

Developing interactive learning media to enhance elementary school students' learning motivation

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Article Information:

Received 2024-06-25

Revised 2025-06-02

Published 2025-06-28

ABSTRACT

Low learning motivation among elementary school students remains a major challenge in the learning process. Conventional methods, which are often unengaging, make students quickly bored and passive. Therefore, the development of interactive learning media is needed to effectively and enjoyably enhance student involvement, interest, and enthusiasm. This study aims to develop interactive learning media to increase elementary students' learning motivation, promote active engagement, interest, and conceptual understanding through an enjoyable and effective learning experience. The study employs a Research and Development (R&D) method using the ADDIE model to develop the interactive learning media. The development process includes needs analysis, learning strategy design, media creation, implementation, and effectiveness evaluation. Data were collected through observation, interviews, questionnaires, and documentation, and analyzed both qualitatively and quantitatively to assess the quality and effectiveness of the developed learning product. The results indicate that the implementation of interactive learning media effectively improves student motivation and engagement. The use of physical components, such as wooden map boards and cultural picture cards, provides hands-on learning experiences that deepen student understanding. Despite challenges related to teacher adaptation and media accessibility, the benefits of this approach, particularly in enhancing motivation and learning outcomes, are evident. This study contributes to the development of interactive learning media that enhances elementary students' motivation and engagement. By integrating physical components for active learning, the research offers an effective approach to teaching cultural diversity and provides insights into developing adaptive media that can be applied across various contexts and used more widely in classrooms.

Keywords: Interactive Learning Media, Elementary School, Learning Motivation, Educational Technology.



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To cite this article (APA Style):

Hartono, H., Ningsi, N., & Hina, S. (2025). Developing interactive learning media to enhance elementary school students' learning motivation. *EDUCARE: Journal of Primary Education*, 6(1), 81–96. <https://doi.org/10.35719/educare.v6i1.291>

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INTRODUCTION

In today's education system, fostering student motivation is a crucial component for creating effective learning, particularly at the elementary school level. Radil et al. (2023) and Dermitzaki (2025) emphasize that young learners often require more than verbal explanations or textbook readings to fully grasp concepts and remain engaged in class. Darling-Hammond et al. (2019) argue that professional teachers must not only master subject matter but also present it in ways that are meaningful and engaging. Interactive learning media play a vital role in this process, serving as a bridge between abstract concepts and students' concrete understanding, as noted by Adawiyah et al. (2024). Hossain (2024) further explains that educational media clarifies complex content, enriches vocabulary, and brings lessons to life through visual, auditory, or kinesthetic engagement. In line with Indonesia's educational goals, Hidayat et al. (2023) highlight that teachers are responsible for creating enjoyable, creative, and dialogical learning environments. Therefore, traditional lecture-based methods are no longer sufficient. Developing and implementing interactive learning media is essential to address student boredom and passivity, enhancing motivation, enthusiasm, and active participation in the learning process.

Various studies have explored the development of learning aids in the form of cultural maps of Indonesia to enhance the quality of student learning. Romualdi and Sudrajat (2024) developed a product designed to increase students' learning motivation. Similarly, Handtke et al. (2019) created a replica of a cultural map, which included traditional houses and cultural cards, and was assessed as both engaging and feasible for use. Petropoulos et al. (2023) introduced an innovative map made from paper pulp, accompanied by cultural cards, which was proven to be valid, practical, and effective in enhancing learning motivation. Yasan and Yıldırım (2022) developed a digital version based on smartphones, which yielded high validity and attractiveness results. Additionally, Kholisunnada and Darmawati (2023) implemented the Numbered Heads Together model in their learning process, receiving positive feedback from students. These studies share a common approach in utilizing Research and Development (R&D) methodologies and focusing on Indonesia's cultural diversity. However, they differ in terms of the product form, development models, and the target grade levels.

Although previous studies have explored the development of learning aids, such as cultural maps and interactive media, to enhance student motivation, several gaps remain. Most studies focused primarily on product outcomes, including validity, practicality, and attractiveness, without systematically analyzing the specific learning needs of students or the classroom context prior to development. Additionally, while various forms of media such as physical replicas, paper pulp maps, and digital applications have been developed, the processes of creation were often only partially documented, limiting their replicability and practical guidance for other educational settings. Moreover, few studies have thoroughly evaluated the impact of these media on students' learning motivation in elementary schools, especially using both qualitative and quantitative measures. This study addresses these gaps by focusing on three main aspects: conducting a comprehensive needs analysis, implementing a systematic development process, and evaluating the effectiveness of the media in enhancing student motivation, providing a more evidence-based and holistic approach to educational media development.

The purpose of this research is to highlight the differences from previous studies by focusing on three main aspects: the analysis of learning media needs, the systematic development process of the media, and the evaluation of the impact of using the media on enhancing students' learning motivation in elementary schools. Thus, this study is expected to provide a more comprehensive overview of how the developed learning media aligns with students' needs and effectively encourages their enthusiasm for learning significantly. The benefits of this research include making an important contribution to the development of more targeted and effective learning media to increase motivation among elementary school students. The research results are expected to serve as a reference for teachers and education practitioners in selecting and developing media that suit the needs of learners. Furthermore, this study also enriches academic insights regarding the media development process and its practical impact on students' academic achievement and learning motivation.

Based on the research objectives, the preliminary conclusion indicates that previous studies on the development of learning media have not fully emphasized a systematic analysis of students' learning needs, a structured development process, or a comprehensive evaluation of its impact on learning motivation. This study aims to address these gaps by focusing on these three key aspects, thereby providing a more evidence-based and holistic approach to developing interactive learning media for elementary schools. Accordingly, this study seeks to answer the following research questions: (1) What specific learning needs of elementary school students should be considered in the development of interactive learning media? (2) How can a systematic development process be implemented to create effective and practical learning media? and (3) To what extent does the use of the developed media enhance students' learning motivation?

RESEARCH METHOD

The research method employed in this study is Research and Development (R&D), using the ADDIE model, as outlined by Umar et al. (2023). This model is particularly suitable for classroom-based learning because it emphasizes the systematic development of instructional media, including tools that support and enhance the learning process, as noted by Abdulrahman et al. (2020). The ADDIE model, developed by Shelton and Saltsman (2006), consists of five key stages: Analysis, Design, Development, Implementation, and Evaluation. Each stage plays a crucial role in ensuring that the learning media created are effective, aligned with learning objectives, and capable of enhancing students' learning motivation.

In the Analysis stage, this study focuses on Media Development Analysis, identifying students' learning needs, learning problems, and the characteristics required for media to effectively improve learning motivation, as highlighted by Monib et al. (2025). The Design stage involves planning learning strategies and selecting appropriate media to optimize student engagement and interest, as suggested by Spatioti et al. (2022). In the Development stage, the learning media are created based on the needs analysis. The Implementation stage involves applying the developed media in classrooms to stimulate students' motivation, while the Evaluation stage, according to Schildkamp (2019), measures media effectiveness, its impact on learning motivation, and identifies areas for improvement. This model ensures that media development is pedagogically sound, practically applicable, and able to significantly enhance students' learning motivation.

The data collection techniques used in this study included observation, interviews, questionnaires, and documentation, as noted by Klingebiel et al. (2024). These methods were employed to gather comprehensive information throughout the development process, in line with the approach suggested by Paradis et al. (2016). Product testing was conducted in stages, starting with expert validation involving three validators, followed by a small-scale trial with 10 students, and a large-scale trial with 23 elementary school students in Banyuwangi. This study utilized both qualitative and quantitative data comprehensively. Qualitative data were used to describe the quality and characteristics of the developed product based on expert and user feedback, typically presented descriptively, while quantitative data were employed to measure validation and trial outcomes numerically, as suggested by Sutton and Austin (2015). Questionnaires during trials used Likert and Guttman scales, with the Likert scale specifically applied in expert validation to assess content, design, and functionality. Average scores were calculated using standard formulas to determine overall product quality, as recommended by Massof (2004).

The data analysis process was conducted after all data were collected, aiming to process and interpret information to determine whether the research objectives were achieved, as stated by Lim (2024). The data analysis focused on three main aspects of the study: Media Development Analysis, to evaluate students' needs and characteristics as the basis for media creation; Media Development, to assess the quality and effectiveness of the creation and implementation process of interactive learning media; and Student Learning Motivation, to measure the extent to which the developed media could enhance students' interest, engagement, and enthusiasm. According to Cole (2023), data analysis is a crucial component of research because it transforms raw data into meaningful

information that can be used scientifically. Through this process, Ratan et al. (2019) argue that researchers can draw valid conclusions and effectively answer research questions, particularly regarding media development and its impact on students' learning motivation.

$$P = \frac{\sum X}{n} \times 100\%$$

Description:

P = Value

$\sum X$ = Total assessment score

n = Ideal total score

Student response data was obtained from the guttman scale questionnaire. To analyze the student response questionnaire using the following formula:

$$NPr = \frac{TS-e}{TS-Max} \times 100\%$$

Description:

NPr = Value

TS – e = Total obtained by the student

TS – Max = Total maximum score

In conclusion, the data analysis process is critical not only for determining whether research goals have been achieved but also for ensuring that the methods used to evaluate outcomes are rigorous and grounded in scientific principles. The use of structured formulas like the one mentioned helps in quantifying results, which is particularly useful in educational research to assess the effectiveness of learning tools or methods. However, a potential limitation of this approach is that it does not account for qualitative aspects of learning, such as individual learning progress or engagement, which are equally important for a holistic evaluation of student outcomes. Therefore, a balanced approach that integrates both quantitative and qualitative data could offer a more comprehensive view of the effectiveness of the educational interventions.

RESULTS AND DISCUSSION

Results

Media development analysis

Needs analysis for media development is a vital first step in creating effective learning tools. This stage focuses on identifying the needs of students, teachers, and current learning conditions, as well as uncovering any challenges or issues in the teaching and learning process. By addressing these challenges, learning media can be designed to better support educational goals. The analysis helps to ensure that the media developed is relevant, tailored to the specific needs of learners, and effective in enhancing the learning experience. Ultimately, a thorough needs analysis ensures that the media aligns with educational objectives and provides solutions to improve teaching and learning outcomes.

Table 1

Analysis of Media Development Needs

No	Analysis	Explanation
1	Analysis of student characteristics	The analysis of student characteristics focuses on understanding their behavior during learning. Observations and interviews with homeroom teachers show that students are highly active, especially when engaged with stimuli and direct involvement. This aligns with the concrete operational phase in elementary school children, making them more responsive to active participation.
2	Analysis of needs	In the needs analysis, pre-observations and interviews with homeroom teachers revealed that the learning media were simple, such as printed images and surrounding objects. While media availability was adequate, its use and variation remained limited.
3	Analysis of curriculum	Curriculum analysis ensured that the developed products aligned with the applicable curriculum. The Merdeka curriculum was used in several classes, while classes 3 and 6 followed the 2013 Curriculum. This analysis helped determine Core Competencies and Basic Competencies to guide the creation of indicators and learning objectives.

Based on the three analyses of student characteristics, media needs, and the curriculum, it can be concluded that the development of learning media at Madrasah Ibtidaiyah must be customized to the actual conditions observed in the field. Students in Class 3A show high levels of activity, especially when actively involved in the learning process. Therefore, the media developed should provide interactive and engaging stimuli to capture their interest and enhance their learning experience. This aligns with the concrete operational phase of elementary school children, where they are most responsive to hands on participation. However, the current use of learning media is still limited to simple tools such as printed images and surrounding objects, which lack sufficient variation. This highlights the need to create more innovative and diverse media to effectively address learning challenges and optimize engagement.

Moreover, considering the differences in the curriculum applied in the madrasah, media development must take into account both the Merdeka Curriculum and the 2013 Curriculum. This approach ensures that the media and learning tools are aligned with the learning objectives and indicators set out in both curricula. By integrating these two frameworks, the developed media can be more accurate and relevant to current educational policies. Furthermore, such alignment guarantees that the media supports all students, regardless of the curriculum they are following. Therefore, media development must be conducted in an integrated and cohesive manner to provide an optimal learning experience, one that can effectively cater to the diverse needs of students and contribute to achieving educational goals.

Media development

The development of the PEKAN media involves several stages, including the design of the product and its components. PEKAN media is a specially designed map created by researchers to showcase various aspects of Indonesian culture, such as traditional houses, clothing, dances, musical instruments, and typical foods. The map and its content were edited using the Canva application to make it visually appealing and informative. This product is then printed into various components, including hanging banners, cultural cards, game rule cards, and a guidebook. The guidebook contains material on cultural diversity across Indonesia's 34 provinces, tailored specifically to support the Civic Education curriculum. It focuses on cultural diversity topics for grade III students, specifically for theme 5, subtheme 1, in the even semester. The PEKAN media is designed to engage students and enrich their understanding of Indonesia's rich cultural heritage, making learning more interactive and enjoyable.

Table 2
Media Development Results

No	Media Development	Explanation
1		The map board is made of wood measuring 51 x 51 cm, covered with stickers of Indonesian map images designed using the Canva application. This board is also equipped with handles and hooks, making it easy to carry and use in various learning activities.
2		This guidebook contains instructions for using media and a summary of the material presented in the form of illustrations or images. The book design was created using the Canva application and then printed as a physical book to make it easier for users to understand how to use learning media effectively.
3		The results of the development of PEKAN media include several stages, namely the form of the product and its components. PEKAN media is in the form of a map specially designed by researchers to display various cultures such as traditional houses, traditional clothing, traditional dances, musical instruments, and typical foods edited using the Canva application.

Based on the results of the development of PEKAN media consisting of a 51 x 51 cm wooden map board with an Indonesian map sticker design, a guidebook containing instructions for use and a summary of illustrative material, and media products that display various Indonesian cultures, it can be concluded that this media is well designed and comprehensive. The use of the Canva application in the design shows the use of digital technology to improve the visual quality and appeal of the media. However, although this media is quite complete and practical, it is necessary to pay attention to the sustainability of development so that the media remains relevant and innovative, and is supported by ongoing evaluation to ensure its effectiveness in improving students' understanding of cultural material as a whole.

Implementation and evaluation of media development

The development and evaluation of the PEKAN media in this study follow a systematic approach, aiming to create effective and engaging learning tools for students. The process began with a needs analysis, which identified the characteristics of Class 3A students, media requirements, and the relevant curriculum. Following this, the media was implemented through a small-scale trial with 10 students and a large-scale trial with 23 students to assess its effectiveness and collect feedback. The trials were designed to gather detailed student responses using a Guttman scale questionnaire. The results showed a high level of student engagement and positive feedback, with an average response rate of 98.37%. Based on this success, the final evaluation confirmed that PEKAN media was suitable for use in Civic Education classes, enhancing students' learning experiences.

Table 3

Research Findings on PEKAN Media Development and Evaluation

Stage	Scale	Assessment Method	Results
Implementation (Small Scale Trial)	Small scale (10 students)	Field test (to anticipate obstacles)	Small scale trial conducted to identify potential issues before full implementation.
Implementation (Large Scale Trial)	Large scale (23 students)	Guttman scale questionnaire	Average student response: 98.37%. PEKAN media categorized as very good based on validity criteria.
Evaluation (Final Assessment)	Final evaluation of PEKAN media	Validation data, materials, practicality, and student responses	PEKAN media deemed suitable for use in Civic Education for class 3A

The implementation and evaluation of PEKAN media revealed promising results, with student responses showing a high level of engagement and satisfaction. The positive feedback, reflected in the 98.37% average response rate, indicates that the media is both effective and engaging, meeting the learning needs of Class 3A students. However, while the media was considered suitable for use in the classroom, further research is needed to assess its long-term impact on learning outcomes. The small-scale trial effectively identified potential obstacles, and the large-scale trial confirmed the media's feasibility in real classroom settings. Despite these successes, the study highlighted the importance of ongoing evaluation and adaptation, as different student groups may require different learning tools. Future iterations of PEKAN media should explore more diverse content, multimedia integration, and further alignment with curriculum updates to ensure continued relevance and effectiveness in supporting student learning and engagement.

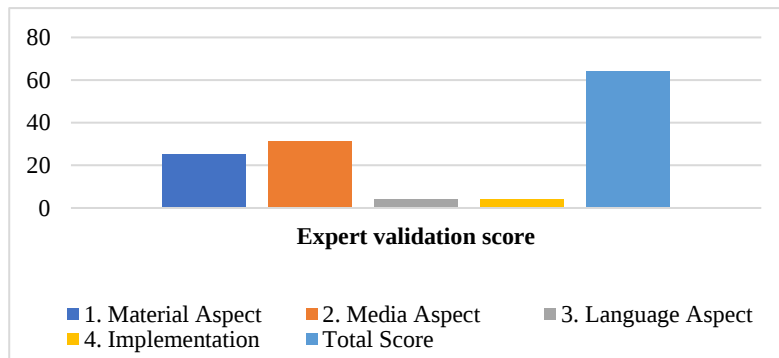
Results of the assessment of the feasibility of learning media

The results of the learning media feasibility assessment indicate how well the developed media meets the quality standards established during the development process. This evaluation encompasses several key aspects, including design, content accuracy, practicality, and user response, all of which serve as primary indicators of the media's effectiveness. By examining these factors, the assessment provides a comprehensive understanding of the media's strengths and areas needing improvement,

ensuring that it can effectively support the learning process, engage students, and enhance overall educational outcomes in line with the intended objectives.

Figure 1

Results of Practical Expert Validation Test



Based on expert practicality assessment, PEKAN media scored 91.43%, classifying it as “very good” and highly suitable for learning. It is especially effective for teaching Indonesia’s cultural diversity, engaging students, and enhancing their understanding, making it a valuable and recommended tool for classroom use.

Results of observations on students' learning motivation

Student learning motivation was assessed through observations of engagement in learning activities. Results showed most students achieved full scores on motivation indicators, reflecting high engagement, while a few scored slightly lower, indicating minor variations in motivation. The data provide a clear overview of student participation, demonstrating the effectiveness of the implemented learning methods and their impact on student engagement.

Table 4

Results of Observations of Students' Learning Motivation

No	Name	Assessment Indicators (Yes)	Assessment Indicators (No)	Total Score	Score (%)
1	AMR	8	0	8	100
2	ANP	8	0	8	100
3	AAY	8	0	8	100
4	AKH	7	1	7	87.5
5	DMA	7	1	7	87.5
6	DHR	8	0	8	100
7	DEF	8	0	8	100
8	GB	8	0	8	100
9	IZM	8	0	8	100
10	INAS	8	0	8	100
11	KRP	8	0	8	100
12	MDA	7	1	7	87.5
13	MDF	8	0	8	100
14	MRR	8	0	8	100
15	MR	8	0	8	100
16	MZM	8	0	8	100
17	MH	8	0	8	100
18	RMB	8	0	8	100
19	RAN	8	0	8	100
20	RAW	8	0	8	100
21	SARM	8	0	8	100
22	SR	8	0	8	100
23	VBA	8	0	8	100
Total score obtained			181		2.262,5

The results from the observation of students' learning motivation suggest that the learning methods applied had a highly positive impact, as most students scored 100%, reflecting strong enthusiasm and participation. However, there were some students (around 3 out of 23) who scored slightly lower at 87.5%. This indicates that while the overall response to the learning activities was overwhelmingly positive, there are some areas where student motivation could be further enhanced. These students may require additional support or more varied activities to maintain their engagement. The high percentage of students achieving full scores shows that the learning media and methods used were effective in fostering interest and involvement. In conclusion, the findings suggest that the learning environment is highly motivating for most students, but slight variations in motivation levels warrant further exploration to ensure consistency across all students. Future strategies could focus on identifying and addressing the factors that influenced the lower scores.

Discussion

Effectiveness of interactive learning media in increasing student motivation

The findings of this study indicate that interactive learning media effectively enhance student motivation by providing tangible, hands-on learning experiences. In contrast to prior research emphasizing digital-based cultural maps, such as Lian and Xie (2024), this study highlights the value of physical and print-based media, including wooden map boards, cultural picture cards, and colorful guidebooks. These components allow students to actively interact with learning materials, deepening their understanding and retention of cultural diversity content. Scholars such as Krestanova et al. (2021) interpret this approach as promoting direct engagement, while Markey et al. (2023) argue that sensory-driven, manipulable materials strengthen comprehension and memory. The findings suggest that, unlike purely digital media noted by Ohara (2023), the physical media in this study fosters immersive learning that encourages participation and sustained motivation. Overall, the research demonstrates that integrating tangible components in interactive learning media can create a more engaging and effective educational environment, aligning with and extending prior studies' insights.

The validation results of this study highlight the high effectiveness of the interactive learning media, with media experts rating it 98.12%, material experts 91.1%, and practicality experts 91.43%, resulting in an overall score of 93.55%, categorized as "very good." González-Valencia et al. (2022) interpret such high ratings as evidence of strong suitability for classroom use, particularly for teaching cultural diversity in Citizenship Education. Abacioglu et al. (2023) argue that consistent positive feedback from various experts reflects the media's quality, pedagogical relevance, and potential to enhance learning experiences. Mebert et al. (2020) emphasize that hands-on interactive components, such as wooden map boards and cultural picture cards, actively engage students, supporting constructivist learning principles. Lin et al. (2017) further note that effective media improves teaching efficiency, increases motivation, and promotes faster comprehension. Comparatively, this study demonstrates that physical, interactive media provides a more immersive, participatory, and motivational learning experience than prior digital-focused approaches, confirming its effectiveness in fostering student engagement and understanding of cultural topics.

The development and implementation of the media demonstrate a significant positive impact on student motivation, showing that interactive learning tools can actively engage learners. Daryanes et al. (2023) interpret this as evidence that hands-on, tangible media effectively stimulates interest and participation. Validation ratings from media, material, and practicality experts, as highlighted by Bozdağ (2022) and Manganello and Baldacci (2024), suggest that the media is highly suitable for classroom use, particularly for teaching cultural diversity. The use of physical components, such as wooden maps and cultural cards, provides a sensory-driven experience that fosters active learning, a view supported by Cho (2021), emphasizing constructivist principles. Compared to purely digital media, this approach encourages more direct interaction, which appears to enhance engagement and comprehension. Olsson et al. (2022) note that long-term monitoring is essential to assess sustained motivation, while Singh et al. (2021) argue that integrating digital and print components could further optimize engagement and knowledge retention, supporting the effectiveness observed in this study.

Implementation of interactive learning media in elementary education

The development and implementation of Civics Education media for Class 3A demonstrate a structured effort to create interactive learning tools that promote active and meaningful learning in elementary education. Marougkas et al. (2023) and Børte & Lillejord (2024) highlight the importance of approaches that facilitate direct student participation, which aligns with this study's findings, as students' engagement increased markedly with physical media. Charline et al. (2023) argue that visually appealing and stimulating resources enhance student enthusiasm, consistent with classroom observations. Similarly, Pandita & Kiran (2023) note that hands-on interaction improves concept comprehension, reflected in students' active involvement with the wooden map board and cultural picture cards. Sugiarni et al. (2024) emphasize that well-organized visual design supports understanding; using Canva ensured the media was both attractive and structured. The integration of cards, magnetic sticks, and a colorful guidebook provided an engaging, effective, and enjoyable learning experience, demonstrating a strong synergy between theoretical insights and practical classroom implementation.

The media facilitates two-way interaction and actively involves students in the learning process, reflecting Gan et al.'s (2015) view that student-centered approaches create more dynamic learning experiences. Its design prioritizes durability, portability, and accessibility, which Kerimbayev et al. (2023) identify as essential for effective classroom use, a need confirmed by this study's observations. Physical materials are built to withstand repeated handling, supporting Martin-Alguacil et al.'s (2024) emphasis on practicality for both teachers and students. The inclusion of magnetic sticks, guidebooks, and culture-themed picture cards allows engagement through multiple modalities, consistent with Rehman et al.'s (2022) argument that diverse learning strategies enhance understanding. Repetitive exposure to visual components strengthens memory retention, aligning with Sankalaite et al.'s (2023) findings and cognitive theories proposed by Paas & van Merriënboer (2020), which stress repeated interaction for effective learning. Overall, the media demonstrates a synergy between theoretical recommendations and classroom practice, offering an engaging, practical, and culturally enriching tool that supports curriculum goals and deepens students' appreciation of Indonesia's cultural diversity.

The development and implementation of Civics Education media demonstrate a well-integrated effort to create interactive and engaging learning tools that enhance student participation and enthusiasm. Ullah and Anwar (2020) and Haleem et al. (2022) emphasize that such approaches effectively stimulate student involvement, which aligns with this study's observations of increased engagement. By incorporating physical elements like wooden map boards, cultural picture cards, and guidebooks, the media fosters a student-centered learning environment, supporting Shayan et al.'s (2022) view on the importance of active participation. This hands-on approach accommodates multiple learning styles, reflecting constructivist principles highlighted by Richter et al. (2024). The design's emphasis on practicality, durability, and portability reinforces Pimdee et al.'s (2024) recommendations for effective classroom tools. While positive outcomes were observed, Bukhatir et al. (2023) suggest investigating long-term effects on learning and retention, and Al-Saadawi et al. (2024) advocate for adapting the media to diverse cultural contexts. Overall, the media exemplifies a promising model for culturally rich, interactive elementary education resources.

Challenges and opportunities in using interactive learning media for elementary students

The implementation of interactive learning media in Class 3A presents both challenges and opportunities in enhancing students' learning experiences. Purkarthofer and Mäntysalo (2022) argue that such media can significantly improve the overall learning process, a perspective supported by this study's observation of increased student motivation and engagement. Alshamaila et al. (2023) note that interactive media fosters a more engaging environment, which aligns with the overwhelmingly positive feedback from students in this study, who found the content enjoyable and easily understood. Keller et al. (2018) emphasize that dynamic, participatory approaches enhance the learning experience, which is reflected in students' active involvement during lessons. Similarly,

Clark et al. (2016) and Zhao et al. (2023) highlight that both digital and physical interactive media can transform passive learning into an active process, increasing attention and participation. Overall, these findings suggest that incorporating interactive media not only captures students' interest but also reinforces a more student-centered, participatory, and effective learning environment.

Despite positive outcomes, challenges remain in the preparation and implementation of interactive media in classrooms. Hadders Algra (2020) argues that teachers must adapt to new tools and methods, often requiring additional training and time a concern reflected in this study, particularly for educators less familiar with technology. Simon and Zeng (2024) similarly note that lack of familiarity can hinder effective integration, a barrier observed during classroom trials. Additionally, ensuring media accessibility, durability, and suitability across diverse learning environments is critical. Botelho (2021) emphasizes the importance of designing media that can function in varied settings, aligning with findings that practical, well-structured tools improve usability. Teachers must also balance educational value with adaptability to student needs, as Thelma et al. (2024) highlight. Grassini (2023) suggests that addressing these obstacles is essential for successful implementation. Overall, these perspectives indicate that providing sufficient support and resources is key to maximizing the effectiveness of interactive learning media across educational contexts.

Despite the challenges, the use of interactive media offers significant opportunities for enhancing learning. Cheung (2010) highlights that interactive media actively involves students and allows the integration of cultural context through hands-on, colorful materials, a finding consistent with observations of increased student motivation and deeper content understanding in this study. Hanaysha et al. (2023) argue that such media enhances psychological engagement and stimulates interest, supporting the notion that active participation fosters more effective learning. The interactive features also assist teachers in delivering content clearly while enabling students to comprehend it better. Sato et al. (2024) and Clemente-Suárez et al. (2024) note that interactive tools benefit both teachers and students by promoting mutual understanding, which aligns with the observed increase in student involvement. Overall, these findings suggest that integrating interactive media not only reinforces curriculum objectives but also creates a dynamic, enjoyable, and student-centered learning environment, ultimately improving educational outcomes.

CONCLUSION

The implementation of interactive learning media has proven to be highly effective in enhancing student motivation and engagement, as demonstrated by the overwhelmingly positive student feedback. The use of physical components, such as wooden map boards, cultural picture cards, and guidebooks, provided a hands on learning experience that supported students' active participation and deeper understanding of cultural diversity. The media's design, which prioritizes durability, portability, and accessibility, ensures its suitability for classroom use. While challenges related to teacher adaptation and media accessibility remain, the benefits of this interactive approach such as increased motivation and improved learning outcomes are clear. The media fosters an engaging, student-centered environment that aligns with constructivist principles. Further research should explore the long-term impact on student knowledge retention and investigate how to adapt the media for diverse cultural contexts. Overall, the study highlights the potential of interactive media to transform learning experiences in elementary education.

The theoretical implication of this study supports the constructivist principle, which emphasizes that effective learning occurs when students are actively engaged in the learning process through interaction with the material. This research reinforces the idea that physical learning media can enhance student motivation and understanding, particularly regarding cultural diversity. It also shows that media engaging multiple senses can strengthen memory retention and improve learning quality. Practically, the study demonstrates that the use of interactive learning media in the classroom increases student participation and helps them comprehend the material more thoroughly. It also provides valuable insights for educators to adapt learning tools that capture student attention, address

teacher adaptation challenges, and ensure the media is accessible and durable. Therefore, teacher training is recommended to maximize the potential of interactive media in the classroom.

This study has several limitations that should be addressed in future research. Firstly, the sample size of 23 students may not fully represent the diverse learning styles and preferences found in larger populations, limiting the generalizability of the results. Additionally, the study focused only on one specific context, which may not reflect how interactive media performs across different educational settings or subjects. Future research should consider a larger and more diverse sample, as well as explore the long-term impact of interactive media on student learning outcomes and retention. Moreover, further studies could investigate the integration of digital and print-based media to create a more hybrid learning experience, enhancing engagement and knowledge retention. Finally, examining how interactive media can be adapted to various cultural contexts would provide deeper insights into its potential for broader application in diverse educational environments.

ACKNOWLEDGEMENT

I would like to express my gratitude to all the informants who participated in this research, as well as to the editorial team of Educare Journal for the opportunity to publish this article. I hope this article can provide benefits, significant contributions, and open space for further discussion and development of knowledge.

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