alone is insufficient; they should be complemented by learning media designed to accommodate the characteristics, learning needs, and developmental stages of elementary school students. This finding is consistent with the study by Rahayu & Luswati (2022) which reported that learning motivation is influenced by learning experiences that capture students' attention, stimulate their interest, and encourage active participation. Therefore, interactive learning media are expected to enhance students' learning motivation by providing a more engaging, interactive, and meaningful learning experience than conventional instructional approaches. While these findings support those of Rahayu & Luswati (2022), the present study offers a more specific contribution by demonstrating that learning media should be designed in accordance with the characteristics and learning needs of elementary school students.

The needs analysis also revealed that students continued to experience difficulties in understanding the classification of animals based on their feeding habits. This finding suggests that instructional approaches relying solely on textbooks and teachers' verbal explanations were insufficient to facilitate a deeper and more effective understanding of the concepts. According to the Cognitive Theory of Multimedia Learning, learning becomes more effective when instructional content integrates text, images, audio, video, and animations in complementary ways, thereby supporting students in constructing conceptual understanding (Mayer, 2001). Furthermore, based on Piaget's theory of cognitive development, third-grade elementary school students are in the concrete operational stage, during which they acquire knowledge more effectively through direct experiences, tangible objects, and visual representations than through abstract concepts (Piaget, 1977). Therefore, presenting instructional content through images, videos, storytelling, and interactive activities can help students develop a more concrete understanding of the concepts of herbivores, carnivores, and omnivores. These findings are

consistent with those reported by Sari & Ahmad (2021), who found that digital learning media improved students' conceptual understanding by presenting instructional content in a more interactive manner. However, the present study extends these findings by demonstrating that learning media should also be accessible through devices commonly owned by students, thereby enabling flexible learning both at school and at home.

Furthermore, students' strong interest in learning activities integrated with educational games indicates that game-based elements have the potential to enhance the quality of Science and Social Studies instruction. This finding is supported by the questionnaire results, which showed that the majority of students were interested in using learning media incorporating educational games. These findings are consistent with the concept of gamification, which refers to the integration of game elements, such as challenges, points, rewards, levels, and feedback, into learning activities to enhance students' motivation and engagement (Valentinna et al., 2024). Putra et al. (2025) also reported that integrating educational games into the learning process can increase students' interest in learning by providing more interactive, engaging, and meaningful learning experiences. Therefore, educational games should not merely serve as a source of entertainment but can also function as an instructional approach that promotes students' learning motivation and active engagement. These findings support the study by Syafriafdi et al. (2025). However, the present study differs by emphasizing a comprehensive needs analysis of both teachers and students as the foundation for developing interactive digital learning media.

Based on the findings of the needs analysis, the HeKaO interactive digital learning media was developed to align with the characteristics of third-grade elementary school students. The media includes user instructions, Learning Outcomes (CP), Learning Objectives (TP), and instructional materials introduced through a short narrative and an introductory video to activate students' prior knowledge. The presentation of content through a combination of text, images, and video applies the principles of the Cognitive Theory of Multimedia Learning, while the use of visual representations and interactive activities is designed to support students' cognitive development at the concrete operational stage. In addition to the main instructional materials, HeKaO features an Interesting Facts menu containing supplementary videos and information about various animals, enabling students to broaden their knowledge and stimulate their curiosity. The media also incorporates an educational game that can be played simultaneously by all students, fostering healthy competition, increasing learning motivation, and encouraging active participation during classroom instruction. Consequently, every feature of HeKaO was developed based on the identified needs of both teachers and students. As a result, the media not only provides an engaging visual learning experience but also addresses learners' characteristics and the instructional needs of Science and Social Studies education at the elementary school level. The primary contribution of this study lies in providing empirical evidence on the needs of teachers and students as the foundation for developing interactive digital learning media supported by educational games. These needs analysis findings served as the basis for designing HeKaO, ensuring that the developed media was grounded not only in established educational theories but also in the actual conditions and instructional needs encountered in elementary school classrooms.

Conclusion

This study aimed to analyze the needs for developing interactive digital learning media supported by educational games for Science and Social Studies instruction on the topic of classifying animals based on their feeding habits in third-grade elementary school. The findings indicate that the primary instructional need extends beyond the availability of technological facilities to the provision of interactive learning media that align with students' developmental characteristics and integrate instructional materials, videos, supplementary information, and educational games. Such media have the potential to enhance students' engagement, motivation, and conceptual understanding of animal classification based on feeding habits. These findings highlight the importance of needs analysis as a foundation for developing digital learning media that effectively address both teachers' instructional needs and students' learning characteristics. Therefore, learning media developers should design interactive, user-friendly media that accommodate students' characteristics, while teachers may utilize such media as an alternative instructional resource to create more meaningful Science and Social Studies learning experiences. This study was limited by the needs analysis being conducted in only one elementary school, which restricts the generalizability of the findings. Future research is therefore recommended to involve a broader range of schools with diverse backgrounds and characteristics to provide a more comprehensive understanding of instructional needs.

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Authors' Note

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

References

- Aginsha, N. P. (2021). Pengaruh Game Online dan Motivasi Belajar Terhadap Prestasi Belajar Siswa V Se-Gugus Kasihan Bantul. *Melior : Jurnal Riset Pendidikan Dan Pembelajaran Indonesia*, 1(1), 21–24. <https://doi.org/10.56393/melior.viii.127>
- Ahmad, N. A., Pagarra, H., & Syamsuddin, A. F. (2024). Penerapan media pembelajaran pop up book untuk meningkatkan hasil belajar matematika siswa kelas V sekolah dasar. *Mindset*, 4(2), 76–82. <https://doi.org/10.56393/mindset.v4i2.2735>
- Ain, N., Kurniawati, R. E., & Zuhro, L. F. (2025). Application of Deep Learning-Based Problem Based Learning to Increase Motivation and Critical Thinking of Elementary School

-
- Students. *Lucerna : Jurnal Riset Pendidikan Dan Pembelajaran*, 5(1), 1–9. <https://doi.org/10.56393/lucerna.v5i1.3288>
- Assidik, Y. P., Indawati, N., Sakdiyah, S. H., & Hakim, A. R. (2024). Pengembangan Ensiklopedia Berbasis Kearifan Lokal dengan Barcode Creator untuk Meningkatkan Motivasi Belajar Siswa. *Melior : Jurnal Riset Pendidikan Dan Pembelajaran Indonesia*, 4(1), 16–23. <https://doi.org/10.56393/melior.v4i1.2524>
- Aulya, L. N., Ratnaningrum, I., & Widagdo, A. (2024). Efektivitas penggunaan media digital berbasis animasi Powtoon untuk meningkatkan minat dan hasil belajar IPAS pada siswa kelas IV. *Jurnal Ilmiah Ilmu Pendidikan*, 7(5), 4912–4918. <https://doi.org/10.54371/jiip.v7i5.4353>
- Citra, N. (2022). Dampak Hasil Belajar Ilmu Pengetahuan Alam dengan Penggunaan Model Problem Based Learning Kelas VIII. *Pedagogi Jurnal Pendidikan Dan Pembelajaran*, 2(1), 31–37. <https://doi.org/10.56393/pedagogi.v2i1.1791>
- Dicki, M., Sauri, W., & Arief, N. A. (2023). Tingkat kebugaran jasmani siswa kelas X SMA Negeri 8 Kota Kediri. *Jurnal Basicedu*, 7(3), 1876–1882. <https://doi.org/10.31004/basicedu.v7i3.5834>
- Fitri, H. R. (2022). Upaya Aplikatif Peningkatan Kemampuan Bahasa Baku Peserta Didik dengan Media Wordwall di Sekolah Menengah Pertama. *Pedagogi Jurnal Pendidikan Dan Pembelajaran*, 2(2), 67–73. <https://doi.org/10.56393/pedagogi.v2i2.1793>
- Gaol, M. D. F. L. (2022). Peningkatan Minat Belajar Peserta Didik dengan Metode Visual Auditory Kinesthetic. *Pijar : Jurnal Penelitian Bidang Pendidikan Dan Pembelajaran*, 2(2), 36–41. <https://doi.org/10.56393/pijar.v2i2.1129>
- Ginting, H. (2021). Pemanfaatan Media Belajar Berbasis Canva pada Mata Pelajaran Pendidikan Pancasila dan Kewarganegaraan. *Educare Jurnal Penelitian Pendidikan Dan Pembelajaran*, 1(2), 47–52. <https://doi.org/10.56393/educare.v1i2.956>
- Handayani, B. (2024). Penggunaan media pembelajaran puzzle Rabu pada mata pelajaran Pendidikan Pancasila untuk meningkatkan motivasi dan hasil belajar peserta didik. *Jurnal JARLITBANG Pendidikan*, 10(2), 161–172. <https://doi.org/10.59344/jarlitbang.v10i2.166>
- Harini, S. U. D., & Sulistiono. (2015). Penggunaan media lingkungan untuk meningkatkan hasil belajar dan aktivitas siswa kelas XI-TKJ SMKN 1 Semen Kediri. *Proceeding Biology Education Conference*.
- Hasbin, N. N. H., Irfan, M., & Hermuttaqien, B. P. F. (2024). Pengaruh Penggunaan Media Pembelajaran Interaktif Wordwall dalam Meningkatkan Kosakata Siswa di Sekolah Dasar. *Sistem-Among : Jurnal Pendidikan Sekolah Dasar*, 4(1), 20–26. <https://doi.org/10.56393/sistemamong.v4i1.2110>
- Islam, K. R., Komalasari, K., Masyitoh, I. S., Juwita, & Adnin, I. (2024). Pengaruh model pembelajaran game-based learning terhadap motivasi belajar peserta didik. *Ideas: Jurnal Pendidikan, Sosial, dan Budaya*, 10(3), 619–628. <https://doi.org/10.32884/ideas.v10i3.1640>
- Iswahyudi, D., Suciati, S., Amalia, W. O. S. R., & Andarwati, L. (2025). Comparison of the Effectiveness of Google Form and Quizizz on Pancasila Education Learning Outcomes in Elementary School. *Lentera : Jurnal Kajian Bidang Pendidikan Dan Pembelajaran*, 5(2), 68–78. <https://doi.org/10.56393/lentera.v5i1.3314>
- Kadir, S. K. A., Ndori, V. H., Bajo, F. D., & Ayusari, A. (2025). Wordwall-Based Gamification to Improve Understanding of the Demand Function: A Madrasah Aliyah Case Study. *Lentera : Jurnal Kajian Bidang Pendidikan Dan Pembelajaran*, 5(2), 89–96. <https://doi.org/10.56393/lentera.v5i2.3404>
- Khasanah, L., Suwadi, S., & Sugianti, S. (2025). The Effectiveness Implementation Team Games Tournament Learning Model on Negotiation Text Materials Class X Students. *Paidea :*
-

-
- Jurnal Pendidikan Dan Pembelajaran Indonesia*, 5(1), 1-14.
<https://doi.org/10.56393/paidea.v5i1.3433>
- Maulidia, R., Suwignyo, H., & Andajani, K. (2023). Pengembangan multimedia interaktif berbasis permainan edukatif untuk pembelajaran tematik siswa kelas 3 SD. *ELSE (Elementary School Education Journal)*, 7(2), 230-240.
<https://doi.org/10.30651/else.v7i2.20404>
- Mayer, R. E. (2001). *Multimedia learning*. Cambridge University Press.
- Mayonva, H., & Faiza, D. (2023). Rancang media pembelajaran multimedia interaktif pada mata pelajaran dasar-dasar elektronika sekolah menengah kejuruan. *ELEKTIF: Jurnal Elektronika & Informatika*, 1(2), 72-81. <https://doi.org/10.24036/elektif.vi1i2.18>
- Megawati, M., Triwahyudianto, T., & Indawati, N. (2022). Pengembangan Buku Pendamping Bidang Studi Ilmu Pengetahuan Alam Tema 5 Subtema 1 Kelas V Sekolah Dasar. *Kognisi : Jurnal Penelitian Pendidikan Sekolah Dasar*, 2(1), 1-7.
<https://doi.org/10.56393/kognisi.v2i1.322>
- Musthofa, D. N., Cahyono, A. E., & Ulfa, N. M. (2025). Pengembangan media pembelajaran mobile learning dengan fitur gamifikasi pada materi kebutuhan dalam mata pelajaran IPS. *Simki Pedagogia*, 8(2), 365-375. <https://doi.org/10.29407/jsp.v8i2.1038>
- Nikmah, N. H., & Rahmawati, F. P. (2022). Analisis kebutuhan pengembangan media digital interaktif berbasis PowerPoint pada pembelajaran Bahasa Indonesia di sekolah dasar. *Jurnal Basicedu*, 6(3), 5251-5258. <https://doi.org/10.31004/basicedu.v6i3.2928>
- Ningrum, M. L. C., Rahayu, S., & Sesanti, N. R. (2024). Pengembangan E-Book Interaktif Berbasis Canva pada Materi Pecahan untuk Meningkatkan Pemahaman Konsep. *Pijar : Jurnal Penelitian Bidang Pendidikan Dan Pembelajaran*, 4(1), 24-32.
<https://doi.org/10.56393/pijar.v4i1.2510>
- Nisa, K., Amanda, N., & Pribadi, R. A. (2023). Kolaborasi pendidik dan peserta didik dalam mewujudkan digitalisasi dan penguasaan teknologi pada pembelajaran abad 21. *Jurnal Basicedu*, 7(3), 1433-1445. <https://doi.org/10.31004/basicedu.v7i3.5383>
- Nur, M. I., Yusuf, F., & Salam, R. (2024). Penerapan Media Big Book untuk Meningkatkan Kemampuan Membaca Permulaan Siswa Kelas II Sekolah Dasar. *Pijar : Jurnal Penelitian Bidang Pendidikan Dan Pembelajaran*, 4(2), 69-81.
<https://doi.org/10.56393/pijar.v4i2.2832>
- Nurhidayati, V., Ramadani, F., Melisa, F., & Putri, D. A. E. (2023). Penerapan media pembelajaran terhadap motivasi. *Bina Gogik*, 10(2), 99-106.
<https://doi.org/10.61290/pgsd.v10i2.428>
- Pagarra, H., Syamsuddin, A. F., & Ahmad, N. A. (2024). Penerapan Media Pembelajaran Pop-Up Book untuk Meningkatkan Hasil Belajar Matematika pada Siswa Kelas V Sekolah Dasar. *Educare : Jurnal Penelitian Pendidikan Dan Pembelajaran*, 4(2), 65-72.
<https://doi.org/10.56393/educare.v4i2.2847>
- Palui, Y. K., Akbar, M. R., & Wijayanti, R. (2021). Pengembangan Gatric Game Untuk Meningkatkan Keterampilan Sosial Anak Kelompok B RA Perwanida Jajar Selopuro Blitar. *Lucerna : Jurnal Riset Pendidikan Dan Pembelajaran*, 1(2), 34-41.
<https://doi.org/10.56393/lucerna.vi1i2.559>
- Peni, N., Sumadji, S., & Suwanti, V. (2022). Pembelajaran Probing-Prompting Berbasis Demonstrasi Untuk Meningkatkan Motivasi dan Hasil Belajar Siswa. *Pedagogi Jurnal Pendidikan Dan Pembelajaran*, 2(2), 60-66. <https://doi.org/10.56393/pedagogi.v2i2.410>
- Piaget, J. (1977). *The development of thought: Equilibration of cognitive structures*. Viking Press.
- Putra, R. K., Koto, R. D., & Purwanto, W. (2025). Efektivitas media pembelajaran berbasis game dalam pembelajaran. *Jurnal Education and Development*, 13(2), 775-781.
<https://doi.org/10.37081/ed.v13i1.6826>
-

-
- Putri, M. M., Aras, L., & Nurhaedah, N. (2024). Pengaruh Model Pembelajaran RADEC terhadap Keterampilan Berpikir Tingkat Tinggi Siswa dalam Pembelajaran Matematika di Sekolah Dasar. *Paidea : Jurnal Pendidikan Dan Pembelajaran Indonesia*, 4(2), 58–64. <https://doi.org/10.56393/paidea.v4i2.2862>
- Rahayu, B. P., Nita, C. I. R., & Gutama, A. (2024). Pengembangan E-Modul Interaktif Berbasis Kearifan Lokal Pada Pembelajaran Seni Rupa Kelas V Sekolah Dasar. *Sistem-Among : Jurnal Pendidikan Sekolah Dasar*, 4(2), 41–51. <https://doi.org/10.56393/sistemamong.v4i2.2531>
- Rahayu, D. D., Sakdiyah, S. H., & Chrisyarani, D. D. (2022). Pengembangan Media Interaktif Berbasis Adobe Animate CC Pembelajaran Ilmu Pengetahuan Sosial Kelas IV. *Sistem-Among : Jurnal Pendidikan Sekolah Dasar*, 2(1), 1–9. <https://doi.org/10.56393/sistemamong.v2i1.354>
- Rahayu, H. S., & Luswati, N. T. (2022). Pengaruh penggunaan media pembelajaran interaktif terhadap motivasi belajar siswa sekolah dasar. *Jurnal Basicedu*, 6(3), 132–137. <https://doi.org/10.31004/basicedu.v6i3.2821>
- Rosmana, P. S., Ruswan, A., & Alifah, A. N. (2024). Pentingnya media pembelajaran dalam perencanaan pembelajaran guru sekolah dasar. *Jurnal Pendidikan Tambusai*, 8(1), 3048–3054. <https://doi.org/10.31004/jptam.v8i1.12840>
- Sari, W. N., & Ahmad, M. (2021). Pengembangan media pembelajaran flipbook digital di sekolah dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 3(5), 2819–2826. <https://doi.org/10.31004/edukatif.v3i5.1012>
- Sebastiana, Y., Mujiono, M., & Rahayu, S. (2023). Pengaruh Motivasi Terhadap Hasil Belajar IPA Siswa Kelas V SD Negeri 6 Dobo Pada Masa Pandemi. *Kognisi : Jurnal Penelitian Pendidikan Sekolah Dasar*, 3(1), 23–29. <https://doi.org/10.56393/kognisi.v2i1.880>
- Sesanti, N. R., Ni'ama, S., & Harini, Y. S. (2025). Pop Up Media-Assisted Discovery Learning Model to Improve Elementary School Students' Collaboration Skills. *Lucerna : Jurnal Riset Pendidikan Dan Pembelajaran*, 5(1), 20–28. <https://doi.org/10.56393/lucerna.v5i1.3287>
- Silaen, A. (2021). Paradigma Sosial Pembelajaran Pasca Pandemi Bagi Peserta Didik di Sekolah. *Pedagogi Jurnal Pendidikan Dan Pembelajaran*, 1(2), 45–50. <https://doi.org/10.56393/pedagogi.v1i2.412>
- Siswoyo, A. A., Wijaya, B. R., & Nizar, R. C. (2023). Multimedia interaktif game edukasi terintegrasi kearifan lokal Madura untuk menanamkan literasi budaya siswa sekolah dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 5(6), 2879–2888. <https://doi.org/10.31004/edukatif.v5i6.5820>
- Solikhah, H., Ahmadi, A., & Raharjo, R. P. (2024). Perbandingan penggunaan media permainan digital interaktif dalam pembelajaran Bahasa Indonesia. *Indonesia: Jurnal Pembelajaran Bahasa dan Sastra Indonesia*, 5(2), 214–220. <https://doi.org/10.59562/indonesia.v5i2.61791>
- Sulistiyowati, P., Shaftri, S. I., & Yulianti, Y. (2024). Pengembangan E-modul Interaktif Smart Apps Creator Berbasis Masalah Pada Mata Pelajaran Ilmu Pengetahuan Sosial di Sekolah Dasar. *Pelita : Jurnal Kajian Pendidikan Dan Pembelajaran Indonesia*, 4(1), 27–37. <https://doi.org/10.56393/pelita.v4i1.2768>
- Susanti, D., Hasan, N. F., Nafisa, K., & Astuti, N. (2024). Pemanfaatan media pembelajaran interaktif berbasis game edukasi sebagai stimulus dalam meningkatkan minat belajar peserta didik sekolah dasar. *Jurnal Handayani*, 15(2), 380–392. <https://doi.org/10.24114/jh.v15i2.64484>
- Syafriafti, N., Yakub, E., Umari, T., Hayati, I. R., Puspita, D., & Pernades, P. C. (2025). [Judul artikel tidak tercantum pada data sumber]. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 14(3), 316–327. <https://doi.org/10.33578/jpfkip.v14i3.p316-327>
-

-
- Syamsuriyanti, S., Hidayat, N., Harun, N. A. U., & Abdullahq, N. A. (2024). Peningkatan Kemampuan Membaca Siswa Kelas 1 Menggunakan Media Papan Pintar Bahasa Indonesia di Sekolah Dasar. *Pelita : Jurnal Kajian Pendidikan Dan Pembelajaran Indonesia*, 4(2), 38–43. <https://doi.org/10.56393/pelita.v4i2.2775>
- Taqiyyuddin, M. F., Kumbara, H., & Akbar, M. T. (2025). Analisis tingkat kepuasan siswa SD Negeri 240 Palembang terhadap implementasi Kurikulum Merdeka pada pembelajaran pendidikan jasmani. *Jurnal Ilmiah Spirit*, 25(2), 51–58. <https://doi.org/10.36728/jis.v25i2.4912>
- Taswira, A., Hermuttaqien, B. P. F., & Syamsuddi, A. F. (2024). Pengembangan Media Pembelajaran Ilmu Pengetahuan Alam Berbasis Game Edukasi pada Siswa. *Mindset*, 4(2), 65–75. <https://doi.org/10.56393/mindset.v4i2.2734>
- Ulfiah, Z. (2023). Penerapan permainan edukatif teka-teki silang dalam meningkatkan motivasi belajar siswa sekolah dasar. *Dirasah: Jurnal Pendidikan dan Pembelajaran*, 6(2), 403–410. <https://doi.org/10.58401/dirasah.v6i2.928>
- Valentinna, C. R., Kurnianti, E. M., & Hasanah, U. (2024). Media belajar gamifikasi terhadap peningkatan motivasi belajar siswa sekolah dasar. *Jurnal Basicedu*, 8(3), 1722–1732. <https://doi.org/10.31004/basicedu.v8i3.7476>
- Zahra, S. F., Solihatin, E., & Abdillah, F. (2024). Pengaruh Digital Citizenship terhadap Karakter Kebhinekaan Global Peserta Didik. *Melior : Jurnal Riset Pendidikan Dan Pembelajaran Indonesia*, 4(1), 24–29. <https://doi.org/10.56393/melior.v4i1.2579>
-