Needs Analysis of Pop-Up Book Media Development in Learning Theme 8 for Grade V Elementary School with a Scientific Approach

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Abstract. The use of effective learning media is key in improving the quality of learning in grade V, especially in facing the challenges of learning theme 8 with a scientific approach. Pop Up Book is one of the learning media that attracts attention to be used in this learning context. This study aims to analyze the need for Pop Up Book media development in learning theme 8 for grade V SD with a scientific approach. The research method used is a qualitative research design with primary data collection through questionnaires and interviews with fifth grade teachers from three different schools in different areas: SD Negeri Kecomberan 1, SD Negeri 2 Kepompongan, and SDIT Akmala Sabila Cirebon. The results of the analysis show variations in the use of learning media between schools, but there are similarities in efforts to prepare materials according to the curriculum and prepare learning activities. The main challenge faced is limited access to technology, where teachers face difficulties in accessing hardware and lack of knowledge or training in using the media. Nonetheless, efforts have been made to find alternative solutions and support from the school. In conclusion, the development of Pop Up Book media in learning theme 8 of grade V SD with a scientific approach requires a holistic and integrated approach. By taking into account the existing challenges, potentials and needs, as well as with support from the school and collaboration between teachers, the development of learning media can be one of the effective solutions in improving the quality of learning and achieving the learning objectives that have been set.

Keywords: learning media, pop-up book, scientific approach, development needs, needs analysis

INTRODUCTION

Basic education plays a crucial role in shaping children's character and intelligence. One important aspect of basic education is how learning materials are delivered to students (Dewi & Ibrahim, 2019). An engaging and interactive delivery method is necessary to maximize student understanding of the material being taught. Learning media is one of the essential components in the teaching and learning process that can help teachers deliver material more effectively and interestingly (Wulandari et al., 2023). In this context, learning media not only functions as a teaching aid but also as a means to foster student interest in learning (Salsabila et al., 2024).

Learning media is a tool or material used by educators to convey subject matter to students so that the learning process becomes more effective and efficient (Firmadani, 2020). According to Wijaya et al. (2021), learning media includes all forms of communication that can be used to convey information, such as text, audio, images, video, and interactive objects. Pop Up Book media falls into the category of visual media that can attract students' attention and help them understand the material through engaging visualizations.

A Pop Up Book is a type of book that has three-dimensional elements that can move or appear when the page is opened (Riana & Pulungan, 2024). According to Inayah (2024), a Pop Up Book can stimulate children's imagination and creativity because it presents stories or information in a more realistic and interesting form. In the context of education, Pop Up Books can be used to explain abstract or complex concepts in a way that is easier for students to understand. The use of Pop Up Books in learning can increase students' motivation because they can interact directly with the learning materials (Wulan & Astutik, 2023).

Constructivism learning theory, pioneered by Jean Piaget and Lev Vygotsky, emphasizes that learning is an active process in which students construct their own knowledge through experience and interaction with the environment. According to Piaget (1972), students learn by associating new information with existing knowledge in their cognitive schema. Vygotsky (1978) adds that social interaction and guidance from a more knowledgeable person (e.g., a teacher) are crucial in the learning process. In the use of Pop Up Books, they can serve as tools that encourage exploration and interaction, allowing students to construct their own understanding

through visual and manipulative experiences.

Visual learning theory states that the use of images and visualization in learning can improve understanding and retention of information (Indah & Fadilah, 2024). According to Mayer (2001), humans have two channels for processing information: verbal and visual. Combining these two channels in learning can enhance information processing efficiency and concept comprehension. Pop Up Books, with their three-dimensional features, utilize the visual channel to help students grasp subject matter more interestingly and meaningfully.

Multimedia theory, also developed by Mayer, asserts that effective learning occurs when information is presented through a combination of text, images, and interactivity (Prabawa & Restami, 2020). This theory is based on principles like the split-attention principle and the coherence principle, which suggest that information should be presented in an integrated manner and free from distracting elements. Pop Up Books, as learning media, combine text, images, and three-dimensional elements, which can help students process information more effectively (Janawati et al., 2024).

The scientific approach to learning emphasizes the scientific process in understanding and exploring various concepts, as outlined by Darmawan and Sangaji (2023). This method involves five key steps: observation, where students carefully observe the phenomena or objects being studied; questioning, during which students ask questions based on their observations; trying, where students engage in experiments or explorations to seek answers to their questions; reasoning, where students analyze the experimental results and draw conclusions; and communicating, where students share their findings and conclusions with others. This structured approach fosters critical thinking and a deeper understanding of the subject matter.

According to Septiasari et al. (2020), the scientific approach can help students develop critical and creative thinking skills and improve their understanding of scientific concepts. In the context of learning theme 8 in grade V, this approach can be used to invite students to actively explore the subject matter through engaging and interactive activities. The integration of Pop Up Books and the scientific approach in learning theme 8 of grade V can provide a holistic and enjoyable learning experience for students. Pop Up Books can be used as visual aids that help students understand the concepts taught, while the scientific approach can involve students actively

in the learning process (Praditya et al., 2023). For example, when learning about ecosystems, Pop Up Books can display three-dimensional images of various types of ecosystems, and students can make observations and conduct simple experiments to understand the interactions between the components of the ecosystem.

This integration can also increase student engagement in the learning process. According to Piaget (1972), learning that involves physical and mental activities can help students construct their own knowledge through direct experience. By using Pop Up Books, students can see and touch the objects being studied, while through the scientific approach, they can observe, ask questions, try, and reason actively. This can increase students' motivation and help them understand the material better.

Pop Up Book media is a type of learning media with great potential for enhancing student interest and understanding of the subject matter. A Pop Up Book is a book with three-dimensional features that appear when the page is opened, providing a more engaging visual experience than ordinary books (Kamal et al., 2024). In learning theme 8 of grade V, which covers various topics such as the environment, culture, and daily life, Pop Up Books can be used to illustrate complex concepts in a way that is easier for students to comprehend. The scientific approach in learning is a method that emphasizes the scientific process in understanding learning concepts. This approach involves students actively in the learning process through observing, questioning, trying, reasoning, and communicating (Maryani et al., 2020). By combining Pop Up Books and the scientific approach, the learning process is expected to become more effective and enjoyable. Students not only passively receive information but are also actively involved in exploring and understanding the subject matter (Ramadhani et al., 2023).

The purpose of this study is to evaluate the effectiveness of integrating Pop Up Book media with the scientific approach in teaching theme 8 to fifth-grade students. Additionally, the study seeks to identify the benefits and challenges faced by teachers and students in implementing Pop Up Books and the scientific approach in the learning process.

METHODS

This research uses a qualitative research design, which aims to understand phenomena in depth through the collection and analysis of descriptive

data. Qualitative research is natural and focuses on the process and meaning behind the data collected. The data used in this research is primary data, which is obtained directly through observation and interviews with respondents. In-depth interviews were used as the main technique in data collection, following the approach used in the preliminary study by Lestari et al. (2018). In-depth interviews were conducted with participants, namely grade V teachers from three elementary schools, namely SD Negeri 1 Kecomberan, SD Negeri 2 Kepompongan, and SDIT Akmala Sabila Cirebon. By using this qualitative research method, it is hoped that the research can produce in-depth and comprehensive findings regarding the use of Pop Up Book media in learning theme 8 of grade V SD with a scientific approach. These findings are expected to make a significant contribution to the development of more effective and innovative learning media in the future.

RESULTS AND DISCUSSION

SD Negeri 1 Kecomberan is one of the public primary schools in Cirebon. The school has a standard curriculum that has been set by the Ministry of Education and Culture of the Republic of Indonesia. SD Negeri 2 Kepompongan is also a public primary school in Cirebon. Like other public schools, it also follows the official curriculum enforced in Indonesia. Its focus is on providing a comprehensive basic education to its students. Akmala Sabila is an integrated Islamic primary school in Cirebon. The school offers an education that integrates Islamic teachings with the national education curriculum. In addition, they may also give emphasis on religious and moral values in the learning process. Each school has its own uniqueness in terms of educational approach, facilities, and extracurricular programs. Based on the results of data reduction from questionnaires and interviews with fifth grade teachers from each school, it can be seen as follows table 1.

The needs analysis of Pop Up Book media development in learning theme 8 of grade V SD with a scientific approach is an important foundation in designing effective learning strategies. In Table 1 above, a number of aspects have been discussed in depth to understand the challenges, potentials, and needs that exist in the use of learning media in the fifth grade. Through a careful breakdown of the results of questionnaires and interviews with teachers from SD Negeri

Kecomberan 1, SD Negeri 2 Kepompongan, and SDIT Akmala Sabila, we can get a clear picture of the current conditions and the desired direction in learning development.

First of all, it is important to understand how learning media is currently used in the learning process. The schools have adopted different types of media, ranging from textbooks, pictures to presentation slides. At this point, the differences in media use between schools become apparent. Nonetheless, there are similarities in the efforts to prepare curriculum-appropriate materials and the organization of learning activities. This shows that there is an awareness of the importance of integrating learning materials with relevant teaching methods (Akram et al, 2021).

However, the problems faced in using learning media are also worth noting. Limited access to technology is a major obstacle faced by teachers. This includes both access to hardware such as computers or projectors and limited knowledge or training in using the media. Nevertheless, efforts to overcome this problem have been made by finding alternative solutions, such as using media that are less dependent on technology or utilizing available resources (Haleem et al, 2022). In addition, support from the school in the form of training and provision of infrastructure also provides hope for increased use of learning media in the future.

The potential contained in the use of learning media is also an important highlight in this analysis. It is known that the use of learning media can increase students' interest and understanding of the subject matter. Positive responses from students to the use of learning media also indicate that this approach has a significant impact on learning. In addition, learning media also has an important role in provoking students' curiosity and making them more active in the learning process. Thus, it is evident that the use of learning media can be one of the keys in creating more interactive and interesting learning for students (Septiani & Rejekiningsih, 2020).

Apart from the potential, there are also needs that must be met in the development of learning media. The need for the development of learning media that is more innovative, interactive, and in accordance with the needs of students is still a major highlight. This is especially relevant in the context of theme 8 learning about our environment which requires a more concrete and interactive approach. Therefore, the main focus in the development of learning media should be to

Table 1. Questionnaire and Interview Results of Need Analysis of Pop Up Book Media

Aspect you want to know	Indicator	Answer		
		SD Negeri Kecomberan 1	SD Negeri 2 Kepompongan	SDIT Akmala Sabila
Use of Learning Media	How learning media is incorporated into lessons, specifically in theme 8. Experience with specific types of learning media, like Pop Up Books.	We use a variety of media, including textbooks, pictures, and presentation slides. We haven't used Pop Up Book yet	We use a variety of media, including books, pictures, and sometimes short videos. We haven't used Pop Up Book yet, but we are interested in trying it out.	Teachers have used learning media such as pictures, short videos, and storybooks. Never used Pop Up Book in learning
	Steps involved in preparing and using learning media in the classroom.	The preparation process involved selecting curriculum-appropriate materials and creating presentation slides.	The preparation process takes time, especially to adjust to the curriculum and subject matter.	The preparation process involves selecting curriculum-appropriate materials and developing learning activities.
	The extent to which learning media is integrated with teaching approaches, such as the scientific method.	Yes, we try to integrate it with observation, question and answer, and small experiments.	Yes, we try to actively involve students in learning by using learning media.	Yes, learning media is used to support the steps in the scientific approach.
Problems faced	Common obstacles faced when using learning media.	One of the problems is limited access to technology in schools	The main problem is limited access to technology and lack of training to use the media.	The main constraints are limited access to technology and the availability of appropriate learning media.
	Methods for overcoming challenges related to learning media.	We try to use media that is less dependent on technology	We try to make it work by utilizing available resources and asking for help from fellow teachers.	Teachers try to utilize the available media and look for alternative solutions if there are technical problems
	Barriers in accessing or using certain types of learning media.	Yes, sometimes there are difficulties in accessing digital materials due to device limitations.	Yes, especially in terms of access to the necessary technological devices The school provides support in the form of training and provision of the necessary infrastructure.	Yes, sometimes access to technology is unstable and affects the use of learning media
	The level of support provided by the school for the use of learning media.	The school supports by providing facilities such as LCD projectors and laptops.	The school provides support in the form of training and the provision of necessary infrastructure.	The school provides support in the form of training and procurement of necessary learning media
Potentials that Support Development	The perceived advantages of using learning media.	The use of media can make learning more interesting and clarify abstract concepts.	The use of learning media can increase students' interest and understanding of the subject matter.	Learning media can increase students' interest and understanding of the subject matter.
	Student response and engagement with learning media.	Students responded positively, especially to the images and videos used.	Students are quite enthusiastic and interested in the use of learning media	Students respond positively to the use of learning media because it makes learning more interesting
	The impact of learning media on increasing student interest.	Learning media can provoke students' curiosity and make them more active in learning.	Learning media can make learning more interesting and relevant to students	Learning media can make learning more interactive and relevant to students' daily lives.
The need for learning media	The need for further development of	Yes, we still need to develop more	Yes, we need learning media that is more	Yes, especially to overcome limited

Aspect you want to know	Indicator	Answer		
		SD Negeri Kecomberan 1	SD Negeri 2 Kepompongan	SDIT Akmala Sabila
	innovative learning media.	interactive learning media.	interactive and in accordance with the needs of students	access to technology and improve learning quality
	The need for developing media specifically for certain themes, like theme 8.	Yes, given the complexity of the topic, specialized learning media can help students' understanding.	Yes, because the theme requires a more concrete and interactive approach	Yes, the development of theme-specific learning media can improve students' understanding.
	Key areas of focus in developing learning media.	The main focus is on presenting information in a way that is interesting and easy for students to understand.	The main focus is to create learning media that is in line with the curriculum and students' needs.	The main focus is on presenting the material in a way that is engaging and relevant to the learning theme.
	Characteristics of ideal learning media for theme 8.	Ideally, learning media should be interactive, visual, and able to stimulate students' thinking.	Learning media must be interesting, easy to understand, and can activate students in learning.	The ideal learning media is one that can illustrate environmental concepts in a real and clear way.
	The need for additional training or guidance in using learning media.	Yes, especially in developing skills to create more interesting learning media	Yes, we need training to utilize learning media more effectively	Yes, especially to deepen understanding of the effective use of learning media
	Specific needs of students regarding the use of learning media.	Some students may need additional assistance in accessing and understanding digital materials.	Some students may need additional assistance to access or understand the learning media	No specific needs mentioned
	The role of learning media in meeting learning objectives.	Learning media can be an effective tool to facilitate the understanding of complex concepts.	Learning media can be an effective tool in achieving the learning objectives set.	Learning media can be an effective tool in achieving the learning objectives that have been set.
	Recommendations for the development or improvement of learning media.	I wish there was more training offered for teachers in learning media development	We expect the development of learning media to be done collaboratively with teachers.	Suggestions are to expand access to technology and procure more varied learning media.
	Methods used to evaluate the effectiveness of learning media in theme 8.	We use feedback from students and evaluation results to measure its effectiveness.	Its effectiveness can be measured through the level of student participation and understanding of the learning material.	The effectiveness of the use of learning media is measured based on students' participation and understanding of the material.

present the material in a way that is interesting, relevant, and in accordance with the learning theme at hand.

It should also be remembered that the development of learning media is not only the responsibility of individual teachers, but also a shared responsibility between teachers, schools and other related parties. Support provided by the school in the form of training, provision of infrastructure, and collaboration between teachers is very important to create a conducive learning environment. Further training and guidance in using learning media should also be considered as a step to deepen understanding of the effective use of such media.

The success of learning media development also depends on teachers' ability to understand students' specific needs. Each student may have different needs in terms of access or understanding of learning media. Therefore, the development of learning media should be sensitive to the individual needs of students in order to maximize the effectiveness of learning. Not only from the teacher's perspective, but it is also important to see the role of learning media in achieving overall learning objectives. Learning media is not just an aid in the delivery of material, but can also be an effective tool to facilitate the understanding of

complex concepts, increase student participation, and create a stimulating learning environment.

The development of learning media, such as Pop Up Book, has a great potential to increase the interactivity and effectiveness of learning theme 8 of grade V SD. By incorporating a scientific approach that emphasizes observation, questioning, and small experiments, learning media can be a powerful tool to bring learning materials to life and clarify abstract concepts, especially in complex topics such as the environment. One of the first steps in developing learning media is to develop a clear and purposeful plan. This plan should include the selection of appropriate content according to the applicable curriculum, as well as teaching strategies that suit the needs of students. In this case, Theme 8 about our environment requires a more concrete and interactive approach, so the use of learning media such as Pop Up Book can be the right solution.

In addition, collaboration between teachers and school authorities is essential in developing effective learning media. Teachers can share experiences and successful strategies with each other, while the school can provide support in the form of training and provision of necessary infrastructure (Owolabi, 2020). This also includes developing teachers' skills in creating learning media that are interesting and relevant to the learning theme. However, it should not be forgotten that the development of learning media must always pay attention to the needs and characteristics of students. Each student may have a different learning style, so learning media should be flexible and adaptable to individual student needs. In this case, individualized learning can be the key to achieving optimal learning effectiveness.

Continuous monitoring and evaluation of learning media effectiveness are crucial, with student feedback and evaluation results serving as key indicators of success. Learning media development should be ongoing, responsive to challenges, and supported by school-provided training and infrastructure. Teachers need to continuously enhance their skills in using innovative media. The development of learning media, such as Pop Up Books, should focus on interactivity, visualization, and relevance to students' lives. A holistic approach, considering challenges, potentials, and needs, supported by collaboration, can effectively improve learning quality and meet educational objectives.

CONCLUSION

The needs analysis of Pop Up Book media development in learning theme 8 of grade V SD with a scientific approach shows the importance of learning media in increasing student interest and understanding. However, limited access to technology is a major challenge that needs to be overcome through school support in the form of training and provision of infrastructure. Students' positive responses to the use of learning media indicate a significant impact on the learning process. For more effective development, innovative, interactive and appropriate media are needed, as well as collaboration between teachers and continuous evaluation. Thus, the development of media such as Pop Up Book has great potential in improving the quality of learning and achieving the set educational goals.

REFERENCES

Akram, H., Yingxiu, Y., Al-Adwan, A. S., & Alkhalifah, A. (2021). Technology integration in higher education during COVID-19: An assessment of online teaching competencies through technological pedagogical content knowledge model. *Frontiers in psychology*, *12*, 736522.

Darmawan, A., & Sangaji, F. (2023). Seberapa Efektif Penggunaan Model Pembelajaran Scientific dalam Praktikum Ilmu Pengetahuan Alam. *SEARCH: Science Education Research Journal*, *1*(2), 14-21.

Dewi, S. Z., & Ibrahim, T. (2019). Pentingnya pemahaman konsep untuk mengatasi miskonsepsi dalam materi belajar IPA di sekolah dasar. *Jurnal Pendidikan UNIGA*, *13*(1), 130-136.

Firmadani, F. (2020). Media pembelajaran berbasis teknologi sebagai inovasi pembelajaran era revolusi industri 4.0. *KoPeN: Konferensi Pendidikan Nasional*, *2*(1), 93-97.

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*, 275-285.

Inayah, F. (2024). Penerapan Media Pop Up Untuk Meningkatkan Hasil Belajar Siswa Kelas II Sekolah Dasar Menggunakan Model Pembelajaran CTL. *Journal of International Multidisciplinary Research*, *2*(4), 59-64.

Indah, R. A., & Fadilah, M. (2024). Literature Review: Pengaruh Media Pembelajaran Literasi Visual Terhadap Hasil Belajar Biologi Siswa SMA:(Literature Review: The Influence of Visual Literacy Learning Media on High School Students Biology Learning Outcomes). *BIODIK*, *10*(2), 188-198.

Janawati, D. P. A., Andika, I. P. B., & Pradnyana, P. B. (2024). Analysis of Reading Skills of Grade 1 Students of SDN 6 Yangapi Through Pop Up Book Media. *Pedagogia: Jurnal Pendidikan*, *13*(1), 120-126.

Kamal, A. L., Ali, M. K., Safitri, D., & Sujarwo, S. (2024). Penggunaan Media Pop Up Book Pada Pembelajaran Ilmu Pengetahuan Sosial Dalam Meningkatkan Hasil Belajar Siswa. *Jurnal Teknologi Pendidikan*, *1*(3), 12-12.

Maryani, M., Effendi, H., & Sabantaro, H. (2020). Pengaruh pendekatan saintifik dalam proses belajar mengajar siswa kelas VIII materi lingkaran. *Jurnal Derivat: Jurnal Matematika Dan Pendidikan Matematika*, *7*(2), 65-74.

Owolabi, J. O. (2020). Virtualising the school during COVID-19 and beyond in Africa: infrastructure, pedagogy, resources, assessment, quality assurance, student support system, technology, culture and best practices. *Advances in Medical Education and Practice*, 755-759.

Prabawa, D. G. A. P., & Restami, M. P. (2020). Pengembangan Multimedia Tematik Berpendekatan Saintifik untuk Siswa Sekolah Dasar. *Mimbar PGSD Undiksha*, *8*(3), 479-491.

Praditya, A., Apriandi, D., & Rustyaningsih, W. (2023). Penggunaan Media Kartu Pop Up Dalam Upaya Meningkatkan Hasil Belajar Bahasa Indonesia Pada Peserta Didik Kelas III SDN 1 Tambakrejo. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *8*(1), 2910-2922.

Ramadhani, N., Ulya, W. J., Nustradamus, S. B., Fakhriyah, F., & Ismaya, E. A. (2023).

Sistematic Literature Riview: Peran Media Pembelajaran Interaktif dan Konvensional Pada Proses Pembelajaran di Sekolah Dasar. *Student Scientific Creativity Journal*, *1*(5), 99-114.

Riana, F. H., & Pulungan, L. H. (2024). Pengaruh Media Pembelajaran Pop-Up Book terhadap Motivasi Belajar pada Pembelajaran IPA Materi Ekosistem Lahan Basah Kelas 3 SD Muhammadiyah 07 Medan. *EduInovasi: Journal of Basic Educational Studies*, *4*(2), 805-814.

Salsabila, Z., Putri, V. E., Salsabila, R., Wismanto, W., & Pahruddin, P. (2024). Analisis Pengembangan Media Pembelajaran Sederhana Pada Sekolah Dasar. *CENDEKIA: Jurnal Ilmu Sosial, Bahasa dan Pendidikan*, *4*(2), 26-36.

Septiani, A. N. N. S. I., & Rejekiningsih, T. (2020). Development of Interactive Multimedia Learning Courseware to Strengthen Students' Character. *European Journal of Educational Research*, *9*(3), 1267-1280.

Septiasari, P., Dantes, N., & Suastra, W. (2020). Pengaruh model reciprocal teaching berbasis pendekatan saintifik terhadap kemampuan berpikir kritis dan hasil belajar ipa kelas v. *Jurnal PENDASI*, *4*(1), 85-94.

Wijaya, A. M. R., Arifin, I. F., & Badri, M. I. (2021). Media pembelajaran digital sebagai sarana belajar mandiri di masa pandemi dalam mata pelajaran sejarah. *SANDHYAKALA Jurnal Pendidikan Sejarah, Sosial Dan Budaya*, *2*(2), 1-10.

Wulan, D. A. N., & Astutik, L. S. (2023). Pengembangan Media Pop-Up Book Pada Materi Siklus Air Untuk Siswa Kelas 4 SDN 1 Waung. *Jurnal Pendidikan Tambusai*, *7*(2), 17644-17655.

Wulandari, A. P., Salsabila, A. A., Cahyani, K., Nurazizah, T. S., & Ulfiah, Z. (2023). Pentingnya media pembelajaran dalam proses belajar mengajar. *Journal on Education*, *5*(2), 3928-3936.