

# Pocket Book: Local Wisdom-Based Mathematics Learning

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**Abstract:** *This research produced a development product in the form of a Local Wisdom-Based Pocket Book Learning Media in Mathematics. The aim of this study was to develop and determine the validity of the Local Wisdom-Based Pocket Book Learning Media. The research method used was Research and Development (R&D), which followed the ADDIE development model consisting of five stages: Analyze, Design, Development, Implementation, and Evaluation. However, this study only reached the development stage. The research was conducted at SMPN 1 Belopa, with expert validators as the research subjects. To determine the validity of the developed pocket book learning media, the researcher provided validation sheets to the four expert validators, namely subject matter experts, media and design experts, and language experts. The results of this study showed that the Local Wisdom-Based Pocket Book Learning Media met the criteria for valid use in the mathematics learning process, as evidenced by the assessment results from the subject matter expert validator (85.41%) with a category of very valid, the media expert validator (69.4%) with a valid category, and the language expert validator (70%) with a valid category. Based on the average scores given by the four validators, the overall average score was 74.93, indicating validity. Therefore, it can be concluded that the developed product, the Local Wisdom-Based Pocket Book Learning Media in Mathematics at Belopa, is considered valid.*

**Keywords:** Pocket Book, Local Wisdom, Mathematics Learning

## 1. Introduction

Mathematics is considered a difficult subject by some students. It is a branch of knowledge obtained through the learning process, acquired through reasoning and thinking. Mathematics encompasses various topics, including addition, subtraction, and others.

The learning process, fundamentally, is a form of communication, and the media used in teaching is referred to as instructional media. Instructional media includes anything that can convey messages through various channels, stimulate students' thoughts, feelings, and willingness to learn, and facilitate the acquisition of new information, thereby enabling the achievement of learning objectives. In this modern era, the education system is becoming increasingly advanced, and as such, teachers must keep up with the times to ensure that the learning process aligns with the current conditions.

Based on the interview results obtained by the author with Mrs. Andi Kartini, S.Pd, the Mathematics teacher for Grade VII at SMPN 1 Belopa, it was revealed that the learning media used during the mathematics teaching process is the textbook package. However, the textbook package used in the school is too thick, causing students to become bored with reading. The teacher has previously used pocket book learning media, and some students were interested in using this pocket book learning media. However, the pocket book learning media used was not based on local wisdom. Therefore, the author is interested in developing pocket book learning media based on local wisdom so that students do not forget their own culture.

The learning process using teaching materials in the form of learning media developed for mathematics education is the pocket book learning media based on local wisdom. The pocket book learning media is a small-sized book,

lightweight, can be carried in a pocket, and instantly accessible for reading. Another definition states that a pocket book is one of the print-based learning media known as pocket book has a similar form to a booklet, with the difference being that the pocket book learning media is designed to be smaller and more practical, making it portable. The pocket book learning media is used as a tool to deliver data containing instructional materials and other unidirectional content, thus enhancing students' abilities. The pocket book learning media provides concise and clear material, includes references to local wisdom examples, and presents problem formulations to facilitate students' understanding of the conveyed material and enable them to learn more about local wisdom in their respective regions. Additionally, it serves as an assessment tool for evaluating students' ability to apply their mathematical knowledge.

The use of pocket book learning media based on local wisdom can serve as an alternative medium for smooth teaching both inside and outside the classroom, with an appealing design enriched with illustrations of local wisdom. Therefore, students not only learn mathematics but also gain an understanding and appreciation of local wisdom in Indonesia. As users of pocket book learning media based on local wisdom, students are expected to find it easier to engage in education and overcome difficulties in mastering the subject of mathematics, both inside and outside the classroom. This, in turn, motivates students to learn mathematics and understand local wisdom, both within the school environment and beyond.

## 2. Theory Description

### 2.1 Learning Media

According to the terminology, the word "media" comes from the Latin word "medium," which means intermediary. In Arabic, the word "media" comes from the word "Wasila,"

which means the messenger or intermediary of a message from the sender to the receiver. In the context of learning, media serves as the intermediary or conduit between the source of the message and the receiver of the message. It stimulates the mind, emotions, attention, and willingness of the learner, encouraging their active involvement in the learning process. Learning media refers to all forms of systematically designed physical equipment used to convey information and foster interaction. The physical equipment mentioned includes tangible objects, printed materials, visuals, audio-visuals, multimedia, and web-based resources.<sup>2</sup>

Learning media is a teaching aid, which supports the use of teaching methods employed by teachers.<sup>3</sup> According to Azhar Arsyad, learning media refers to anything that can be used to deliver messages or information in the teaching and learning process, aiming to stimulate students' attention and interest in learning.<sup>4</sup> Based on the explanations from the experts, it can be concluded that media pembelajaran refers to tools that can assist the teaching and learning process, making the conveyed message clearer and enabling the educational or learning objectives to be achieved effectively and efficiently.

## 2.2 Pocket Book Learning Media

Print media in education that is small size, such as pocket books, is expected to serve as a learning media that can be used as supplementary teaching materials to capture the attention and interest of learners. It also aims to develop the potential of learners to become independent in the learning process. According to Setyono, pocket book learning media refers to small books that contain information that can be carried in a pocket or bag, with the purpose of facilitating student learning.<sup>6</sup> The benefits of using pocket book learning media as a tool are that it delivers information about subject matter and other topics in a one-way manner, thereby developing the potential of learners to become independent learners.

Pocket book learning media is a form of small book, one of the print media that contains summarized material presented in an appealing format with the inclusion of visuals such as illustrations and the use of colored fonts. This design aims to elicit students' sympathy and engagement in learning. Pocket book learning media is a type of print learning media with a small and portable design, allowing it to be carried anywhere and used anytime.

Pocket book learning media has distinct characteristics compared to other instructional materials, including:

- 1) Pocket book learning media has size of 10.5 x 14.8 cm.
- 2) The smaller size of pocket book learning media allows students to study the material anywhere and anytime.
- 3) Despite its small size, pocket book learning media contains comprehensive material with summarized content to help students understand the material quickly.
- 4) The number of pages is not limited, but it should have a minimum of 24 pages.
- 5) It follows the principles of popular scientific writing.
- 6) Pocket book learning media can be used as a practical

teaching tool for teachers.

- 7) Teachers do not require special skills or expertise to use pocket book learning media as a resource in the classroom. Media pembelajaran *pocket book* biasanya memiliki halaman.

Based on the information provided, we can conclude that pocket book learning media is a small, attractive, and practical pocket-sized book that enables learners to carry it anywhere and anytime due to its compact size. It presents concise and clear material. However, if a pocket book learning media is too thick, it may lead to student boredom. Additionally, being in print form, pocket book learning media is susceptible to damage.

## 2.3 Local Wisdom

The term local wisdom consists of two words: local and wisdom. Local refers to the local or specific place, while wisdom refers to knowledge or wisdom. In other words, local wisdom can be understood as the ideas, values, and perspectives that are specific to a local community and are characterized by wisdom, sound judgment, and positive values that are embedded and followed by its members. Thus, local wisdom represents the behaviors or value systems of a community in their interactions and way of life.<sup>7</sup> It refers to the knowledge, values, customs, traditions, and practices that are unique to a particular local community or culture. Local wisdom embodies the collective wisdom and experiences of the community, often passed down through generations, and reflect their deep understanding of their environment, social dynamics, and sustainable ways of living. It is often considered an important cultural heritage and resource that can contribute to the overall development and well-being of a community.<sup>8</sup>

According to Ulfa Fajriani, local wisdom refers to the worldview, knowledge, and various life strategies manifested through activities carried out by the local community in addressing their needs and challenges. In other words, learning based on local wisdom is a process that assists learners in effectively acquiring knowledge, drawing upon the behaviors and value systems of the local community in their interactions. In this context, it specifically refers to the local wisdom of the Luwu region.<sup>9</sup> Apart from introducing students to the local culture of Luwu, character education based on local cultural wisdom also aims to transform attitudes and behaviors of existing human resources to enhance work productivity and prepare them for future challenges. The application of culture in mathematics learning and meaningful cultural experiences can foster students' ability to develop cultural heritage in the present context using the basis of mathematical creative thinking skills. In relation to education based on local wisdom, mathematics educators are expected to fulfill their role in presenting themselves as honest individuals with noble character, serving as role models for students and society. They should act in accordance with religious, legal, social, and national cultural norms in Indonesia through the mastery of learning theories and principles that promote education.<sup>10</sup>

According to the researcher, local wisdom in Luwu can be

observed in various aspects of traditional life, such as the traditional houses, wedding customs, traditional cuisine, and traditional clothing. These elements reflect the cultural traditions and practices that have been passed down through generations in the Luwu community. Local wisdom encompasses the knowledge, values, and practices embedded in these traditions, which contribute to the cultural identity and heritage of the Luwu region.

## 2.4 Local Wisdom-Based Pocket Book

A pocket book based on local wisdom refers to a small book that is created with the intention of incorporating and promoting the cultural knowledge, values, and practices of a specific local community. The content of the pocket book is centered around the local wisdom and traditions of a particular region, highlighting aspects such as traditional customs, beliefs, local history, indigenous knowledge, and sustainable practices. The aim is to preserve and transmit the local wisdom to future generations and promote an understanding and appreciation of the cultural heritage within the community. The pocket book serves as a portable and accessible resource that can be carried anywhere, allowing individuals to delve into the local wisdom and engage with the richness of their cultural heritage.11

Media pembelajaran pocket book berbasis kearifan lokal can serve as an alternative learning media used to facilitate the teaching and learning process both inside and outside the classroom. Its design incorporates attractive illustrations related to local wisdom. Thus, students can learn mathematics while also understanding and remembering the local wisdom found in Indonesia. By utilizing pocket book learning media, students can engage with the local wisdom of Luwu, which helps capture their attention and prevent them from feeling bored or disinterested. This way, pocket book learning media becomes an effective tool for student engagement and learning.

## 3. Methodology

The research method employed in this study is research and development (R&D). The location of the study was SMPN 1 Belopa, and the research was conducted from March 24, 2021, to January 3, 2022. The research subjects included expert validators in the field, including content experts, media and design experts, and language experts. The research object focused on developing a local wisdom-based pocket book learning media for mathematics instruction.

The research procedure utilized by the researcher follows the ADDIE model, which is adjusted to meet the research needs. The research procedure consists of five stages, but in this study, the researcher only reached three stages: data analysis, design planning, and product development, including validation testing and the final product development.

### 1) Preliminary research stage

In the first stage of this research, the researcher conducts the analysis phase. Analysis is an initial step that needs to be carried out because it involves examining the problems encountered during the teaching and learning process and

formulating solutions. In this stage, the analysis of mathematics instruction and teaching materials takes place.

The analysis of mathematics instruction involves observation and interviews with teachers at the research site. The purpose of this analysis is to identify any deviations from the intended learning goals and objectives.

Based on the observations and interviews, it was found that many students have difficulty understanding the concepts of plane figures (triangles and quadrilaterals).

This is because the use of the standard textbooks is considered ineffective as they are thick and monotonous, leading students to focus solely on the teacher's explanations without paying much attention to the textbooks. The textbooks are rarely used for independent learning since they are not designed for that purpose.

Moving on to determining the content and materials for the pocket book learning media, the researcher conducted an analysis of the teaching materials. Based on the analysis, it was found that the researched school still relies heavily on standard textbooks as the main teaching materials. Additionally, during the interviews, it was revealed that pocket book learning media is already being used in the school, but it is not based on local wisdom. Therefore, the researcher aims to develop a local wisdom-based pocket book learning media.al.

### 2) Initial product development stage

After identifying the problems from the analysis stage, the next step is the design stage. This research will utilize the data obtained from the initial analysis to create the product design.

**Table 1:** Design of Pocket Book Learning Media

No	Design	Explanation
1.	Physical formk	The physical form of the pocket book is an A6-sized paper measuring 10.5cm x 14.5cm. It is printed in green color and uses the Calibri font with a font size of 11. The pocket book consists of 43 pages.
2.	Content	Quadrilaterals and triangles
3.	Language	Indonesian language
4.	Section or Part	a. Introduction :Cover based on local wisdom of Luwu, Preface, Table of Contents, Core Competencies and Basic Competencies, Local wisdom information, and Concept map. b. Content section: presentation of material, example questions and practice exercises, illustrations depicting local wisdom of Luwu. c. Conclusion: bibliography
5.	The function	As a self-learning instructional media, both inside and outside the classroom.

### 3) The development

a) Drafting the pocket book learning media In this phase, the initial form of the pocket book learning media is created. All initial designs of the pocket book learning media developed in the design phase are combined to create a draft of the pocket book learning media. This draft is then submitted to the expert team to assess the validity of the pocket book learning media before it is printed into a book. The initial form or draft of the pocket

book learning media consists of printed sheets of high-quality paper, including the cover, content section, and closing section of the pocket book learning media.

- b) Validity testing of the pocket book learning media. In this stage, the validity of the pocket book learning media is tested. The validity testing is conducted by a panel of experts consisting of three individuals, including a media and design expert, a subject matter expert, and a seventh-grade teacher. The subject matter expert evaluates the suitability of the content and other related aspects of the material. The media and design expert assesses the adherence to minimum standards in the development of the pocket book learning media and evaluates its attractiveness in the learning process. The language expert examines the adherence to minimum language standards in the development of the pocket book learning media. These validity tests are conducted to determine the level of suitability and validity of the pocket book learning media as a teaching material. The validity testing is carried out using a validation sheet instrument.
- c) Revision of Validity Testing Results: After receiving evaluations from the evaluation team, the next step is to revise the developed product based on the validation results. Revision is done to address any criticisms or suggestions provided by the validators. The revision process involves carefully considering the feedback and making necessary modifications to improve the product. This may include clarifying unclear information, addressing any identified weaknesses, refining the design or layout, and incorporating suggested enhancements to ensure the product meets the required standards and objectives.
- d) The printing of the pocket book in the form of a book involves. The process of reproducing the finalized content onto physical pages. Once the revisions and finalizations have been completed, the pocket book is prepared for printing.

The printing process typically involves several steps, including pre-press preparation, printing, and post-press finishing. In the pre-press stage, the digital files of the pocket book, including the cover and interior pages, are prepared for printing. This may involve formatting the content, adjusting colors and layout, and ensuring proper alignment.

Once the pre-press preparation is complete, the files are sent to a printing press where the actual printing takes place. The pocket book pages are printed on sheets of paper using high-quality printing techniques, such as offset printing or digital printing. The cover and interior pages are printed separately and then bound together to form the book.

The techniques used to collect validation data from the expert validators, including the subject matter expert, media and design expert, and language expert, may involve several methods. Expert Validation Sheet for Subject Matter, Media, Design, and Language contains indicators to obtain information about the quality of the learning material. The expert validation sheet for subject matter, media, design, and language includes specific indicators that are used to gather information about the quality of the learning material. These indicators are designed to assess various aspects of the

learning material and provide valuable insights into its overall quality.

The indicators cover different dimensions of the learning material, including: (1) Content: The experts assess the accuracy, relevance, and comprehensiveness of the learning material's content. They examine the clarity of explanations, the appropriateness of examples, and the effectiveness of the exercises in supporting learning. (2) Media and Design: The experts evaluate the visual presentation, layout, and design elements of the learning material. They assess the effectiveness of visuals, graphics, and other media in enhancing understanding and engagement. (3) Language: The language experts focus on the linguistic aspects of the learning material, such as grammar, vocabulary, readability, and coherence. They provide feedback on the language usage, sentence structure, and overall clarity of the material. The data analysis techniques that will be used in this research are as follows:

#### 1) Qualitative descriptive analysis

The qualitative descriptive analysis technique is used to manage the data obtained from the reviews of mathematics experts, design and media experts, subject matter experts, language experts, teachers, and supervising professors. This data analysis technique involves grouping information from qualitative data, such as input, feedback, criticism, and suggestions for improvement obtained from questionnaires and interviews. The analysis results are then used to revise the development product accordingly.

#### 2) Quantitative descriptive analysis

This technique is used to manage data obtained through validation questionnaires by experts. Validation refers to the degree of accuracy between the data observed in the research object and the data reported by the researcher. Thus, valid data is data that does not differ between the researcher's report and the actual data observed in the research object. Before the instrument is used, a validity test is conducted to assess the suitability of the instrument being used. The activities conducted in the data analysis process for the validity of the pocket book media learning product involve providing the validators with validation sheets for each instrument to be filled out using a Likert scale ranging from 1 to 4, as follows:

Score 1: Not relevant

Score 2: Less relevant

Score 3: Sufficiently relevant

Score 4: Highly relevant

The validation data is analyzed using the formula:

$$\text{Presentase} = \frac{\sum \text{skor per item}}{\text{skor maksimum}} \times 100\%$$

Based on the percentage results, it is categorized according to the following Table 3.2:

**Table 2:** Pengkategorian Validasi

Percentage Range	Category
80% - 100%	Highly Valid
60%-79%	Valid
40%-59%	Less Valid
Below 40%	Not Valid

#### 4. Analysis and Discussion

The research development study yielded data regarding the necessary requirements for developing a locally-based pocket book learning media on the topic of plane geometry (triangles and quadrilaterals) at SMPN 1 Belopa. The data on the feasibility of the pocket book learning media were obtained through questionnaire calculations during the validation process by subject matter experts, media and design experts, as well as language experts.

The research procedure employed by the researcher utilized the ADDIE development model adapted to the school's needs. The research procedure consists of five stages, but in this study, the researcher focused on three stages: data analysis (analyze), planning (design), and product development, which includes validation testing and the final product (development).

##### 1) The development of the pocket book-based learning media with a local wisdom.

The development of the pocket book-based learning media with local wisdom aims to understand the stages of developing the pocket book and to determine the validity of the pocket book as a learning resource. The ADDIE model is used as a reference in this research and consists of the following activities:

**Analysis:** This stage involves analyzing the learning needs and curriculum requirements. The researcher identifies the specific requirements for developing the pocket book and aligns it with the curriculum objectives.

**Design:** In this stage, the researcher designs the framework of the pocket book and develops the assessment instruments. The design includes incorporating local wisdom concepts and ensuring the content is relevant and engaging.

**Development:** In this stage, the researcher develops the draft version of the pocket book based on the design. The pocket book is then subjected to validation by expert validators. However, in this particular research, the development process stops at the development stage, as the focus is on product development.

The pocket book-based learning media with local wisdom developed for 7th-grade students undergoes validation by multiple experts. Based on the validation results, the researcher makes several revisions based on the level of feasibility and appropriateness.

##### 2) The validation results of the development of pocket book-based learning media with local

In that section, based on the validation results by the content expert, media expert, and language expert, scores of 85.41% in the valid category, 69.4% in the valid category, and 70% in the valid category were obtained, with an average percentage of 74.9% which falls within the valid category.

The results of this study are in line with the research conducted by Surya Najma titled "Development of Pocket Book-Based Learning Media with Realistic Mathematics Approach (PMR) for Students' Mathematical Understanding

in Grade VIII of SEI Bejangkar Private Junior High School in the Academic Year 2019/2020." It shows the process of developing the pocket book learning media through the define and design stages. In terms of the quality of validity, the pocket book learning media meets the valid criteria, as indicated by the average validity score of 4.24, classified as very good. Meanwhile, the effectiveness of the pocket book learning media in terms of students' mathematical understanding also meets the effective criteria, as indicated by the increase in the percentage of students' learning mastery from the pretest (11.1%) to the post-test (78%) with a good category. The significance of the effectiveness was also measured through a t-test, with the result of  $t$  calculated = 10.965 and  $t$  table = 2.056, where  $t$  calculated >  $t$  table, indicating a significant difference.

The results of this study are consistent with the research conducted by Harnisa Fitri et al. from Borneo Tarakan University, Department of Mathematics Education, in their thesis titled "Development of Local Wisdom-Based Pocket Book as a Learning Resource for Number Materials". This research is a research and development study conducted at SMP Negeri 8 Tarakan in Grade VII, Academic Year 2018/2019. The development model used is a modified version of the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). It is shown that the developed local wisdom-based pocket book product, validated by content experts, obtained a category of highly appropriate with a percentage of 85.71%, validated by layout experts with a category of highly appropriate with a percentage of 86.25%, and validated by language experts with a category of highly appropriate with a percentage of 85%. Meanwhile, based on the field research and user responses from students, a percentage of 83.5% was obtained, indicating a highly practical category. Additionally, the research conducted by Devi Ariyantika from Intan Lampung State Islamic University in her thesis titled "Development of Pocket Book of Mathematics Media for Students with Special Needs (ABK) to Facilitate Mathematical Concept Understanding" showed that the pocket book of mathematics for students with special needs received a response of "very interesting" from students with a score of 3.27 in a large-class test. The media was found to be effective in the learning process with an effect size score of 1.2, indicating high effectiveness, based on the pretest and posttest results. Therefore, it can be concluded that the developed media received a highly interesting and effective response in its implementation.

Based on the data, it can be said that the developed pocket book-based local wisdom learning media has utility as a learning tool in the learning process, serving as an instrument that aids in achieving educational goals. Additionally, the pocket book-based local wisdom learning media also enables students to learn independently because it is easily accessible anywhere and anytime due to its small size.