

Teaching Material Technology Based On Local Wisdom

Retno Wulandari¹, Sri Utaminingsih², Mohammad Kanzunnudin³

^{1,2,3}Masters of Elementary Education Study Program, Faculty of Teacher Training and Education, Universitas Muria Kudus, Indonesia

¹aqilla87@gmail.com

Abstract. This study was to determine the feasibility of thematic teaching materials based on local wisdom. Research method refers to the theory of Borg and Gall, namely potential and problems, research planning, initial product development, field trials, revisions, validation, and final improvement. The data collection used observation, interview and questionnaire. Sources of data were grade VI students and teachers in Rembang District. The feasibility of the product is seen from the results of the validation of material experts and linguists and is strengthened by the results of questionnaire responses from teachers and students. From the material expert validation process obtained an average result of 3.47 with a percentage of 87% and very good category. The validation of linguists obtained 90% results with an average of 3.6 (very good). For the results of teacher responses obtained an average total score of 3.85 with a total score of 3466 (very good). For the results of student responses obtained an average value of 3.94 and a total value of 568 (very good). Based on the results of the validation and reinforced by the results of student and teacher responses, the thematic teaching materials based on local wisdom of Rembang were declared suitable.

1. Introduction

Currently, the Indonesian nation uses the 2013 curriculum. The 2013 curriculum emphasizes developing experiences for students to be able to master the required competencies. The 2013 learning curriculum emphasizes aspects of the learning experience that are in accordance with interests, talents, and contextual. To realize contextual learning, it is necessary to confirm elements of local culture (local wisdom) in learning resources so that the class is active in order to achieve incoming learning experiences.

Socio-cultural elements cannot be damaged in learning at school. As stated by [1] "Local culture is applied as a local thought that is wise, full of wisdom, good values, rooted, and followed by many people". According to [2] Local wisdom is defined as local wealth that contains a policy or point of view of life. Local knowledge or local wisdom is not static but dynamic and changes over time. Indigenous knowledge is knowledge that people in a particular community have developed over time, and continue to develop [3]. Local wisdom for some people is ignored because the main view is wisdom. Local wisdom-based education provides knowledge, skills, and to students so that they have knowledge of environmental conditions Local wisdom can be manifested in the form of wise words in the form of advice, proverbs, poetry, folk tales (oral stories), rules, principles, norms or social and moral rules that become social systems, additional ceremonies, and habits seen in social attitudes and interactions [4]. [5] states that "Elementary school students are the nation's generation who are very much in accordance with their stages of development to instill cultural values". Therefore the selection of teaching materials in learning must be appropriate so that students have strong character. This is as expressed by [2] "Meticulousness in selecting text materials is of importance so as to enable students to

not only gain knowledge, but build their characters based upon decent values brought by local wisdoms. Accordingly, students, teachers, schools, and parents should be more thorough in selecting textbooks to support better learning ". Learning in elementary schools currently uses thematic learning. Thematic learning is learning that is combined with themes to capture interrelated material from the subject matter, the theme must be fertile, meaning that the theme invites many concepts from various fields of study. One of the important things in the 2013 Curriculum is learning material. Theme-based learning materials are considered as all sources (information, tools, or texts) that are arranged systematically, which presents a complete picture of the competencies that students will master through a learning process that encourages active and fun student involvement [6]. In thematic learning, teachers are required to be able to package learning to be attractive. Teachers are also required to be creative and able to use whatever resources and media are available around them to support their classroom teaching [7].

In learning, teaching materials are also needed as a learning resource. Teaching materials are used as a means to achieve learning objectives. This is also explained by [8] who explained, "Maybe similar reading tools need to be developed for other texts as well so that students can see textbooks as useful resources in their environment so that they can interact with them. According to [9] Teaching materials is a set of lesson materials which are arranged systematically, it can guide and facilitate students in learning. The teaching materials used must be up-to-date and accurate. It means teaching materials are in accordance with latest realities so that learning becomes interesting for students.

Based on the results of the analysis of the student book theme 1 class VI, it is known that the learning material has been adjusted to the characteristics of the students, but learning materials are still needed that introduce the culture or local wisdom of each region. Good learning is contextual learning to make it easier for students to associate learning material with conditions that will be experienced themselves. According to [10] Contextual learning model in essence is the relevance of each material or topic of learning with real life. This means that students are faced with a problem commonly encountered in the environment, thus in his time later on students will be able to overcome the real problems faced in the environment. One of the solutions offered to overcome the above problems is to develop their own teaching materials. Teaching materials are the most important elements in the learning process. As stated by [11] "the curriculum is still relatively new, the existing teaching materials are also still very limited, so the development of teaching materials is very important, considering that the curriculum will be effective nationally in 2018 ". Teaching materials produced by teachers are expected to be in accordance with regional potential. Teaching materials based on local wisdom can improve conceptual understanding for students. Reinforce the importance of introducing local culture to students from an early age. [12] said that many young people who are now forgetting local wisdom are one of the things behind research in the field of education. Cultivating the noble values of regional culture in children is very important in order to provide provisions for moral values that will be faced by children in the future. The formulation of the research problem is How is the need for teaching materials based on local wisdom and how to design thematic teaching materials for grade VI SD based on local wisdom.

2. Research Methods

This research uses a research and development design with seven implementation steps referring to the theory of Borg and Gall. The 7 steps in the research are (1) information gathering, (2) research planning, (3) developing the initial product design, (4) product design validation, (5) product design revision, (6) product testing, (7) revision of product test results. The data used in this study are qualitative data and quantitative data. For data collection techniques using interviews, observation, and respondent questionnaires. The quantitative data instrument was a product validation score and a respondent's questionnaire score. While the qualitative instruments are the results of interviews and validator suggestions.

Product validation by linguists on July 20, 2020 and material experts on July 26, 2020. The data collection instruments in this study were expert validation questionnaires, teacher response questionnaires, student questionnaires, interview guidelines, and observation guidelines.

The validation analysis uses a type rating scale with the following steps:

The validator assigns a score to the statement items. The answer scores include the following categories: (4) very good, (3) good, (2) sufficient, (1) less.

The total score for each validator is added up on all indicators.

Looking for the results of the validity value using the formula:

$$p = (\sum f \times 100\%) / n$$

Information :

P: Final grade

F: Obtained score

n: Maximum Score

The results obtained are interpreted by the following criteria.

Table 1.Criteria for the Validity of the Assessment Tool

Number	Score	Category
1	81-100%	Very Good
2	61-80%	Good
3	41-60%	Enough
4	21-40%	less
5	<21%	Very little

A teaching material developed will be said to be suitable for use as teaching material in learning if the percentage obtained from the validation process is more than 61%.

3. Result and Discussion

3.1 Research Result

The results of the research on thematic teaching materials include the need for teaching materials in thematic learning and developing teaching materials

3.1.1 The Need for Teaching Materials in Thematic Learning

The research was initiated by conducting a needs analysis of thematic teaching materials for grade VI elementary schools in Rembang. The analysis of the needs of thematic teaching materials was carried out by observing and interviewing students in grade VI of SD Negeri 2 Leteh, Rembang District, Rembang Regency and 3 teachers in the Wijaya Kusuma 2 cluster, Rembang District. The observation activity was carried out on June 4, 2019 and was attended by 31 students consisting of 15 male students and 16 female students. The interview activities were carried out on June 1-3 2019.

The results of the observation of the students' needs for thematic teaching materials obtained different values in each of its aspects. In the activeness aspect of students in classroom learning, the average score was 2.5 with a sufficient category. This shows that students still need stimulation to make students active and enthusiastic in learning.

The second aspect after the activeness of students, namely students carrying out tasks from the teacher, obtained an average score of 2.43 in the sufficient category. This shows that in carrying out the duties of the teacher, students still need motivation and encouragement to increase the interest of students in carrying out tasks properly and a sense of responsibility.

The third aspect is the interaction of students both with teachers and interactions with friends. Based on the research, it was obtained an average value of 2.55 in the sufficient category. This shows that the interaction of students still needs stimulation in order to be able to interact well and arouse curiosity. This good interaction can make learning meaningful. The fourth aspect, namely the enthusiastic attitude and interest of students towards learning, obtained an average value of 2.6 in the sufficient category. This shows that in the learning process students still need innovation that can increase the enthusiasm and motivation of students in the learning process. Based on the average data of 2.52, it can be concluded that the school scored less than 3 in the sufficient category.

Overall, from the results of observations during thematic learning in class, students cannot actively participate in learning because the material they learn is new and has never been known to students. The results of these observations were strengthened by the results of interviews with students. The interviews conducted included aspects of the content and graphic needs of teaching materials. From the aspect of material and content needs, students rarely get material that is contextual and according to local wisdom of Rembang Regency. This is because the existing material does not contain the local

culture of Rembang Regency so that grade VI students do not know and understand Rembang culture, especially about folklore and tourist attractions in Rembang Regency. In terms of the aspect of graphic requirements, writing that is clear, easy to read, and accompanied by pictures and interesting folk tales is required.

Observation of the need for thematic teaching materials for teachers was carried out to describe the ability of teachers in learning in class VI. In the aspect of opening learning, it gets a score of 3 in a good category. This aspect provides stimulation to students to ask questions and provide opinions, teach in groups, create active and fun learning and close the lesson to get a score of less than 3 with a sufficient category. In terms of the aspect of linking material with local wisdom, Rembang culture gets a score of 2 in the sufficient category.

The average value of the observation needs from all aspects obtained 2.71 results. From these data it can be concluded that the average school score is less than 3 which is in the sufficient category. This shows that teachers in implementing thematic learning in elementary schools still need teaching materials that link material to local local wisdom. The results of these observations were strengthened by interviews with class VI teachers in Gugus Wijaya Kusuma 2, Rembang District. The interview includes aspects of the need for teaching materials, the content of teaching materials, and graphics of teaching materials. In the aspect of thematic teaching materials, teachers still need teaching materials that are easy to understand and contextual. This is because the thematic teaching materials in elementary schools in Rembang Regency have not included cultural material for the Rembang area.

3.1.2 Development of Thematic Teaching Materials for Class VI Elementary Schools Based on Local Wisdom

The development of teaching materials that are contextual and based on local wisdom needs to be done to support the achievement of competence and make learning more meaningful. This is in line with the 2013 curriculum approach, namely contextual, where the concept of learning is associated with material that is appropriate to real-world situations and encourages students to make connections between their knowledge and its application in real life. Thematic teaching materials are developed and integrated with local wisdom in Rembang so that later the benefits of learning can be felt for students and learning becomes meaningful for students, because learning outcomes can be applied directly in everyday life. Therefore, principals were supposed to be encouraged to implement local wisdom values through their leadership considering local wisdom values has advantages to obtain the education goals. The steps for developing teaching materials that the researchers have compiled are as follows potentials and problems, analysis of learning resources, analysis of KI-KD, and product design teaching materials. Thematic teaching materials based on local wisdom of Rembang Regency were developed in terms of content components, physical designs, text designs, and visual designs.

1) The content component of teaching materials based on local wisdom of Rembang Regency consists of an introduction, content, and conclusion.

a. preliminary

This introductory section of teaching materials based on local wisdom of Rembang contains components of learning instructions, core competencies, basic competences, indicators that must be achieved by students, introductions, and a table of contents.

b. Contents

In the content section of the material contains (1) working instructions include observing, experimenting, discussing, reading, writing, finding out, practicing, and presenting, (2) material associated with cultural elements of the Rembang area, in which there are pictures, folklore, tourist attractions, and cultural activities or events. The material in this local wisdom-based teaching material is presented to help teachers develop the character of love for local culture in Rembang Regency, (3) worksheet, (4) Practice questions at the end of the sub theme

c. Closing

The closing section consists of a bibliography and author's biography.

2) Physical design

The physical design of the teaching materials is described as follows (1) Product Size. Size The development product used is 210 x 260 mm for practical purposes, easy to carry, and easy to use. (2) Cover. The teaching material cover uses illustrations of activities at the Port of Rembang, batik lasem, and pictures of RA Kartini who is a heroine from Rembang. Lasem batik and Rembang Harbor are

Rembang's superior potentials that need to be preserved. All of these things give a message to us that we should be proud of the wealth owned by the city of Rembang. We should protect this wealth. As for the cover image can be seen in Figure 1.



Picture 1. Cover materials teaching

3) Text Design.

The size and type of letters used in development products, namely the title of teaching materials, use 16 point letters with arial typeface. Text size for subtitles in teaching materials is 14 points. Text size for teaching materials 12 points. Text spacing in teaching materials aims to make it easier for readers to read books.

4) Visual Design.

This visual design will explain the use of colors and images in teaching materials. The colors, pictures and illustrations used are as follows. The images used in this teaching material have a relationship between descriptions of information and illustrations or images, are closer to the original and some also use aspects of local culture in Rembang Regency. This is so that students can feel a love for the culture in their area. examples of visual design images in teaching materials can be seen in Figure 2.



Picture 2. Visual design materials teaching

5) Language.

The language used in the development of teaching materials based on local wisdom of Rembang is straightforward, communicative, and interactive so that it is easily understood by readers.

3.1.3 Data Validity Test Expert Validation

Expert validation is carried out to provide an assessment. of teaching materials seen in terms of material and language aspects as well as to obtain criticism and suggestions from the validator as well as for the

process of revising teaching material products. data from the validation results of material experts and linguists can be seen in the following table.

Table 2. Material Expert Validation Results Data

Assessment Indicators	Assessment Item	Score
a. Suitability of material with KI and KD	5 item	19
b. Material Accuracy	7 item	22
c. Material Update	4 item	15
d. Character Assessment	1 item	3
Total	17 item	59
Average		3,47
Percentage		87%
Category		Very Good

Table 3. Linguist Validation Results Data

Assessment Indicators	Assessment Item	Score
a. Straightforward	2 item	7
b. Communicative	1 item	4
c. Interactive	1 item	4
d. Conformity with the development of students	1 item	3
Total	5 item	18
Average		3,6
Percentage		90%
Category		Very Good

From table 2 it can be seen that expert validation for the feasibility aspect of the content of the material consists of the suitability of the material with KD, the accuracy of the material, the up-to-date of the material, and the character assessment. The results of expert validation from the aspect of material feasibility in thematic teaching materials based on local wisdom of Rembang Regency obtained an average score of 3.47 with a percentage of 87% in the very good category. Based on table 3 aspects of language feasibility, there are 4 assessment indicators, namely straightforward, communicative, interactive, conformity to the development of students. The results of the feasibility aspect of language in thematic teaching materials based on local wisdom of Rembang Regency obtained an average score of 18 of 3.6 with a percentage of 90% with the very good category. Overall, the expert validation questionnaire from the material and language aspects contained 22 statement items. The scores for each aspect of the questionnaire assessment were 4 (very good), 3 (good), 2 (moderate), 1 (poor).

3.2 Discussion

Based on the results of the analysis of the needs analysis, it was found that thematic learning requires teaching materials that are contextual and sourced from the local culture of the area where students live. In this case, it turns out that many students are not familiar with the local culture of Rembang. With the development of teaching materials based on local wisdom, it is hoped that students will know more about the local culture of the Rembang area because they learn contextually. Local wisdom is very appropriate for elementary school age children. With the existence of teaching materials based on local wisdom, it is hoped that students will love and understand local culture more. This thematic teaching material based on local wisdom of Rembang Regency is a product of teaching materials developed based on an analysis of the needs of teachers and students in the Rembang Regency area.

The development of this thematic teaching material was developed based on the 2013 revised edition of the curriculum in 2018 with integrated thematic learning. Learning outcomes are in accordance with the interests and needs of students, in accordance with the environmental conditions where students live, and use the principle of play while learning. One example of developing teaching materials adapted to the characteristics of providing direct experience is the content of KD 3.1 and 4.1

in science comparing reproductive methods of plants and animals. The materials prepared provide direct experience to students by inviting them to visit fish auctions in Rembang Regency. This is in line with what was expressed by [13] The contents of local wisdoms could be inserted in the texts and students' activities, in effort to make the students understand, both directly and indirectly, and preserve the existing local wisdoms.

Teaching materials based on local wisdom of Rembang Regency were developed with interesting and fun characteristics. The attractiveness of this teaching material can be seen from the content components, physical design, text design, and visual design of teaching materials. In carrying out learning, it should be based on the initial experience obtained by students from the environment in which they live. This is because it will make it easier for students to understand every concept of the material being taught.

After the product design stage, teaching materials are validated by experts to determine the feasibility of teaching materials. The results of the validation were analyzed using quantitative data, namely the number of questionnaire scores and qualitative data in the form of comments and suggestions from experts. Based on the results of the two questionnaires that have been filled in by each criterion validator, it is declared valid. The highest score for each item of questionnaire assessment given by the validator is 4 (very good) and the lowest score for each item given by the validator is 3 (good).

Expert validation assessment includes material and language aspects by lecturers and practitioners who are experienced in it. The results of expert validation from the material aspect obtained a total score of 59 with an average score of 3.47 with a percentage of 87% in the very good category and the linguistic aspect obtained a total score of 18 with an average score of 3.6 with a percentage 90% with very good category. From these results it can be concluded that the teaching materials developed are feasible and both in terms of material and language to be used in learning. In the validation process, the researcher got several suggestions. Expert advice is used to carry out the product revision process so that product revisions are not carried out thoroughly but only in accordance with the validator's suggestions.

The suggestions from the validator are as follows.

- a. The color and writing sections must be bright enough to be read and seen clearly.
- b. Please add local cultural content so that other materials are not destroyed.
- c. Try to clearly write the reference source if it is not the document itself.

This teaching material based on local wisdom of Rembang Regency is suitable for use in the implementation of thematic learning. With this local wisdom-based teaching material it can also make students become individuals who love their local culture. This is also in line with the results of research conducted by [14] with the results of local wisdom in the local curriculum based on local needs in each school in accordance with environmental needs that support educational goals to create a civilized nation to respond to global challenges so that local identities do not lost. By loving the cultural heritage of our ancestors, we will help preserve the nation's culture and help build the nation's foundation. The same thing was also explained by [15] who stated that the transformation of local wisdom is an effort to pass down local cultural wealth in society in the form of values and norms that apply in the local area. Learning rooted in the love of local culture is important to encourage young people to be recognized and proud of their local wisdom and to participate in the preservation of students' own local knowledge [16]

4. Conclusion

From the research that has been done, the conclusions that can be obtained are:

- a. Analysis of the needs of teachers and students on the development of thematic teaching materials based on local wisdom of Rembang was carried out by observation, interviews, and questionnaires. The results of the analysis show that teachers and students of grade VI elementary schools need thematic teaching materials based on local wisdom of Rembang Regency.
- b. The development of thematic teaching materials based on local wisdom of Rembang Regency that the researchers did was potential and problems, KI-KD analysis, analysis of learning resources, and design of teaching material development. The components of the teaching materials developed consist of an introduction, content, and cover. The content / teaching material components reflect local wisdom to foster a love character for the culture of the Rembang area. Then the teaching materials are tested for

their feasibility by the validator through a validation test. The validation results show that the teaching materials are valid for use in the learning process with a very good predicate.

5. References

- [1] F. Sasmitatias and H. Kuswanto, "The Development of Science Learning Device Based on Serukam Local Culture To Improve Students' Analytical Skill," *Int. J. Educ. Res. Rev.*, vol. 3, no. 3, pp. 59–68, 2018, doi: 10.24331/ijere.441348.
- [2] P. Anggraini and T. Kusniarti, "The insertion of local wisdom into instructional materials of bahasa Indonesia for 10th grade students in senior high school," *J. Educ. Pract.*, vol. 6, no. 33, pp. 89–92, 2015, doi: <https://files.eric.ed.gov/fulltext/EJ1083666.pdf>.
- [3] Yuliana, S. Sriyati, and Y. Sanjaya, "Local wisdom of Ngata Toro community in utilizing forest resources as a learning source of biology," *AIP Conf. Proc.*, vol. 1868, no. August, 2017, doi: 10.1063/1.4995217.
- [4] S. Haryanto, "Socio-Cultural Aspects of Traditional Arts : Performing Related to ' Bersih Desa ' Ceremony and It ' s Effect on the Development of Cultural Tourism Assets at Gantiwarno Sub-District , Klaten Regency," vol. 24, pp. 6–9, 2016.
- [5] D. dan S. R. T. Gasong, "Introduction of Tallulolona's Life Philosophy in Local Content Learning Materials in Primary Schools to Preserve Toraja Local Wisdom," *J. Cult.*, vol. 48, no. 2018, pp. 25–31, 2019, doi: 10.7176/JCSD.
- [6] Q. Ghonin Hamidah, S. Sutarmi Fadhilah, and B. Wasito Adi, "The Development of Thematic Integrative Based Learning Material for Fifth Grade Elementary School," *Int. J. Educ. Res. Rev.*, vol. 4, no. 1, pp. 8–14, 2019, doi: 10.24331/ijere.460596.
- [7] Suswandari, "Incorporating beliefs, values and local wisdom of Betawi culture in a character-based education through a design-based research," *Eur. J. Contemp. Educ.*, vol. 6, no. 3, pp. 574–585, 2017, doi: 10.13187/ejced.2017.3.574.
- [8] L. Alfieri, P. J. Brooks, N. J. Aldrich, and H. R. Tenenbaum, "Does Discovery-Based Instruction Enhance Learning?," *J. Educ. Psychol.*, vol. 103, no. 1, pp. 1–18, 2011, doi: 10.1037/a0021017.
- [9] A. Fultami, "The Development of Teaching Materials in Writing Poetry Environmental Based for Students Class X 2 State Senior High School of Kisaran," vol. 9, no. 2, pp. 93–98, 2018.
- [10] C. Ulfa and T. A. Siburian, "Development of Negotiation Text Writing Teaching Material Based on Contextual on Class X SMK Negeri 1 Percut Sei Tuan Medan," vol. 9, no. 15, pp. 106–114, 2018.
- [11] A. P. Rini, N. Suryani, and S. S. Fadhilah, "Development of the Predict Observe Explain (POE)-based Thematic Teaching Materials," *Int. J. Educ. Res. Rev.*, vol. 4, no. 1, pp. 1–7, 2019, doi: 10.24331/ijere.458067.
- [12] A. Kristanto, . S., and . G., "Promoting Local Wisdom in International Primary Curriculum Aims to Develop Learners' Problem Solving Skills," *Int. J. Educ. Res. Rev.*, pp. 439–447, 2019, doi: 10.24331/ijere.573947.
- [13] P. T. Anggraini, "Character and Local Wisdom-Based Instructional Model of Bahasa Indonesia in Vocational High Schools," *J. Educ. Pract.*, vol. 8, no. 5, pp. 23–29, 2017.
- [14] M. Yamin, "Integrating The Local Wisdom Values into The National Curriculum to Create the Nationalism Strength," *J. Educ. Pract.*, vol. 8, no. 33, pp. 47–53, 2017, [Online]. Available: [http://eprints.ulm.ac.id/3500/1/Integrating The Local Wisdom Values into The National Curriculum to Create the Nationalism Strength.pdf](http://eprints.ulm.ac.id/3500/1/Integrating%20The%20Local%20Wisdom%20Values%20into%20The%20National%20Curriculum%20to%20Create%20the%20Nationalism%20Strength.pdf).
- [15] D. Evi Seftiana, M. Thoha B. S. Jaya, Alben Ambarita, "The Development of Supplementary Textbooks Based on Local Wisdom with Inquiry Learning Model in Elementary School," *J. Educ. Pract.*, vol. 10, no. 5, pp. 92–101, 2019, doi: 10.7176/JEP.
- [16] C. Pornpimon, A. Wallapha, and C. Prayuth, "Strategy Challenges the Local Wisdom Applications Sustainability in Schools," *Procedia - Soc. Behav. Sci.*, vol. 112, no. Icepsy 2013, pp. 626–634, 2014, doi: 10.1016/j.sbspro.2014.01.1210.