El Midad : Jurnal Jurusan PGMI
p-ISSN 2087-8389 e-ISSN 2656-4289
website : http://journal.uinmataram.ac.id/index.php/elmidad
Vol. 17 No. 3 Desember 2025
p.498-510
email : elmidadpgmi@uinmataram.ac.id

IMPROVING THE UNDERSTANDING CONCEPT OF LOCAL WISDOM BASED ON PROBLEM-BASED LEARNING: TEACHING MATERIALS "LENTERA" IN ELEMENTARY SCHOOL

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ABSTRACT

This study is motivated by fourth-grade students who have difficulty understanding the concept of IPAS, especially in local wisdom material. Based on the observation of the lack of teaching materials that support learning and teacher-centred learning methods. The purpose of this research is to develop PBL-based "LENTERA" teaching materials that can improve the understanding of grade IV elementary school students regarding local wisdom material. This research employs the Design and Development (D&D) methodology with the ADDIE model, which includes the Analysis, Development, Implementation, and Evaluation stages. The results of this study indicate that teaching materials are very feasible to use, with material experts getting a percentage of 95% very feasible category, design experts getting a percentage of 95% very feasible category, and learning practitioners getting a percentage of 92.5% in % very feasible category based on the results of limited trials of grade IV elementary school students. This study concludes that PBL-based "LENTERA" teaching materials are highly effective for grade IV elementary school students in understanding the concept of local wisdom material.

Keywords: Problem-Based Learning, Concept Understanding, Local Wisdom

INTRODUCTION

Local wisdom is closely related to the traditional culture of a place. Local wisdom contains many views and guidelines, providing people with a reference for carrying out actions in daily community behaviour (Usop et al., 2021, p. 2). Local wisdom plays a vital role in the sustainability of life. By applying and learning from it, we can preserve the culture of cooperation, mutual respect, and tolerance. This culture needs to be formed from an early age, so that people in Indonesia can live based on their cultural customs. Character building can be applied to students, one way being through education (Jamaah et al., 2024, p. 2). The curriculum plays a vital role in education because it determines the direction, content, and process of education, ultimately shaping the qualifications of graduates from an educational institution (Anggraini et al., 2022, p. 3). Understanding of local wisdom material can be learned through Social Science (IPS) subjects in the independent curriculum. Social science is integrated with Natural Science (IPA) into IPAS subjects (Husna et al., 2023, p. 6).

In accordance with the learning objectives of IPAS, social studies learning has a vital role in shaping students' character and insight into social life. The Decree of the Head of the

Education Standards, Curriculum and Assessment Agency of the Ministry of Education, Culture, Research and Technology Number 032 of 2024 states that there are several learning objectives of IPAS, namely, (1) Take an active role in maintaining, maintaining, preserving the natural environment and managing natural resources and the environment wisely (2) understand members of a community group and nation and understand the meaning of being a member of the nation and world community so that students can contribute to solving problems related to themselves and the environment around them. Achieving IPAS lesson objectives, particularly in social studies on local wisdom material, will help form students who can recognise and preserve the culture in their environment. Social studies learning not only focuses on providing memorised concepts but also on helping students grasp the concepts simply so that they are easy to understand. Social studies learning can serve as a source for understanding the introduction of tradition (Mulyana et al., 2022, p. 3). Social studies learning aims to develop and guide students' abilities and understanding to be sensitive to their environment (Chodarsih et al., 2024, p. 5). The results of the literature review, according to Febiwanti et al. (2023, p. 112), say that social studies learning about human interaction with the environment is still under the control of the teacher, and the learning materials are usually dull.

According to Afandi's statement (2011, p. 12) states that there are several objectives of social studies learning in elementary schools as follows: (1) Know the concepts related to social life and the environment (2) Have the basic ability to think logically and critically, curiosity, inquiry, problem solving, and skills in social life (3) Have a commitment and awareness of social values and humanity (4) Have the ability to communicate, cooperate and compete in a pluralistic society, at the local, national and global levels. Social studies learning encourages awareness of social values, love of the environment, and preservation of local culture as part of the nation's identity. Understanding the concept of local wisdom in social studies material is expected to foster national insight, social values, cultural awareness, and an understanding of students' responsibilities in the community. The supporting factors for achieving students' concept understanding in social studies learning are through learning models that are contextual, interactive, and based on students' daily experiences (Hendracipta, 2021, p. 4). The Problem-Based Learning model allows students to develop a deeper understanding of social studies learning concepts. Through the PBL model, students will encounter real situations that require applying concepts of local wisdom.

In fact, based on observations in one of the schools in West Bandung Regency, students' understanding of local wisdom material is still lacking. They have not been able to State, identify, provide examples of, or apply logically the concepts they have learned. This was observed when

researchers conducted interviews and observations with teachers. Based on the results of observations, learning about local wisdom is also still delivered by the lecture method. Based on the results of the interview, the teacher chose this method because it was easy and practical to provide in class. Local wisdom material should be taught through an approach that involves students actively participating in the classroom, ensuring that learning is not one-way. In contrast, the lecture method is more suitable for informative and one-way types of material. In addition to the correct method, the use of teaching materials will also affect students' understanding of concepts. However, based on the interview results, the teaching materials consist solely of textbooks and oral explanations from teachers, lacking activities that directly involve students. As a result, students remain confused about the material on local wisdom delivered. Students are less interested in learning local wisdom material because there is a lack of teaching materials to support learning.

For local wisdom material to be well understood by students, it is necessary to make efforts to create effective learning (Yuniarti et al., 2024, p. 337). One approach is to develop teaching materials about local wisdom based on a learning model that encourages active student involvement in finding and understanding concepts through direct experience. The appropriate learning model used is the Problem-Based Learning (PBL) model. The Problem-Based Learning model facilitates the active involvement of students in the learning process. This model can improve students' understanding of concepts and help develop their critical thinking, creativity, and problem-solving skills (Darwati et al., 2021, p. 62). Problem-based Learning will also incorporate contextual issues, primarily focusing on local wisdom. This aligns with previous research by Zulfahrin (2019, p. 11), who used Problem-Based Learning teaching materials to enhance students' understanding of concepts in learning.

Research on developing teaching materials based on local wisdom has been widely conducted, but existing studies have not specifically integrated the PBL model to enhance students' understanding of concepts. Other studies examining local wisdom teaching materials have shown that using contextual teaching materials can increase students' interest and participation. However, these studies have not emphasised how the learning model can help students build a deep understanding of concepts through teaching materials. Based on the above problems, the researcher aims to develop teaching materials "LENTERA" with the Problem Based Learning model as an effort to improve concept understanding in local wisdom material for social studies phase B elementary school with the title "Development of Teaching Materials

'LENTERA' Based on Problem Based Learning (PBL) to Improve the Ability to Understand the Concept of Local Wisdom of Phase B Learners".

METODOLOGY

This research uses the Design and Development (D&D) method. Based on the opinion by Richey and Klein (2014), explaining that the D&D model is design and development research, which means a systematic research study based on stages in the design, development, and evaluation process aimed at producing tools and products from both learning and non-learning activities and to create new and improved products and models. The D&D method is primarily designed to inform instructional designers (IDs) that learning problems are discovered and solved empirically and systematically through a series of studies on the design, development, and evaluation process (Richey and Klein in Ellis & Levy, 2010, p. 108).

In this study, researchers developed teaching materials "LENTERA" with the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). Roza et al. (2022, p. 114) explain that Reiser and Mollenda developed the ADDIE model in the 1990s; these stages or steps can be implemented procedurally. There are benefits from the ADDIE model, namely as a guideline for building tools and infrastructure for training programs that are effective, dynamic, and support the performance of the training itself with stages that have been designed in such a way as to make it easier for educators with the ADDIE model because it is in a systematic and sequential stage in a row (Syahid et al., 2024, p. 259). A visualisation of these stages can be seen in Figure 1.

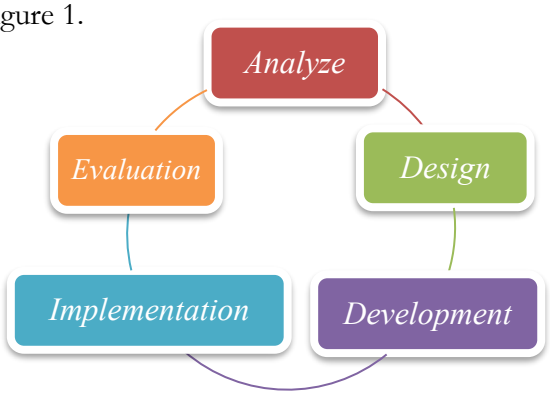

Figure 1. Stages of the ADDIE Model

(Source: Arianti et al., 2021, pp. 427)

The following is an explanation of the ADDIE stages that will be used in this study: 1) analyse: researchers analyse problems, needs, and curricula related to the development of "LENTERA" teaching materials based on Problem-Based Learning. Observations and interviews are conducted to identify the obstacles faced by teachers and students and to find solutions for improving their understanding of local wisdom concepts. The analysis of the materials focused on the learning outcomes of IPAS phase B in accordance with the Merdeka

Curriculum. The following table shows the learning outcomes of IPAS phase B in the Merdeka Curriculum:

Table 1. IPAS Phase B Learning Outcomes

Elements	Learning Outcomes
IPAS understanding	Learners understand the form and function of the five senses; the life cycle of living things and efforts to preserve them; issues related to the preservation of natural resources as an effort to mitigate climate change; the process of changing the form of substances and changes in the form of energy; sources and forms of energy and the process of changing the form of energy in everyday life; magnetic phenomena in everyday life, types of forces and their effects on the direction, motion, and shape of objects; roles, duties, and responsibilities as well as social interactions that occur around the place of residence and school; recognize the location of the city/district and province where he lives through conventional/digital maps; variety of landscapes and their relationship to people's professions; biodiversity, cultural diversity, local wisdom, family and community history where he lives, and efforts to preserve them; as well as differences in needs and wants, the value of currency and its functions.

2) design: developed a teaching material design incorporating West Java local wisdom, including themes, illustrations, content, characters, and visual design. A blueprint was prepared to ensure the teaching materials were engaging and aligned with learning needs. The design is created using Canva. 3) development: developing the design into instructional materials, then validating it by subject matter experts, design experts, and learning practitioners. 4) Implementation: Testing the instructional materials on Phase B students through a pretest, using the "LENTERA" instructional materials, and a post-test to measure improvements in conceptual understanding.

5) evaluation: assessing the results of the pilot test and expert feedback. If deficiencies are identified, the instructional materials are revised; if not, the product is deemed suitable for use.

Data collection techniques in this development research include interviews, questionnaires, and tests. The instruments used in this development research include interview guidelines to gather information, an expert validation questionnaire to assess the feasibility of

teaching materials, and pre-test and post-test assessments to evaluate students' initial and final abilities in understanding local wisdom material.

The eligibility criteria described by Wismanto et al. (2022, p. 21) are as follows:

Table 2. Kriteria Interpretasi Skor Kelayakan

No.	Percentage	Criteria
1	0-25,99%	Not Feasible
2	26-50,99%	Less Feasible
3	51-75,99%	Feasible
4	76-100%	Very Feasible

RESULT AND DISCUSSION

Result

The results of analysing problems, needs, and curriculum were obtained during the preliminary study. Based on the results of the problem analysis, it was found that students' understanding of local wisdom material was still low. This was revealed during an interview with a fourth-grade elementary school teacher in the West Bandung district, who stated that students lacked understanding and struggled to explain local wisdom. Students were not able to explain what parts of local wisdom were. Then, researchers analysed the needs of students in learning IPAS, especially on local wisdom material. Based on the interview results, it is found that the only learning resources used are the books provided by the government. Based on observations of students who prefer learning materials with more illustrations and images, teaching materials are needed to explain local wisdom more deeply, as the book used for learning about local wisdom provides little explanation. There is a lack of illustrations and images in the book.

Based on the results of the analysis of the curriculum used in learning at school, learning refers to the independent curriculum of learning outcomes, learning objectives, and indicators of teaching objectives, referring to the Decree of the Head of the Education Standards, Curriculum and Assessment Agency of the Ministry of Education, Culture, Research and Technology number 032/H/KR/2024. Therefore, this research focuses on phase B learners, specifically grade IV elementary school students. In the independent curriculum, there are two elements in the IPAS subject: the IPAS understanding element and process skills. This study focuses on understanding IPAS, particularly regarding CP (learning outcomes), specifically on students' understanding of local wisdom. Researchers designed PBL-based "LENTERA" teaching materials.

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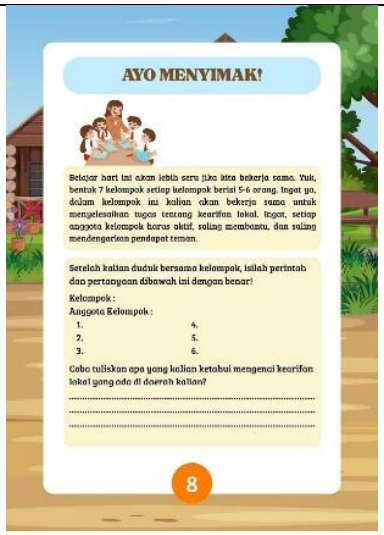
Researchers create characters and image illustrations to be included in teaching materials, aligning with the title of the material. The character contained in the teaching material "LENTERA" is named the character "Udin", the character uses typical West Javanese clothing, namely pangsi clothes or Sundanese beskap, this outfit consists of dark-colored tops (usually black) and subordinate batik-patterned cloth or typical Sundanese lurik. The character "Udin" also uses a head covering called a bendo. This head covering is a traditional Sundanese headband, typically made of batik cloth and wrapped in a specific way around the head. The character was chosen because this teaching material will be developed and implemented in schools located in West Bandung Regency, West Java. Making figures and designs of PBL-based "LENTERA" teaching materials with the help of the Canva application. The following is the design of the PBL-based "LENTERA" teaching materials, as shown in Table 3.

Table 3. Teaching Material Product "LENTERA" Based on Problem-Based Learning

.No	Product From	Description
1.		The front cover of the teaching material "LENTERA" contains the title of the teaching material, the author's identity, the target users of the teaching material, namely, phase B students in grade IV elementary school, a picture of the character "Udin", and illustrations of local wisdom material. The title on the front cover of this teaching material is made with a large font size, a professional font, and a colour that contrasts with the background. The writing of this title uses Garamond typeface, TAN tankwood, and Bree serif with sizes 20, 24, and 75.

2.		The problem orientation section introduces real problems or situations that students will study and solve. This problem orientation is the first part of the Problem-Based Learning (PBL) syntax. The purpose of this problem orientation is to arouse curiosity, train critical thinking, and encourage students to find solutions in the stories presented, along with interesting supporting images relevant to everyday life.
3.		This section contains triggering questions that can connect problem orientation with solutions provided to learners. There are four lighter questions in the "LENTERA" teaching materials, each with an answer column that learners can fill in. In this section, the PBL syntax is used to orient learners to the problem.
4.		In the "Let's Listen!" section, learners will be divided into groups and sit with their respective groups. Learners are asked to write down the group and the names of the group members. Then, learners are asked to answer initial questions to assess their knowledge of local wisdom. In the question column, there is an answer column for respondents to provide their answers. In this section, the second PBL syntax is discussed, namely organising students to learn.

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5.		In the “Let's Read!” section, students are asked to investigate and find solutions to the given problem orientation. They are also invited to read material to find solutions to these problems. This section covers the third part of PBL syntax, namely guiding individual or group investigations.
6.		In the “Let's Try!” section, the character Udin will instruct students to write down their solutions to the problem-solving questions provided. The character “Udin” also provides steps so that students do not feel confused. This section covers the fourth part of the PBL syntax, namely developing and presenting work.
7.		The “Let's Answer!” section contains two questions that ask how the learners can defend the problem-solving solutions they have provided. This section covers the fifth part of the PBL syntax, namely analysing and evaluating the problem-solving process.

The developed teaching materials are then subjected to a validation test by material experts, design experts, and learning practitioners. The validation results can be seen in Table 4.

Table 4. Expert Validation Results

Expert Validation	Validation Result	Criteria
Material Expert	95%	Very Feasible
Design Expert	95%	Very Feasible
Learning Practitioner	92,5%	Very Feasible

Based on Table 4, the assessment obtained by experts shows that the results of material expert validation obtained a percentage of 95% with a very feasible category, the results of design expert validation obtained a percentage of 95% with a very feasible category, and the results of learning practitioners obtained a rate of 92.5% with a very feasible category.

Researchers conducted tests in the form of a pre-test and a post-test. Pre-test activities are undertaken to gather data on students' initial ability with local wisdom material before they use the PBL-based "LENTERA" teaching materials. Meanwhile, the post-test was conducted to determine the increase in students' ability to understand concepts after using PBL-based "LENTERA" teaching materials. To observe the rise in students' understanding of local wisdom material after using "LENTERA" teaching materials, the lowest, highest, and average values of the pre-test and post-test results are shown in the table below.

Table 5. Lowest Score, Highest Score, Average Score

	Pre-Test	***Post-Tes***
Lowest Score	10	65
Highest Score	35	95
Average	22,78	79,44

Based on the table above, the lowest pre-test score is 10 and the highest is 35. The lowest post-test score is 65, and the highest post-test score is 95. There is a difference in the average pre-test and post-test scores. The pre-test average was 22.78, and the post-test average was 79.44. Based on these results, it can be concluded that the average post-test value is greater than the average pre-test value. The average N-Gain value in this study is 0.73, indicating that the improvement in students' understanding of local wisdom material meets the high criteria.

DISCUSSION

The results of the study indicate that the "LENTERA" teaching material, which is based on Problem-Based Learning, is highly suitable according to expert validation. The average pre-test score of the students was 22.78, which increased to 79.44 in the post-test. The N-Gain score of 0.73 falls into the high category, indicating a significant improvement in students' conceptual understanding after using the instructional materials. Factors contributing to this improvement

include engaging presentation of the material, the use of rich visualisations, and simple, easy-to-understand language. Students demonstrated high enthusiasm during the learning process, aligning with the characteristics of active and meaningful learning in the Problem-Based Learning model.

The findings of this study align with the opinion of Nuryasana et al. (2020) that teaching materials play an essential role as a source of information for teachers and students. Magdalena et al. (2020) also support these results by explaining that teaching materials help teachers save time, encourage teachers to act as facilitators, and make learning more interactive. Furthermore, the results of this study reinforce the theory of Mutaqi et al. (2021) that printed modules, as one type of teaching material, can facilitate independent learning. The findings are also in line with Fiteriani et al. (2021), who emphasise that attractive visualisations and simple language can increase students' interest in learning.

This study expands the application of Problem-Based Learning theory by integrating local wisdom materials, thereby confirming that PBL is effective not only for science or exact subjects but also for culture-based learning and regional values. This enriches the educational literature linking problem-based learning with local contexts. The "LENTERA" teaching materials contribute to the development of designs that combine attractive visualisations, learning companions, and simple language. This adds to the references for teaching material designs that can enhance students' understanding of concepts.

CONCLUSIONS

Based on the results of research related to the development of teaching materials "LENTERA" based on Problem Based Learning (PBL) as an effort to improve the ability to understand the concept of local wisdom of phase B students in the previous chapter, the following conclusions are formulated: 1) The initial design of the "LENTERA" PBL-based teaching materials for fourth-grade students on local wisdom is in the form of a 40-page printed module, arranged according to the PBL syntax, namely problem orientation, organizing learning, guiding investigation, presenting results, evaluating, and containing four indicators of concept understanding: explaining, identifying, exemplifying, and applying. 2) Feasibility was obtained from expert validation with a percentage of 95% for subject matter experts, 95% for design experts, and 92.5% for learning practitioners, falling into the category of highly feasible with minor improvements. 3) The final product was revised based on validator feedback, including adjustments to problem orientation, prompting questions, activity design (Let's Listen, Let's Read, Let's Answer), and replacing illustrations with authentic images. 4) There was an

improvement in students' conceptual understanding, as evidenced by an increase in the average pre-test score from 22.78 to 79.44 in the post-test, with an N-Gain of 0.73, categorised as high.

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