
DEVELOPMENT OF IPAS TEACHING MATERIALS BASED ON JAVANESE LOCAL WISDOM IN DIFFERENTIATED LEARNING FOR STUDENTS

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Abstract

This study aims to develop teaching materials based on Javanese local wisdom in differentiated learning to improve students' creativity in the IPAS subject at the elementary school level. This research employed a Research and Development (R&D) method using the ADDIE model, which consists of analysis, design, development, implementation, and evaluation stages. The population in this study was all fourth-grade students at the elementary school where the research was conducted. The sampling technique used was purposive sampling, which involves selecting a sample based on specific considerations relevant to the research objectives. The sample consisted of 21 fourth-grade students. Furthermore, the study involved expert validators consisting of learning material experts, learning media experts, and learning design experts to assess the feasibility of the developed teaching materials. The data in this study were obtained from expert validators and fourth-grade elementary school students through validation sheets, questionnaires, observations, and tests. The data analysis techniques included descriptive quantitative analysis to determine the validity and practicality of the teaching materials, as well as inferential statistical analysis using N-gain and paired sample t-test to evaluate their effectiveness. The results showed that the teaching materials were very valid, with an average validation score of 4.55. They were also considered very practical, indicated by student response scores of 4.08 and teacher response scores of 4.63. In terms of effectiveness, there was an increase in the average pretest score (2.63) to posttest (4.25), with an N-Gain of 0.68 (moderate category) and a significant difference (Sig. 0.000 < 0.05). Therefore, the developed teaching materials are valid, practical, and effective in enhancing students' creativity and can be used as an alternative learning resource in elementary education.

Keywords

Differentiated Learning, IPAS, Javanese Local Wisdom, Students' Creativity, Teaching Materials.



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INTRODUCTION

The Merdeka Curriculum was introduced as a solution to the learning crisis following the COVID-19 pandemic by emphasizing flexibility in learning and strengthening character through the eight dimensions of the Graduate Profile. One of the most important dimensions in this profile is creativity. Creativity is an individual's ability to generate new ideas, innovative solutions, and flexible thinking in solving problems (Beghetto, 2021; Rindiantika, 2021). Based on preliminary observations conducted at SD Muhammadiyah 3 Pekajangan, students' creativity was still relatively low. This finding was obtained through classroom observations, interviews with the fourth-grade teacher, and analysis of students' assignments in the first semester of the 2023/2024 academic year. Of the 21 students observed, only five students (23.81%) demonstrated the ability to generate new ideas or complete tasks in ways different from the examples provided by the teacher. In contrast, 16 students (76.19%) tended to imitate existing examples, wait for detailed instructions, and lacked confidence in expressing their own ideas.

Low student creativity was evident in various learning situations. For example, when the teacher assigned students to create posters about Cultural Diversity, most of them produced nearly identical designs in terms of images, colors, and text arrangement. The students simply followed the example displayed by the teacher on the board without adding new ideas, symbols, or messages based on their own imagination. Another example was observed during group discussions, where only a few students actively expressed their opinions, while the majority chose to remain silent and waited for decisions from classmates who were considered more capable. Based on interviews with the classroom teacher, this condition occurred because students were not yet accustomed to being given opportunities to explore their ideas independently and were still used to a learning pattern that emphasized single correct answers.

The lack of student creativity affects several important aspects of the learning process. First, students become less skilled in problem-solving, especially when confronted with open-ended questions that require more than one possible answer. Based on documentation of project evaluation results, only 5 students (23.81%) were able to present solutions using varied approaches. Second, low creativity reduces students' learning motivation because they perceive the learning process as monotonous and insufficiently challenging. Third, students' critical and innovative thinking skills have not developed optimally, even though these skills are essential for addressing the challenges of the 21st century. In addition, students tend to rely heavily on examples and instructions provided

by the teacher, resulting in limited development of independent learning skills.

The school has made various efforts to enhance students' creativity. Based on documentation studies, the school has implemented the Merdeka Curriculum, which emphasizes project-based learning and the strengthening of the Pancasila Student Profile. The school has also carried out the Project for Strengthening the Pancasila Student Profile (P5), drawing competitions, recycled craft activities, and the provision of student work corners in every classroom. In addition, teachers have participated in training on the implementation of differentiated learning and the use of digital media in instruction. However, based on interviews with teachers, these programs have not yet produced optimal results. Creative activities are still conducted on an incidental basis and have not been consistently integrated into the daily learning process. Moreover, the instructional media used have not been able to effectively encourage students to imagine, explore, and produce original work independently.

Thus, the data obtained from observations, interviews, and documentation indicate that students' creativity at SD Muhammadiyah 3 Pekajangan remains low, despite the school's implementation of various supporting policies and programs. This condition highlights the need for more engaging and interactive learning innovations that provide students with broad opportunities to express their ideas and create original work. One alternative solution is the development of teaching materials designed to encourage idea exploration, increase student engagement, and foster creativity in the learning process. This finding is consistent with previous studies showing that the lack of innovative learning activities can hinder the development of students' creativity (Ardianti et al., 2017).

One relevant approach to addressing this problem is differentiated learning. Differentiated learning is an instructional strategy designed to accommodate differences in students' readiness, interests, and learning profiles (Tomlinson, 2017). Through this approach, students are given opportunities to learn according to their individual characteristics, allowing their potential to develop optimally. Differentiated learning has also been proven to enhance student engagement and improve learning outcomes (Herwina, 2021; Marlina, 2020). However, in practice, many educators still face difficulties in implementing differentiated learning optimally in the classroom (Netti, 2022; Wahyuningsari et al., 2022).

On the other hand, the use of contextual teaching materials is also an important factor in improving the quality of learning. Teaching materials are one of the essential components that

support the effective achievement of learning objectives (Aisyah et al., 2020; Magdalena et al., 2020; Wahyudi, 2022). The integration of local wisdom into teaching materials can make learning more meaningful because students learn from environments that are closely related to their daily lives (Affandy, 2017; Kaimuddin, 2019; Raihani, 2018; Suarningsih, 2019; Suastra et al., 2019). Local wisdom serves not only as a learning resource but also as a means of instilling cultural values and character development (Khotimah & Digna, 2021; Umurohmi, 2023). However, teaching materials that integrate local wisdom as a contextual learning resource have not yet been used in the learning process. The teaching materials currently used are still general in nature and do not accommodate local culture, even though education and culture are two inseparable aspects. This makes local culture-based learning highly important (Farihatun Nisa & Nugroho, 2017).

Previous studies have shown that local wisdom-based learning is able to enhance students' motivation and learning outcomes (Kumala & Sulistyowati, 2016; Meilana & Aslam, 2022). In addition, differentiated learning is effective in accommodating the diverse characteristics of students (Herwina, 2021; Marlina, 2020). However, the integration of these two approaches into systematic teaching materials has not been widely developed. Most previous studies have focused either on the implementation of instructional strategies or on the development of teaching materials separately, without specifically integrating local wisdom and differentiated learning into a single instructional product. In fact, the combination of these two approaches has the potential to provide learning experiences that are both more contextual and more adaptive to students' needs.

In the context of IPAS learning, the integration of natural and social sciences requires a learning approach that is oriented not only toward mastering concepts but also toward developing students' ability to understand phenomena in their surrounding environment (Marwa et al., 2023). Therefore, the use of contextual teaching materials is essential to enable students to relate the learning content to the realities of everyday life (Khairani et al., 2017). However, in practice, IPAS learning still tends to be theoretical and provides limited opportunities for students to explore their surrounding environment as a source of learning. As a result, the learning process becomes less meaningful and contributes to the low level of students' creativity.

Based on the foregoing, this study offers a novel contribution by developing IPAS teaching materials based on Javanese local wisdom that are specifically designed to support differentiated learning in order to enhance students' creativity. Conceptually, the integration of local wisdom provides authentic learning contexts, while differentiated learning offers students opportunities to

learn according to their individual characteristics. The combination of these two approaches is believed to foster the development of students' creativity through exploratory, reflective, and contextual activities. Therefore, the development of IPAS teaching materials based on Javanese local wisdom within a differentiated learning framework represents a relevant solution to address this problem.

This study aims to: (1) determine the validity of the teaching materials, (2) assess the practicality of the teaching materials, and (3) evaluate the effectiveness of the teaching materials in improving students' creativity in the IPAS subject.

METHOD

This study employed a Research and Development (R&D) method using the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation (Rayanto & Sugianti, 2020).



Figure 1. Steps of the ADDIE Model

Source: (Astiti et al., 2021)

The analysis stage was carried out by identifying students' needs and learning problems in the classroom. The design stage involved designing the structure of the teaching materials, selecting the content, and developing differentiated learning activities. The development stage consisted of compiling the teaching materials in full, which were then validated by experts in subject matter, instructional media, and instructional design. The implementation stage involved trying out the teaching materials with fourth-grade students. Subsequently, the evaluation stage was conducted to assess the validity, practicality, and effectiveness of the developed teaching materials. Through these stages, the resulting product was expected to be of high quality and aligned with the learning needs of elementary school students.

This study was conducted at SD Muhammadiyah 3 Pekajangan, located in Pekajangan Village, Kedungwuni District, Pekalongan Regency, Indonesia. The research was carried out during

the second semester of the 2025/2026 academic year. The selection of the research site was based on the consideration that the school possessed characteristics aligned with the objectives of the study and supported the development of teaching materials based on Javanese local wisdom. The population of this study consisted of all fourth-grade students of SD Muhammadiyah 3 Pekajangan in the 2025/2026 academic year, comprising two classes with a total of 42 students. The sampling technique used was purposive sampling, which involves selecting participants based on specific considerations relevant to the research objectives. The sample consisted of one fourth-grade class with 21 students, selected based on its suitability to the research needs, including student characteristics and the relevance of the learning material. The research subjects included expert validators and students. The expert validators consisted of subject matter experts, media experts, and instructional design experts, who were responsible for assessing the feasibility of the developed teaching materials. Meanwhile, the selected fourth-grade students served as participants in the trial implementation to evaluate the practicality and effectiveness of the teaching materials. Data were collected through the following techniques: (1) expert validation to assess the validity of the teaching materials, (2) teacher and student response questionnaires to measure practicality, (3) classroom observation to examine the implementation of learning activities, and (4) pretest and posttest to evaluate the effectiveness of the teaching materials. Students' creativity was measured based on four indicators: fluency, flexibility, originality, and elaboration. The indicators of students' creativity used in this study are presented in Table 1.

Table 1. Students' Creativity Indicators

No	Indicator	Deskripsi	Examples of Student Behavior
1.	Fluency	The ability to generate many ideas or answers	Produces multiple ideas or responses to a given problem
2.	Flexibility	The ability to generate a variety of ideas from different perspectives	Offers diverse approaches or viewpoints in solving a problem
3.	Originality	The ability to generate unique and uncommon ideas	The ability to generate unique and uncommon ideas
4.	Elaboration	The ability to develop ideas in detail	Expands and refines ideas with detailed explanations or additions

Sourch: (Beghetto, 2021)

Data analysis was conducted using descriptive quantitative analysis to determine the validity and practicality of the teaching materials, N-Gain analysis to measure the improvement in learning outcomes, and a paired sample t-test to examine the differences before and after the treatment. The validity test was conducted using a 1–5 Likert scale, and the resulting scores were

then converted into feasibility criteria, as presented in Table 2.

Table 2. Teaching Material Validation Criteria

Quality Score	Validation Criteria	Description
$4,2 < x \leq 5,00$	Very Valid	No Revision Required
$3,4 < x \leq 4,2$	Valid	No Revision Required
$2,6 < x \leq 3,4$	Fairly Valid	Partial Revision Required
$1,8 < x \leq 2,6$	Less Valid	Content Review Required
$0 < x \leq 1,8$	Invalid	Complete Revision Required

Source: (Aini et al., 2018)

The practicality test was analyzed based on the average scores of teacher and student responses, as well as the implementation of the learning process. The practicality criteria are presented in Table 3.

Table 3. Practicality Criteria for Teaching Materials

Quality Score	Validation Criteria
$4,2 < x \leq 5,00$	Very Practical
$3,4 < x \leq 4,2$	Practical
$2,6 < x \leq 3,4$	Fairly Practical
$1,8 < x \leq 2,6$	Not Practical
$0 < x \leq 1,8$	Very Impractical

Source: (Aini et al., 2018)

Furthermore, the effectiveness test was analyzed using the N-Gain calculation, with the criteria presented in Table 4.

Table 4. N-Gain Criteria Levels

Average Score	Criteria
$g > 0,7$	High
$0,3 \leq g \leq 0,7$	Moderate
$0 < g < 0,3$	Low
$g \leq 0$	Failed

Source: (Wahab et al., 2021)

In addition, a paired sample t-test was conducted to determine the significance of the differences in learning outcomes before and after the treatment. If the significance value (p-value) was less than 0.05, it indicated a statistically significant difference between the pretest and posttest scores, and the teaching materials were considered effective. Conversely, if the significance value (p-value) was greater than or equal to 0.05, it indicated no statistically significant difference between

the pretest and posttest scores, and the teaching materials were considered ineffective. The use of this statistical test was intended to ensure that the observed improvement was not merely due to chance, but was statistically meaningful. Therefore, the analysis used in this study was not only descriptive but also inferential in order to strengthen the research findings.

FINDINGS AND DISCUSSION

Findings

This study produced a set of IPAS teaching materials based on Javanese local wisdom, developed using the ADDIE model. The results are presented as follows:

1. Analysis Stage

At the analysis stage, learning needs were identified through classroom observations, interviews with the teacher, and an analysis of student characteristics. The results indicated that IPAS instruction in the fourth grade still relied on teaching materials that were less contextual and had not yet accommodated differences in students' abilities. In addition, students' creativity in the learning process was still relatively low because instructional activities tended to be teacher-centered. Therefore, it was necessary to develop teaching materials based on Javanese local wisdom that could support differentiated learning and enhance students' creativity.

2. Design Stage

At the design stage, the teaching materials were planned by determining the learning objectives, organizing content based on Javanese local wisdom, and designing learning activities that support differentiated instruction. In addition, the research instruments were developed, including validation sheets, questionnaires, observation sheets, and test items. The teaching materials were designed with careful consideration of content, visual appearance, and readability to ensure that they were appropriate for the characteristics of elementary school students.

3. Development Stage

At the development stage, the teaching materials were prepared in accordance with the previously designed framework. Subsequently, the materials were validated by subject matter experts, instructional media experts, and instructional design experts to determine their feasibility. An example of the developed teaching materials is presented in Figure 2.



Figure 2. Example of the Teaching Materials Layout

The validation results provided by the subject matter expert, instructional media expert, and instructional design expert are presented in Table 5 below.

Table 5. Teaching Materials Validity Test Results

No	Validator	Average Skor	Category
1.	Subject Matter Expert	4,71	Very valid
2.	Instructional Media Expert	4,43	Very valid
3.	Instructional Design Expert	4,50	Very valid
	Average	4,55	Very valid

Source: Research Data

Based on Table 5, the average validation score was 4.55, which falls into the very valid category. This indicates that the teaching materials met the criteria for content, presentation, language, and visual design. The high validity also demonstrates that the materials were aligned with the IPAS learning outcomes and integrated with the values of Javanese local wisdom that are relevant to the students' environment. Effective teaching materials should fulfill the principles of relevance, consistency, and adequacy in order to support the achievement of students' competencies (Magdalena et al., 2020).

4. Implementation Stage

At the implementation stage, the developed teaching materials were tested with fourth-grade students at SD Muhammadiyah 3 Pekajangan. The learning process was conducted by applying the principles of differentiated instruction. The practicality of the teaching materials was measured through teacher and student response questionnaires, as well as observations of the implementation of the learning activities. The results of the practicality test are presented in Table 6.

Table 6. Practicality Test Results of the Teaching Materials

No	Respondent	Average Score	Category
1.	Students	4,08	Practical
2.	Teacher	4,63	Very Practical
3.	Learning Implementation	4,38	Very Practical

Source: Research Data

Based on Table 6, the teaching materials were considered practical by both students and the teacher. This indicates that the materials were easy to use, engaging, and able to support the implementation of differentiated learning. Students were more interested in the learning process because the content was connected to their everyday lives, while the teacher was assisted in managing instruction according to the diverse characteristics of the students. This finding is consistent with the view that well-designed teaching materials can enhance student engagement and facilitate teachers in delivering the learning content effectively. (Aisyah et al., 2020; Wijaya, 2021).

5. Evaluation Stage

The evaluation stage was conducted to determine the effectiveness of the teaching materials in improving students' creativity. The effectiveness of the teaching materials was measured using the results of the pretest, posttest, N-Gain analysis, and statistical testing, as presented in Table 7 below:

Table 7. Teaching Materials Effectiveness Test Results

No	Indicator	Score
1.	Average Pretest Score	2,63
2.	Average Posttest Score	4,25
3.	N-Gain	0,68
4.	Sig. (2-tailed)	0,000

Source: Research Data

Based on Table 7, the students' average score increased from 2.63 to 4.25. The N-Gain value of 0.68 indicates an improvement in the moderate category. In addition, the results of the paired sample t-test showed a significance value of $0.000 < 0.05$, indicating that there was a statistically significant difference before and after the use of the teaching materials. The increase in pretest and posttest scores can be seen in Figure 3 below.

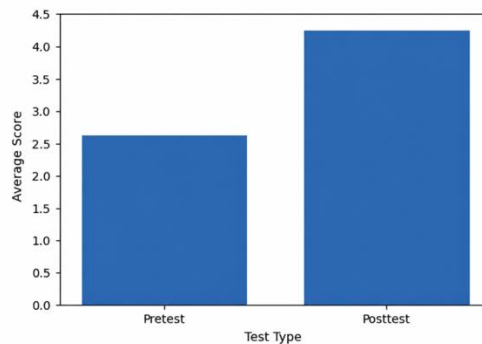


Figure 3. Comparison of Pretest and Posttest Scores

The graph in Figure 3 clearly illustrates the upward trend in students' learning outcomes after the use of the teaching materials. Visually, there is a considerable increase between the pretest and posttest scores. This indicates that the implemented learning approach had a positive impact on students' understanding and creativity. In addition, presenting the data in graphical form makes it easier to compare the results more quickly and clearly than using a table. Therefore, this graph strengthens the finding that the developed teaching materials are effective for use in the learning process.

The improvement in scores not only indicates a quantitative change in learning outcomes but also reflects changes in students' thinking processes. Students began to demonstrate the ability to express ideas, relate the learning content to their daily lives, and complete tasks more independently. In addition, during the learning process, students were observed to be more actively engaged in classroom activities. This suggests that the developed teaching materials were able to create a more participatory and meaningful learning environment. These findings indicate that the success of the teaching materials is measured not only by test results, but also by changes in students' learning behaviors throughout the instructional process.

In addition to the quantitative data, classroom observations during the learning process revealed changes in students' learning behaviors. At the beginning of the instruction, students tended to be passive and wait for directions from the teacher. However, after using the developed teaching materials, students began to demonstrate more active involvement in learning activities. They appeared more enthusiastic about participating in lessons, particularly when the content was connected to everyday life and local culture. Furthermore, students became more confident in expressing their opinions and began to complete tasks in more creative ways. This indicates that the teaching materials had an impact not only on learning outcomes but also on creating a more active and meaningful learning process.

Discussion

1. Validity of the Teaching Materials

The high level of validity, with an average score of 4.55, indicates that the developed product met the feasibility criteria in terms of content, instructional media, and instructional design. These results demonstrate that the teaching materials were systematically designed and were appropriate for the characteristics of elementary school students. The integration of local wisdom into the IPAS content adds significant value because it connects learning concepts to real-life contexts in the students' environment. This finding is consistent with the view that effective teaching materials should be systematically organized, engaging, and easy to understand in order to optimally support the learning process (Aisyah et al., 2020; Prastowo, 2018; Wahyudi, 2022). In addition, local wisdom-based learning has been shown to enhance the meaningfulness of learning because students gain learning experiences from contexts that are closely related to their daily lives (Affandy, 2017; Kaimuddin, 2019; Suastra et al., 2019). According to Vygotsky, the learning process becomes more effective when new knowledge is constructed based on the social and cultural experiences that students already possess. Therefore, the use of Javanese culture—such as local traditions, traditional foods, traditional games, and the value of mutual cooperation (gotong royong)—helps students understand IPAS concepts in a more concrete manner (Ningsih et al., 2023; Ratnasari & Ismail, 2021). In addition to demonstrating content suitability, the high validity score also indicates that the teaching materials fulfill sound pedagogical principles, namely the alignment between learning objectives, content, activities, and assessment (Magdalena et al., 2020; Tomlinson, 2017). This is important because teaching materials function not only as sources of information but also as tools that systematically and meaningfully guide students' learning processes. The flexible design of the teaching materials allows students to access the content according to their readiness levels and learning profiles, making it consistent with the principles of Universal Design for Learning (CAST, 2018). Theoretically, high validity indicates that the teaching materials are built upon a strong conceptual foundation and can be used as a means of implementing innovative learning.

2. Practicality in Differentiated Learning

The high practicality of the teaching materials indicates that the product is easy to use for both teachers and students. In the context of differentiated learning, these teaching materials are able to accommodate various student learning styles, including visual, auditory, and kinesthetic styles. Differentiated learning requires teachers to address students' diverse learning needs in terms

of readiness, interests, and learning profiles (Herwina, 2021; Marlina, 2020; Tomlinson, 2017). With flexible and contextual teaching materials, teachers can more easily implement differentiated learning in the classroom. In addition, varied and contextual teaching materials can enhance students' motivation to learn by providing more engaging and meaningful learning experiences (Aisyah et al., 2020; Haryadi & Kinanti, 2022). This is consistent with findings showing that instruction tailored to students' characteristics can significantly enhance their engagement in learning (Deci & Ryan, 2020; Netti, 2022; Wahyuningsari et al., 2022). However, the practicality of the teaching materials is also influenced by teachers' readiness to implement differentiated learning. Without adequate understanding of diagnostic assessment, student needs mapping, and differentiation strategies, even well-designed teaching materials will not be used optimally (Faiz et al., 2022; Umurohmi, 2023). Therefore, support in the form of training and mentoring is needed to help teachers implement differentiated learning effectively.

3. Effectiveness in Improving Students' Creativity

The increase in scores from the pretest to the posttest, along with the N-Gain results, indicates that the teaching materials were effective in improving students' creativity. Students' creativity developed through opportunities to explore ideas, solve problems, and generate new ideas fluently, flexibly, originally, and in a detailed manner during the learning process (Mery et al., 2022; Munandar, 2019; Rindiantika, 2021). In this study, the improvement in creativity is shown by students' ability to express more ideas, produce a variety of works, and connect Science and Social Studies (IPAS) concepts with real-life situations in their environment. The integration of Javanese local wisdom into the teaching materials provides a contextual learning experience, thereby encouraging students to think more creatively (Khotimah & Digna, 2021; Meilana & Aslam, 2022; Suarningsih, 2019). Students do not merely receive information but also relate the material to their daily lives. In addition, differentiated learning provides students with space to learn according to their individual learning styles and abilities, enabling their creative potential to develop optimally (Marlina, 2020; Wahyuningsari et al., 2022). These findings are also supported by previous research showing that local wisdom-based learning can improve students' motivation and learning outcomes because it is more relevant to their daily lives (Kumala & Sulistyowati, 2016). The N-Gain score falls within the moderate category, indicating that the teaching materials still make a significant contribution to improving students' creativity (Wahab et al., 2021). The improvement in students' creativity occurs because the teaching materials provide opportunities for exploration through open-

ended activities that allow students to independently develop their ideas. However, these results also indicate that there are still other factors influencing students' creativity, such as the learning environment, the teacher's role, and individual student characteristics (Ardianti et al., 2017; Sternberg, 2018). Thus, teaching materials are not the only determining factor, but rather part of an interconnected learning system. Although the research results show good effectiveness, the implementation of differentiated learning-based teaching materials still requires teachers' readiness to deeply understand students' characteristics. Students' creativity will develop more optimally when learning provides opportunities to investigate real problems, develop various alternative solutions, and produce products that reflect their understanding. Open-ended and challenging learning activities have been proven to significantly enhance creative thinking skills (Henriksen et al., 2021).

4. Implikasi Penelitian

The results of this study indicate that the development of teaching materials based on Javanese local wisdom is highly relevant in supporting the implementation of the Merdeka Curriculum. These teaching materials not only assist teachers in applying differentiated learning but also strengthen students' cultural identity. Education integrated with local culture will result in more meaningful and contextual learning, rooted in students' social environment (Farihatun Nisa & Nugroho, 2017; Kemendikbudristek, 2022; Khotimah & Digna, 2021). Therefore, the development of teaching materials based on Javanese local wisdom can serve as an innovation to improve the quality of learning in elementary schools. The results of this study strengthen previous research findings indicating that local wisdom-based learning is able to increase student engagement and learning outcomes (Meilana & Aslam, 2022). In addition, differentiated learning has also been proven effective in improving the quality of learning because it is able to accommodate diverse student needs (Marlina, 2020). However, this study makes a further contribution by integrating both approaches into systematic and applicable teaching materials. In addition to enhancing creativity, the use of Javanese local wisdom-based teaching materials also contributes to building students' cultural awareness. Students not only learn academic concepts but also understand the values present in their surrounding environment. This is important in shaping students' character in accordance with the Graduate Profile Dimensions. Thus, the developed teaching materials have not only academic value but also cultural and character-building value, thereby providing broader contributions to the field of education. The findings also imply that Javanese local wisdom-based

teaching materials integrated with differentiated learning can be used as a learning strategy to enhance students' creativity. Teachers can implement these materials by adjusting activities based on students' readiness, interests, and learning profiles, making learning more effective and meaningful. The integration of local culture in learning also strengthens the relevance of the content to students' lives and supports the development of global competencies without neglecting regional cultural identity. This approach is considered effective in creating contextual, meaningful, and sustainable learning (OECD, 2023).

5. Research Limitations

This study has several limitations. First, the number of research subjects was limited to a single class, so the findings cannot be widely generalized. Second, the measurement of students' creativity was still limited to test results and observations, and therefore did not fully capture all dimensions of creativity in depth (Rindiantika, 2021). Third, this study only examined the effectiveness of the teaching materials over a relatively short period, so it could not capture their long-term impact on the development of students' creativity. Therefore, future research is recommended to involve a broader range of participants and to investigate the long-term effects of using these teaching materials in order to obtain a more comprehensive understanding of their influence on students' creativity.

CONCLUSION

The validity of the teaching materials is shown by the expert assessment results with an average score of 4.55, categorized as highly valid. The practicality is indicated by positive responses from teachers with a score of 4.63 and students with a score of 4.08, showing that the teaching materials are easy to use and engaging. The effectiveness of the teaching materials is demonstrated by an increase in scores from a pretest mean of 2.63 to a posttest mean of 4.25, an N-gain value of 0.68 (moderate category), and statistical test results of $0.000 < 0.05$, indicating a significant difference after the use of the teaching materials. The implications of this study show that local wisdom-based teaching materials can serve as an alternative innovation in Science and Social Studies (IPAS) learning, not only improving learning outcomes but also enhancing students' creativity and strengthening their understanding of local culture. Therefore, teachers are encouraged to develop and utilize contextual teaching materials that are aligned with students' characteristics. In addition, future research may develop similar teaching materials for different topics or educational levels and

examine their long-term impact.

REFERENCES

- Affandy, S. (2017). *Penanaman Nilai-Nilai Kearifan Lokal dalam Meningkatkan Perilaku Keberagamaan Peserta Didik*.
- Aini, P. A., Komarudin, & Masykur, R. (2018). Handout Matematika berbantuan Etnomatematika Berbasis Budaya Lokal. *Desimal: Jurnal Matematika*, 1(1), 73–79. <http://ejournal.radenintan.ac.id/index.php/desimal/index>
- Aisyah, S., Noviyanti, E., & Triyanto. (2020). Bahan Ajar Sebagai Bagian dalam Kajian Problematika Pembelajaran Bahasa. *Salaka*, 2(1), 62–65.
- Ardianti, D. S., Ari Pratiwi, I., & Kanzunudin, M. (2017). Implementasi Project-Based Learning (Pjbl) Berpendekatan Science Edutainment Terhadap Kreativitas Peserta Didik. *Jurnal Ilmiah Kependidikan*, 7(2), 145–150. <http://jurnal.umk.ac.id/index.php/RE>
- Astiti, K. A., Supu, A., Sukarjita, W., Id, W. C., & Lantik, V. (2021). Pengembangan Modul IPA Terpadu Tipe Connected Berbasis Pembelajaran Berdiferensiasi pada Materi Lapisan Bumi Kelas VII. 4(2).
- Beghetto, R. A. (2021). *Creative Identity Development in Classrooms*.
- CAST. (2018). *Universal Design for Learning Guidelines Version 2.2*. CAST.
- Deci, E. L., & Ryan, R. M. (2020). *Self-determination theory: Basic Psychological Needs in Motivation, Development, and Wellness*. Guilford Press.
- Faiz, A., Purwati, & Kurniawaty, I. (2022). Konsep Pembelajaran Berdiferensiasi dalam Implementasi Kurikulum Merdeka. *Jurnal Basicedu*, 6(4), 6942–6948.
- Farihatun Nisa, A., & Nugroho, R. (2017). *Implementasi Kurikulum berbasis Kearifan Lokal di SD Negeri Jarakan Panggungharjo Sewon Bantul*.
- Haryadi, R., & Kinanti, S. N. (2022). Pengembangan Bahan Ajar Berbasis Video Untuk Peserta Didik Maupun Pendidik Tingkat SMA Sederajat dan di Bawah. *EduFisika: Jurnal Pendidikan Fisika*, 7(2), 169–176.
- Henriksen, D., Henderson, M., Creely, E., Ceretkova, S., Černochová, M., Sendova, E., Sointu, E., & Tienken, C. H. (2021). Creativity and Technology in Education: An international perspective. *Technology, Knowledge and Learning*, 26(1), 1–15.
- Herwina, W. (2021). Optimalisasi Kebutuhan Murid dan Hasil Belajar dengan Pembelajaran Berdiferensiasi. *Perspektif Ilmu Pendidikan*, 35(2), 175–182.
- Kaimuddin. (2019). Model Pembelajaran Berbasis Kearifan Lokal (Local Wisdom) pada Usia Kanak-kanak Awal. *Prosiding Seminar Nasional FKIP Universitas Muslim Maros*, 4(2), 156–160.
- Kemendikbudristek. (2022). *Dimensi, elemen, dan subelemen Profil Pelajar Pancasila pada Kurikulum Merdeka*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Khairani, S., Asrizal, A., & Amir, H. (2017). Pengembangan Bahan Ajar IPA Terpadu Berorientasi Pembelajaran Kontekstual Tema Pemanfaatan Tekanan dalam Kehidupan Untuk Meningkatkan Literasi Siswa Kelas VIII SMP. *Pillar of Physics Education*, 10, 153–160.
- Khotimah, N., & Digna, D. (2021). *Pembelajaran Berbasis Kearifan Lokal. Mewujudkan Kemandirian Indonesia Melalui Inovasi Dunia Pendidikan*.
- Kumala, F. N., & Sulistyowati, P. (2016). Pengembangan Bahan Ajar IPA Berbasis Kearifan Lokal. *Universitas Kanjuruhan Malang*.
- Magdalena, I., Prabandani, R. O., Rini, E. S., Fitriani, M. A., & Putri, A. A. (2020). Analisis Pengembangan Bahan Ajar. In *Jurnal Pendidikan dan Ilmu Sosial* (Vol. 2, Number 2). <https://ejournal.stitpn.ac.id/index.php/nusantara>

- Marlina. (2020). *Strategi Pembelajaran Berdiferensiasi di Sekolah Inklusif*. CV. Afifa Utama.
- Marwa, M., Rahmawati, R., & Sari, D. (2023). Integrasi IPAS dalam Kurikulum Merdeka. *Jurnal Pendidikan Dasar*, 8(1), 55–63.
- Meilana, S. F., & Aslam, A. (2022). Pengembangan Bahan Ajar Tematik Berbasis Kearifan Lokal di Sekolah Dasar. *Jurnal Basicedu*, 6(4), 5605–5613. <https://doi.org/10.31004/basicedu.v6i4.2815>
- Mery, M., Martono, M., Halidjah, S., & Hartoyo, A. (2022). Sinergi Peserta Didik dalam Proyek Penguatan Profil Pelajar Pancasila. *Jurnal Basicedu*, 6(5), 7840–7849.
- Munandar, U. (2019). *Pengembangan kreativitas anak berbakat*. Rineka Cipta.
- Netti, H. (2022). Peningkatan Kreativitas Siswa Melalui Strategi Pembelajaran Berdiferensiasi pada Pembelajaran PAI di SMAN 4 Wajo. *Educandum*, 8(2), 229–241.
- Ningsih, D., Prasetyo, Z. K., & Wibowo, Y. (2023). Integrasi budaya lokal dalam pembelajaran IPAS. *Jurnal Pendidikan Dasar Indonesia*, 8(1), 22–31.
- OECD. (2023). PISA 2022 results (Volume I): The State of Learning and Equity in Education. *OECD Publishing*.
- Prastowo, A. (2018). *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Diva Press.
- Raihani. (2018). Education for Multicultural Citizens in Indonesia: Policies and Practices. *Compare: A Journal of Comparative and International Education*, 48(6), 1–17.
- Ratnasari, D., & Ismail, H. (2021). Pembelajaran Berbasis Budaya Jawa di Sekolah Dasar. *Jurnal Pendidikan Dasar*, 12(2), 90–99.
- Rayanto, Y. H., & Sugianti. (2020). *Penelitian Pengembangan Model ADDIE*.
- Rindiantika, Y. (2021). Pentingnya Pengembangan Kreativitas dalam Keberhasilan Pembelajaran: Kajian Teoretik. *Jurnal Intelegensia*, 6(1), 53–63.
- Sternberg, R. J. (2018). *The Nature of Human Creativity*. Cambridge University Press.
- Suarningsih, N. M. (2019). Peranan Pendidikan Berbasis Kearifan Lokal dalam Pembelajaran di Sekolah. *Cetta: Jurnal Ilmu Pendidikan*, 2(1), 23–30.
- Suastra, I. W., Tika, K., & Kariasa, I. (2019). The effectiveness of the local wisdom-based science learning model. *Journal of Baltic Science Education*, 18(3), 321–332.
- Tomlinson, C. A. (2017). *How to differentiate instruction in academically diverse classrooms* (2nd ed.). ASCD.
- Umurohmi, U. (2023). Konsep Pembelajaran Diferensiasi Berbasis Kearifan Lokal: Sebuah Kajian Literatur Dengan Konteks Madrasah di Lampung. *Ar-Rihlah: Jurnal Inovasi Pengembangan Pendidikan Islam*, 2(8), 146–164.
- Wahab, A., Junaedi, J., & Azhar, M. (2021). Efektivitas Pembelajaran Statistika Pendidikan Menggunakan Uji Peningkatan N-Gain di PGMI. *Jurnal Basicedu*, 5(2), 1039–1045.
- Wahyudi, A. (2022). Pentingnya Pengembangan Bahan Ajar dalam Pembelajaran IPS. *JESS: Jurnal Education Social Science*, 2(1), 51–61. <http://ejournal.iain-tulungagung.ac.id/index.php/epi/index>
- Wahyuningsari, D., Hilmiyah, L., Kusumawardani, F., & Sari, I. P. (2022). Pembelajaran Berdiferensiasi dalam Rangka Mewujudkan Merdeka Belajar. *Jurnal Jendela Pendidikan*, 2(04), 529–535.
- Wijaya, H. (2021). 5(3), 67–75. (2021). Pengaruh Bahan Ajar terhadap Motivasi Belajar Siswa. *Jurnal Pendidikan*, 5(3), 67–75.