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Need Analysis of the Science Textbooks

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Abstract

Education encompasses lifelong learning, signifying continuous acquisition of knowledge throughout life. The IPAS curriculum integrates science and social studies, yet the effectiveness of science education at the elementary level remains suboptimal, reflected in low student learning outcomes. Observations at SD 4 Karangmalang revealed an average score of 51.1, with only one student achieving a completion rate of 11.11% out of nine students. Similarly, at SD 9 Gondosari, the average score was 51.1, with an 18.1% completion rate. Interviews with teachers indicated that current science teaching methods predominantly rely on conventional resources available solely within school premises, such as worksheets and government-issued textbooks, lacking engagement with local contexts. Consequently, student motivation suffers, leading to disinterest and disruptive behaviors in class. This study aims to explore the necessity for science and technology textbooks that promote explorative and critical thinking skills rooted in local wisdom. Employing questionnaires, observations, and interviews for data collection, qualitative descriptive analysis was used to assess the impact of these textbooks on student engagement, learning outcomes, and classroom activities.

Keywords: *Education, Science, Needs Analysis, IPAS, Textbook*

INTRODUCTION

Teachers play a pivotal role in shaping engaging classroom environments conducive to effective learning. They must inspire and motivate students, fostering interactive and creative learning experiences that facilitate comprehension, guidance, and assessment of student progress (Kadiyono et al., 2020). A positive classroom atmosphere not only enhances student motivation and enthusiasm but also cultivates a desire for continuous learning. Engaging learning is characterized by activities that captivate students' interest and attention, ensuring they remain attentive and comprehend the material presented (Hoy & Weinstein, 2013).

Education holds significant importance in both societal and national contexts. Broadly defined, education encompasses lifelong learning that positively influences individual growth across diverse settings and circumstances (Freire, 2018). The evolution of curricula in Indonesia, since its establishment in 1947, reflects ongoing efforts to optimize educational processes in response to technological advancements, student development, and standardized educational benchmarks (Vhalery et al., 2022). The current iteration, the independent curriculum, represents a flexible framework that aligns Indonesia's educational goals with global standards while honoring the nation's foundational values, particularly Pancasila. This curriculum empowers educators by prioritizing essential content and fostering student-centered learning, with teachers serving as facilitators rather than central figures.

Central to effective educational practices is the integration of local wisdom, which encompasses community-derived knowledge, life strategies, and cultural insights (Sulianti et al., 2019). Each region's distinct cultural heritage shapes its unique local wisdom, providing valuable perspectives for integrating into educational frameworks, particularly within the Integrated Science and Social Studies (IPAS) curriculum. Kudus Regency, renowned for its rich Islamic cultural heritage and local traditions, exemplifies the importance of infusing local wisdom into educational practices to enrich student learning experiences.

Despite these efforts, challenges persist in current educational practices, as observed in SD 4 Karangmalang, Kudus. Interviews with teachers revealed a reliance on conventional teaching resources like government-issued textbooks, which have proven insufficient in stimulating student engagement. Consequently, students often exhibit disinterest and lack of focus, highlighting the need for innovative approaches to enhance learning quality and cognitive development (Maulida & Fajrie, 2023). This study, conducted at SD 4 Karangmalang, employs qualitative descriptive analysis and utilizes questionnaires, observations, and interviews to explore the necessity for Social Sciences Textbooks that incorporate explorative skills and critical thinking abilities rooted in local wisdom

METHODS

This research employs qualitative descriptive analysis to delve into the effectiveness of integrating local wisdom into educational practices at SD 4 Karangmalang. Data collection methods include questionnaires, structured observations, and in-depth interviews with both teachers and fourth-grade students, totaling 13 participants. Questionnaires provide structured insights into participants' perceptions and experiences, while observations allow for real-time assessment of classroom dynamics and student engagement during lessons infused with local wisdom elements. In-depth interviews with teachers and students further explore attitudes, challenges, and perceived impacts of integrating local wisdom into the curriculum (Mertens, 2018). These methods collectively offer a comprehensive understanding of how local wisdom integration influences student learning outcomes and classroom dynamics at SD 4 Karangmalang. The study aims to uncover valuable insights that can inform future educational practices, emphasizing the importance of culturally relevant pedagogical approaches in enhancing student engagement and educational outcomes.

FINDINGS AND DISCUSSION

This study aimed to assess the necessity for science textbooks integrating explorative skills and critical thinking abilities rooted in local wisdom. Data were gathered through questionnaires administered to both teachers and students, alongside a teacher needs assessment. Table 1 shows the recapitulation of questionnaire results on teacher needs for textbooks.

Table 1. Recapitulation of Questionnaire Results on Teacher Needs for Textbooks

Aspect	Percentage
Teacher knowledge regarding textbooks	66%
Availability of science textbooks	33%
Exposure to varied material	33%
Linkage of material with local wisdom	0%
Use of interesting teaching materials	0%

Analysis of the questionnaire responses revealed that while teachers were familiar with textbook concepts, the availability of science-specific materials was limited in practice. This scarcity underscores the urgent demand for new science textbooks that offer diverse content and incorporate local wisdom to enhance engagement. Students, as indicated by the questionnaire findings summarized in Table 2, displayed diminished interest in science learning, attributing this partly to the lack of varied teaching materials and their perceived disconnect from local wisdom. Consequently, there is a clear consensus among respondents on the necessity for updated textbooks designed to boost student activity and interest in science education. These findings underscore the potential of integrating local wisdom

from Kudus to develop science textbooks that not only stimulate student engagement but also foster explorative skills and critical thinking. The results of the student needs questionnaire are presented in Table 2.

Table 2. Recapitulation of Student Needs Questionnaire Results

Indicator	Result
Interest in learning science and technology	36%
Student activity	42%
Utilization of textbooks	33%
Contents of textbooks	40%
Relating material to students' daily lives	32%

DISCUSSION

This study explored the necessity for science textbooks that integrate explorative skills and critical thinking abilities rooted in local wisdom in Kudus, focusing on the perspectives of teachers and students. The findings reveal a significant gap between the perceived importance of textbooks and their practical availability in schools. Only a minority of teachers reported access to adequate science textbooks, with limited variation in available learning resources and negligible incorporation of local wisdom (Roberts et al., 2021). This deficiency in teaching materials contributes to low student motivation and suboptimal learning outcomes, consistent with findings by Pi et al. (2023) on the impact of instructional materials on educational effectiveness.

To address these shortcomings, it is crucial for educators to develop textbooks that cater to students' needs and align with the educational goals of the curriculum, as emphasized by Zheng et al. (2023); Jazadi (2015). Effective learning environments, as highlighted by Heni et al. (2023), are contingent upon teachers' understanding of learning objectives and their ability to engage students effectively through well-structured teaching materials. Moreover, Firetto et al. (2023), underscore the pivotal role of teachers in shaping educational success, emphasizing the importance of utilizing textbooks that are not only comprehensive but also engaging and culturally relevant.

The student needs assessment revealed a notable lack of enthusiasm for science learning among students, attributed to the monotony of existing textbooks and their perceived disconnect from local contexts. Addressing these issues through the development of engaging, locally contextualized textbooks can potentially enhance student interest and participation in science education, in line with Costello et al. (2023) and Wan Sulaiman & Mustafa (2020), who advocate for motivational approaches to support teacher efforts in textbook development. Ultimately, the development of science textbooks should prioritize the diverse learning needs of students while integrating local wisdom to enrich the educational experience and foster meaningful learning outcomes.

CONCLUSION

In conclusion, the findings highlight a collective desire for textbooks that not only enhance student engagement and motivation in science learning but also promote active participation and deeper comprehension. Moreover, there is a clear consensus on the importance of integrating local wisdom from Kudus Regency into educational materials to make learning more relevant and meaningful. Moving forward, it is recommended that teachers innovate their teaching approaches to create more dynamic and captivating learning experiences. By incorporating local wisdom into lessons tailored to student characteristics, educators can effectively nurture curiosity and facilitate deeper learning. This approach not only enriches students' knowledge but also equips them with practical experiences that resonate with their cultural context. Ultimately, the development and utilization of these tailored textbooks have the potential to significantly enhance the quality of science education in Kudus Regency and beyond.

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