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DEVELOPMENT OF DIGITAL TEACHING MATERIALS BASED ON LOCAL WISDOM (BATU LINGGA) IN IMPROVING FIFTH GRADE OF ELEMENTARY SCHOOL CULTURAL LITERACY

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Abstract
This research is motivated by the lack of utilization of interesting teaching materials in the science and natural sciences learning process and the absence of the use of teaching materials that utilize local wisdom as an innovative and interesting learning resource at SDN Baros 3. This causes a lack of student interest in science and natural science learning outcomes in grade V at SDN Baros 3 which are still not optimal. This study aims to describe and analyze the stages of development, feasibility, effectiveness, and describe and analyze student responses to digital teaching materials based on local wisdom (Batu Lingga) in the science subject of cultural heritage material in grade V UPT SDN Baros 3. This study uses the Research and Development method ADDIE model with a population of all students at UPT SDN Baros 3 and the sample used is grade V elementary school students. This study uses instruments in the form of questionnaires and tests. The results of this study indicate that 1) the feasibility test by material experts is included in the category of "very feasible" with a score percentage of 96%, the feasibility test by media experts with a percentage of 80% is included in the category of "very feasible", the feasibility test of the question experts with a percentage of 95% is included in the category of "very feasible", and the feasibility test of the student response questionnaire obtained a percentage of 87% with the category of "very feasible"; 2) the effectiveness test through pretest and posttest with an N-Gain value of 0.82 is included in the high category; 3) the results of student responses to digital teaching materials based on local wisdom (Batu Lingga) are included in the very high category with a percentage of 92%. Thus, digital teaching materials based on local wisdom (Batu Lingga) for the subject of social studies on cultural heritage materials are effective and feasible to use in the learning process.

Keywords:*digital teaching materials, local wisdom, cultural heritage, cultural literacy.*

Abstrak
Penelitian ini dilatar belakangi oleh kurangnya pemanfaatan bahan ajar yang menarik pada proses pembelajaran IPAS dan belum terdapat penggunaan bahan ajar yang memanfaatkan kearifan lokal daerah sebagai sumber belajar yang inovatif dan menarik di SDN Baros 3. Sehingga menyebabkan kurangnya minat peserta didik dalam pembelajaran IPAS dan hasil belajar IPAS kelas V di SDN Baros 3 yang masih belum optimal. Penelitian ini bertujuan untuk mendeskripsikan serta menganalisis tahapan pengembangan, kelayakan, efektifitas, serta mendeskripsikan dan menganalisis respon peserta didik terhadap bahan ajar digital berbasis kearifan lokal (Batu Lingga) pada mata pelajaran IPAS materi warisan budaya di kelas V UPT SDN Baros 3. Penelitian ini menggunakan metode Research and Development model ADDIE dengan populasi seluruh peserta didik di UPT SDN Baros 3 dan sampel yang digunakan adalah peserta didik kelas V sekolah dasar. Penelitian ini menggunakan instrumen berupa angket dan tes. Hasil penelitian ini menunjukkan bahwa 1) uji kelayakan oleh ahli materi termasuk ke dalam kategori "sangat layak" dengan persentase skor 96%, uji kelayakan oleh ahli media dengan persentase 80% termasuk kategori "sangat layak", uji kelayakan ahli soal dengan persentase 95% termasuk ke dalam kategori "sangat layak", serta uji kelayakan angket respon peserta didik memperoleh persentase 87% dengan kategori "sangat layak"; 2) uji efektivitas melalui pretest dan posttest dengan nilai N-Gain 0,82 termasuk ke dalam kategori tinggi; 3) hasil respon peserta didik terhadap bahan ajar digital berbasis kearifan lokal (Batu Lingga) termasuk ke dalam kategori sangat tinggi dengan persentase 92%. Dengan demikian bahan ajar digital berbasis kearifan lokal (Batu Lingga) mata pelajaran IPAS materi warisan budaya efektif dan layak digunakan dalam proses pembelajaran.

Kata Kunci: bahan ajar digital, kearifan lokal, warisan budaya, literasi budaya.

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Introduction

Technological developments change learning orientation from conventional learning to digital learning. The increasingly rapid development of information and communication technology can be utilized for the learning process in schools in order to increase the effectiveness and efficiency of learning (Ahmadi, 2017; Hanik, 2020). In essence, the implementation of learning process activities cannot be separated from the use of teaching materials (Violandini & Mustika, 2021). The success of a learning process cannot be separated from the various learning components used during the learning process, one of which is teaching materials (Widiastuti, 2020). Teaching materials are a set of learning materials that refer to the curriculum implemented in order to achieve predetermined competency standards and basic competencies (Nugroho, Lazuardi, & Murti, 2019). Teaching materials are anything used by teachers or students to facilitate the learning process. The form of teaching materials can be in the form of reading books, Student Worksheets (LKPD), or broadcasts. In the teaching materials there is a description of material about knowledge, experience and theory which is specifically used by teachers and students with the aim of making it easier to understand a number of certain materials or subjects that have been outlined in the curriculum. With the existence of teaching materials, it is easier for teachers to explain the main points and students continue by reading relevant and more complex teaching materials (Kosasih, 2021: 2).

Teaching materials in schools are an important part of the learning process which is adapted to changes in the curriculum. Curriculum changes are one of the causes of the ineffective use of teaching materials in schools. The recent curriculum changes have certainly affected the existence and use of textbooks provided by schools and other educational units. However, the use of textbooks in each school will always be in line with the curriculum implemented in that school (Rahmawati, 2015). Due to the limited provision of learning resources, the provision is carried out in stages. So many students have to share books with several students when using textbooks in class.

In reality, based on the results of observations and interviews with teachers and students at SDN Baros 3, the teaching materials used in the learning process are still limited to teachers' and students' books. Students tend to be lazy about reading during literacy activities in class. So far the teaching materials used in the learning process only use books in printed form as the main teaching material. Students tend to have difficulty understanding the material contained in books, especially when students have to study independently.

This shortage of teaching materials is a problem that is often encountered in several schools. This is proven by student learning outcomes which are still below assessment standards. Of the total 30 students, there were 10 students who got scores above the assessment standards, while many of the rest got scores below the assessment standards. So researchers feel there is a need for innovation to develop teaching materials that can be used by all students both at school and at home, by utilizing existing technology. The teaching materials that will be used in the research are teaching materials that utilize technology and relate them to local wisdom in the surrounding environment. This aims to introduce local cultural wisdom to students.

According to Kusuma (2018) local wisdom functions and is meaningful as the preservation of traditions and values that are meaningful for the continuity and welfare of

society by maintaining existing culture. Wisdom has characteristics and functions as the identity of a region, as a unifier of society, as a cultural heritage that is accepted and applied, as a cultural wealth of a community, as a mindset and character in social interaction by prioritizing the public interest, as a glue of togetherness in preserving identity from threats. and influence from outside (Utari, Degeng, and Akbar, 2016). Local wisdom is a nation's cultural identity which causes the nation to be able to absorb and process foreign culture according to its own character and abilities (Soebadio in Kasnadi, 2023: 140). Local wisdom is a view of life and knowledge as well as various life strategies in the form of activities carried out by local communities in responding to various problems in meeting their needs (Fajarini, 2014: 123). Local wisdom is an example of cultural heritage that needs to be preserved, so students need to be introduced to cultural heritage, especially cultural heritage found in the surrounding area.

According to Adawiyyah & Desfriyati (2024) technological developments influence students' habits in everyday life. Many elementary school age children already use gadgets in their daily lives, whether for communicating or playing games. Students sometimes do this more than reading books. So there is a need for innovation in terms of developing digital teaching materials but still teaching students to recognize and maintain cultural heritage in the form of historical relics found in the area around students, so as to increase cultural literacy among students.

Cultural literacy is the ability to understand and behave towards Indonesian culture as a national identity (Kemdikbud, 2022). Literacy skills are important for getting to know culture and national identity so as to foster a caring attitude towards others, mutual respect for each other and tolerance between religious communities (Yudin, 2019). Cultural literacy aims to develop various aspects such as the social skills of elementary school children, because since elementary school age children have learned to understand and adapt to Indonesian culture as a national identity and know their rights and obligations as citizens (Santi, 2019).

According to UNESCO (2017) cultural heritage is divided into two categories, namely Tangible cultural heritage and Intangible cultural heritage. Physical cultural objects (tangible heritage) include historical buildings and places, monuments, artifacts and others. Intangible culture (intangible heritage) takes the form of rituals, songs, traditions, oral speech, social practices, traditional cooking recipes and performing arts. Cultural heritage is a marker of culture as a whole, both material and intangible culture, which is inherited from past generations to the next generation. Cultural heritage which has important value, not only for history or culture, needs to be developed and preserved through the process of establishing it.

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The cultural heritage that will be highlighted in this research is one of the cultural heritages found in the Baros area, Serang Regency. This cultural heritage is the Batu Lingga Site). Lingga Stone is one of the relics of the megalithic tradition in the form of menhirs. The number of menhirs on this site is 7 with a patterned layout based on the size of the menhirs. The largest menhir is located in the east while the smallest is located in the west. The word menhir comes from the Breton language (in England) which consists of the words "men" which means stone, and "hir" which means standing. Overall it means an upright rock. The function of menhirs can be divided into two, namely menhirs as a means of worship (religion) and menhirs as standing stones that are profane. Some menhirs stand alone, but in general they are erected together with other megalithic buildings in one complex such as dolmens, stone tombs and altar stones. As for the Batu Lingga Baros Site, no other megalithic remains have been found apart from menhirs (Kemendikbudristek).

According to local community belief, the Lingga Stone is a stake used to tie up fighting cocks, including those belonging to Sultan Hasanudin, son of Syarif Hidayatullah, and Prabu Pucuk Umun or Surya Surajaya, son of Prabu Surosowan. The two of them fought cockfights with the agreement that if Prabu Pucuk Umun's chicken lost, then Sultan Maulana Hasanudin was allowed to spread Islam in Banten, but if Prabu Pucuk Umun won, then Sultan Maulana Hasanudin had to stop his preaching activities.

Based on the facts above, it is necessary to develop appropriate teaching materials for science and science learning in elementary schools. One of them is creating student-centered learning by using digital teaching materials based on local wisdom in science and science lessons, especially Cultural Heritage material. This aims to motivate students to be literate and learn to be able to learn independently wherever they are.

Digital teaching materials are teaching materials whose content is contained in electronic/digital form, namely in the form of audio, audio visual, or interactive multimedia (Priatna, et al, 2017; Sriwahyuni, et al, 2019). Digital teaching materials can support the learning process effectively and efficiently (Surma & Kirschner, 2020). In the aspect of cognition, digital teaching materials can make it easier for students to understand the concepts of the material and improve their reasoning power (Nieto-Márquez, Baldominos, & Pérez-Nieto, 2020). According to Alessi & Trollip (in Kosasih, 2021) there are five minimum criteria contained in digital teaching materials, namely (1) program introduction, (2) navigation instructions, (3) materials, (4) instructions for use, and (5) end of program menu. With the development of digital teaching materials, it is hoped that it can increase cultural literacy among students.

This is in line with research results (Agustin, et al., 2020; Meifinda, 2022; Munajah, 2023; Juniati, et al., 2023) that the development of digital teaching materials based on local wisdom can improve student learning outcomes. What is different from some of the relevant research results above is that the content contained in this local wisdom-based digital teaching material will discuss one of the cultural heritages in the form of objects, namely the Batu Lingga Site in the Baros area, Serang Regency. And there are evaluation questions packaged in game form. The presentation of the material is not only presented in text form, but there are videos that can help students understand the material being studied. The e-book display is in the form of menus that will be connected to the page selected by the student. This was done considering that students' learning styles are quite diverse, so to overcome this, researchers tried to design teaching materials with an attractive appearance.

Based on the explanation above, researchers are interested in developing digital teaching materials based on local wisdom in science and science lessons, especially Cultural Heritage material in the form of text, images and videos which are arranged systematically based on

contextual learning principles. This research focuses on developing digital teaching materials based on local wisdom (Batu Lingga). So with this development, teaching materials can be produced that can increase students' cultural literacy, especially in class V elementary schools, which are supported by validation results from experts and students' responses to digital teaching materials based on local wisdom (Batu Lingga). Preparing teaching materials using the Canva application to package learning materials which are presented in the form of text, audio and learning videos. This aims to facilitate the diverse learning styles of students. As well as evaluation questions packaged in quiz form using the wordwall application. The novelty of this research is that the material contained in digital teaching materials focuses on local wisdom in the form of cultural heritage (Batu Lingga) found in the Baros area, Serang Regency. So the problem formulation in this research is How to develop digital teaching materials based on local wisdom (Batu Lingga) in increasing cultural literacy in class V elementary schools.

Research methods

This research uses the Research and Development (R&D) development method. This method is used to produce a particular product, as well as test the effectiveness of the product. To be able to produce a particular product, analytical research is used and to test the effectiveness of the product so that it can function in the wider community, research is needed to test the effectiveness of the product (Sugiyono, 2019: 297).

This research uses the ADDIE model which has five stages which are interrelated and structured systematically. Where each stage must be carried out sequentially. According to Wicaksana & Agung (2019) the steps in the ADDIE model have 5 stages, namely, (1) Analyze (analysis), (2) Design (design), (3) Development (development), (4) Implement (implementation), and (5) Evaluate (evaluation).

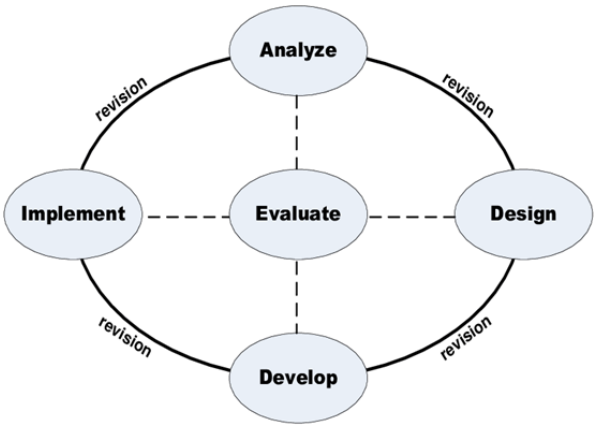


Figure 1
ADDIE Branch Development Model
(Image source: ADDIE Instructional Design book, (Branch, RM, 2009:2)

Development Procedure

Analysis

The analysis stage functions to analyze the need for developing teaching materials in the learning process, analyzing feasibility and what is included in the development requirements (Rayanto & Sugianti, 2020:34).

Design

The second stage in this research model is design. At this stage the researcher begins to design teaching materials that will be developed based on the results of the analysis carried out in the previous stage. Next, determine the elements needed in preparing teaching materials in the form of e-books. Researchers also collected several references that are relevant to the material that will be presented in digital teaching materials based on local wisdom (Batu Lingga).

Development

At this stage, the researcher developed a digital teaching material based on local wisdom (the Lingga Stone) in interactive power point format. The display of the teaching material has several menu buttons that take the reader to the selected menu.

Implementation

At this stage, a trial was carried out on the use of digital teaching materials based on local wisdom which was carried out on a limited basis in the elementary school which had previously been chosen as the research site. This stage is carried out as a process of testing the results of the products (teaching materials) that have been developed. The next stage is giving assignments in the form of evaluating students to see the level of effectiveness of the product that has been developed in the form of digital teaching materials based on local wisdom. This trial aims to determine the feasibility of digital teaching materials used in cultural heritage materials in class V elementary schools.

Evaluation (Evaluation)

At this stage, the final revision of the teaching materials developed is carried out. The revision refers to input obtained from response questionnaires or observations. At this stage researchers evaluate digital teaching materials that have been tested. This aims to make the product developed more perfect and can be used by other schools so that its reach is wider.

There are two types of evaluation used in this research, including formative evaluation and summative evaluation. Formative evaluation is carried out to obtain information regarding the quality of the digital teaching materials that have been developed. The results of this evaluation are then used as feedback when making improvements. The results of this evaluation are validation from material experts and media experts. Next, namely summative evaluation, this stage was carried out with the aim of finding out the effectiveness of digital teaching materials based on local wisdom (Batu Lingga) in improving the learning process, especially on cultural heritage material.

Results and Discussion

This research produces a product in the form of digital teaching materials based on local wisdom (Batu Lingga). The process of making teaching materials using the Canva application. The resulting product can be accessed via a smartphone with Android specifications. Students can use these teaching materials anywhere and at any time, both in the classroom and outside the classroom. This research uses the ADDIE development model which includes five stages, including Analysis, Design, Development, Implementation and Evaluation.

The following is a description of each stage carried out in this research.

Analysis Stage (Analysis)

The analysis stage is carried out to determine the needs of students in the field, so that this becomes a reference in the process of developing teaching materials. This research includes two

stages of analysis, including needs analysis and curriculum analysis. At this stage, observations were made during the learning process as well as interviews with class V teachers at SDN Baros 3.

A needs analysis was carried out to determine the availability of learning resources used in the learning process carried out at SDN Baros 3. At this stage the researcher also analyzed the characteristics of students during the learning process. Observation activities and interviews with teachers were carried out on October 9 2023, with the class V teacher (Musharofah, 2024).

Based on the results of observations during learning activities and interviews with the fifth grade teacher at SDN Baros 3, the resulting data is described as follows.

Existing teaching materials are still limited in quantity, considering the large number of students and they are divided into 2 classes; Lack of use of interesting teaching materials in the science and science learning process; There is no use of teaching materials that utilize local regional wisdom as an innovative and interesting learning resource at SDN Baros 3; Lack of student interest in learning science and science; The results of class V science and science learning at SDN Baros 3 are still not optimal.

Students' knowledge regarding local regional wisdom is still lacking, as evidenced by when students were asked questions about the Batu Lingga Site, most students did not know about the existence of the Batu Lingga Site. So it is necessary for students to be introduced to one of the cultural heritages in their area even without having to go to that location.

These are some of the reasons behind the development of digital teaching materials based on local wisdom (Batu Lingga). This aims to ensure that digital teaching materials based on local wisdom (Batu Lingga) can become an alternative teaching material for teachers and students in studying science and technology material, especially cultural heritage material. So that it can increase cultural literacy among students in the science and science learning process.

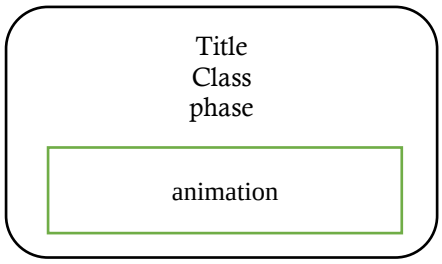
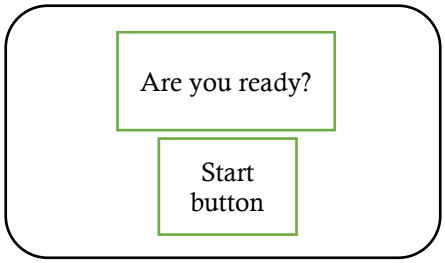
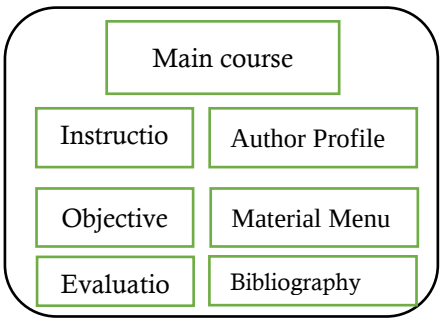
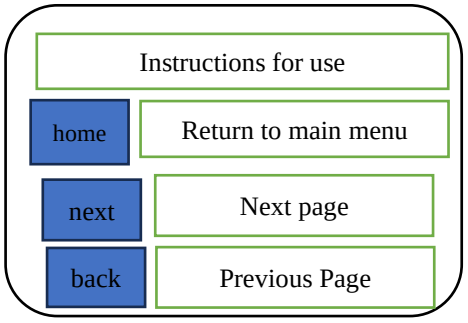
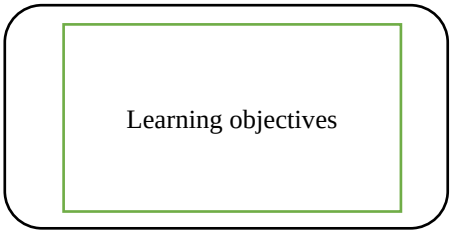
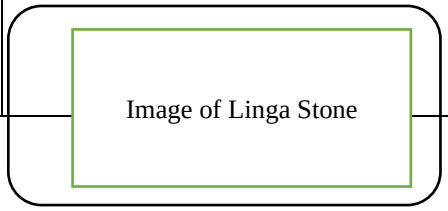
Curriculum analysis is carried out by examining the curriculum used in schools. The curriculum applied in class V is the independent curriculum, then reviewing the syllabus and learning outcomes. This aims to ensure that development is carried out in accordance with the current curriculum and learning outcomes. Based on the results of the curriculum analysis that has been carried out, the next step is to determine the material that will be the focus of development, namely "My Region, My Pride" with the sub-material "Cultural Heritage" contained in the class V material for semester 2.

Design Stage (Design)

At this stage the researcher creates a design in the form of a product design being developed. The researcher created a storyboard as an initial illustration of the process of developing digital teaching materials based on local wisdom (Batu Lingga). The storyboard becomes a reference in the process of creating digital teaching materials based on local wisdom (Batu Lingga).

Table 1
Storyboard of Digital Teaching Materials Based on Local Wisdom (Batu Lingga)

Screen	Appearance	Information

1		This screen displays the title of the learning material, as well as the class and phase according to the class.
2		This screen displays the illustration "Are you ready?" to start learning activities.
3		This screen contains several main menus, including study instructions, author profile, learning objectives, material menu, evaluation, and bibliography.
4		This screen contains instructions for using teaching materials. There are three main buttons, including home, next and back.
5		This screen displays the learning objectives to be achieved from the material.
6-16		This screen contains the main material which consists of several material slides.

16	Linga Stone Video	This screen contains learning video links that support learning material so that it is easy for students to understand
18	Evaluation question link	This screen contains evaluation questions based on the material that students have studied.
19	Bibliography	This screen contains a library list.
20	Developer Profile	This screen contains the developer profile,

In the next stage, researchers collected information from various relevant sources to be included in digital teaching materials based on local wisdom (Batu Lingga), visiting the Batu Lingga Site which is located in Baros District, Serang Regency.

Development Stage (Development)

In the development stage, the product was prepared in the form of digital teaching materials based on the local wisdom of Batu Lingga. The researcher prepared a material script, based on the main material of cultural heritage as well as material about local wisdom (Batu Lingga). Product preparation refers to the storyboard that was prepared in the previous stage. The process of making teaching materials is carried out using the Canva application, including several animated images contained in the teaching materials. Researchers compiled materials, supporting images, learning videos, and evaluation questions into one digital teaching material based on local wisdom (Batu Lingga).

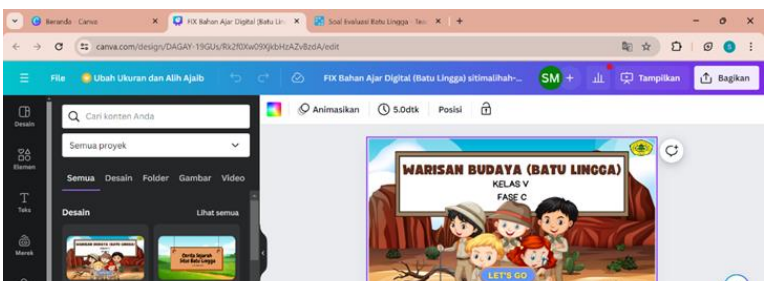
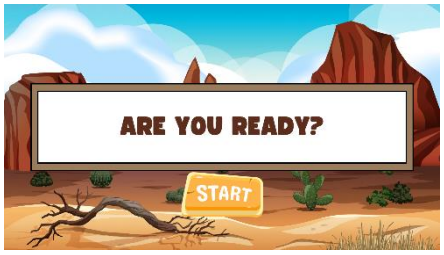
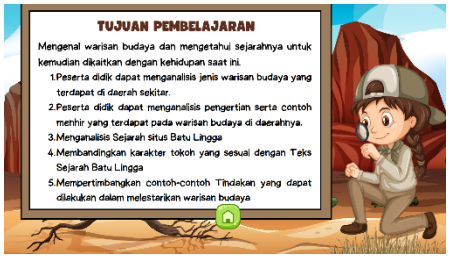


Figure 1
Display of digital teaching materials

The development of digital teaching materials based on local wisdom in Batu Lingga consists of several main menu options that can be accessed by students, such as cover page, opening page, menu page, study guide, learning objectives, materials, evaluation, bibliography, and developer profile.

Table 2
Product Development

 Cover page	 "start" page
 Main menu page	 Instructions page for using teaching materials
 Learning Objectives Page	 Learning Information Page

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"Cultural Heritage" Material Page

Material Page Types of Cultural Heritage

Material Page Understanding Object Cultural Heritage

Material Page Understanding Intangible Cultural Heritage

Material Page Example of Object Cultural Heritage

Material Page Examples of Intangible Cultural Heritage

Lingga Stone Material Page (scientifically)

Lingga Stone Material Page (based on history)

Page Video Illustration of the History of the Lingga Stone

Page Video Illustration of the History of the Lingga Stone

Evaluation Page

Evaluation Questions

Bibliography Page

Developer Profile Page

The digital teaching materials based on local wisdom (the Lingga Stone) that have been completed are then carried out with validation tests by media experts, material experts and subject matter experts. After the validation test was carried out, the researchers revised the product according to the input and suggestions given by the validators. Next, a trial was carried out on students.

Table 3
Expert Assessment Criteria
Converting Quantitative to Qualitative Data

No	Achievement Level	Information	Category
1	81-100%	Very good	Very feasible/very valid/no need for revision
2	61-80%	Good	Feasible/valid/requires revision
3	41-80%	Pretty good	Inadequate/less valid/needs to be revised
4	21-40%	Not good	Inappropriate/invalid/needs revision
5	<20%	Very Not Good	Very inappropriate/very invalid/needs to be revised

(Sugiyono, 2019)

Based on the results of the analysis, a product in the form of digital teaching materials based on local wisdom (Batu Lingga) is said to be valid if the average score for the validity assessment meets the minimum good criteria.

Material Expert Validation Results

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Table 4
Material Expert Validation Results

Material Validation Results	Score
Total Number of Scores	53
Average	4.8
Percentage	96%

Based on the data in table 4, the results of validation by material experts on digital teaching materials based on local wisdom (Batu Lingga) show that the total score is 53 with a percentage of 96%. So with this score, the digital teaching material based on local wisdom (Batu Lingga) received the "very worthy" category.

Validation Results by Media Experts

Table 5
Media Expert Validation Results

Media Expert Validation Results	Score
Total Number of Scores	60
Average	4
Percentage	80%

Based on the data in table 5, the results of validation by media experts on digital teaching materials based on local wisdom (Batu Lingga) show that the total score is 60 with a percentage of 80%. So by obtaining this value, digital teaching materials based on local wisdom (Batu Lingga) received the "decent" category.

Expert Question Validation Results

Table 6
Expert Question Validation Results

Expert Question Validation Results	Score
Total Number of Scores	43
Average	4.7
Percentage	95%

Based on the data in table 6, the results of validation by question experts on digital teaching materials based on local wisdom (Batu Lingga) show that the total score is 43 with a percentage of 95%. So with this score, the evaluation question in digital teaching materials based on local wisdom (Batu Lingga) received the "very worthy" category.

Implementation Stage (implementation)

The trial was carried out in 2 stages, namely small group trials and large group trials. Small group trials were carried out with a total of 15 students, and large group trials with a total of 30 students.

The following are the results of small group trials

Table 7
Response Assessment Criteria for Digital Teaching Materials Based on Local Wisdom (Batu Lingga)

Percentage	Assessment criteria
81-100%	Very high
61-80%	Tall
41-80%	Enough
21-40%	Low
<20%	Very low

(Arsyad, 2017:178)

The following are the results of small group trials

Table 8
Small Group Trial Results

Assessment Aspects	Score Percentage (%)
Attractiveness	90.7%
Use	89.3%
Understanding	93.3%
Overall Average	**91.1%**

After going through the small group trial stage, then a large group trial was carried out. Large group trials were carried out in class V with a total of 30 students. Teaching materials are distributed via the class WhatsApp group. Before carrying out the trial, students are first given pretest questions with the aim of finding out the students' initial abilities. Next, deliver learning to students according to the teaching modules that have been prepared previously.

At the end of the lesson, students are asked to fill in the posttest questions that are available in the digital teaching materials. This aims to determine the effectiveness before and after the application of digital teaching materials based on local wisdom (Batu Lingga). Students are also asked to fill out a student response questionnaire sheet, to find out students' responses to the teaching materials that have been developed.

Data analysis of students' pretest and posttest results via N-Gain. The gain-test data analysis technique is carried out by calculating scores to determine the increase in students' understanding

$$Normalized\ Gain\ (g)=\frac{Posttest\ Score-Pretest\ Score}{Maximum\ Score-Pretest\ Score}$$

The results of these calculations are then interpreted into categories of gain value characteristics, thereby obtaining data regarding the increase in student learning outcomes into the high, medium or low categories. Interpretation of gain values is shown in the following table.

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Table 9
Gain Value Criteria

Mark*g*	**Criteria**
G > 0.7	Tall
0.3 < < 7*g*	Currently
G < 0.3	Low

(Widiastika, et al, 2020)

The results of the effectiveness test were obtained based on giving a pretest and posttest to students during a large group trial which was carried out on May 29 2024. Next, the data from the pretest and posttest results were analyzed and processed using the Normalized Gain (N-Gain) formula. The results of N-Gain based on the pretest and posttest results are presented in the following table

Table 10
Recapitulation of Pretest and Posttest Data

	Pretest	*Posttest*	*Post-Pre*	*Ideal Score (100)- Pre*	*N-Gain Score*
Mean	49	91	41	51	1
Median	48	90	45	53	1
Mode	45	100	45	55	1
Std. Deviation	14	8	12	14	0
Variance	200	59	143	200	0
Minimum	25	75	15	20	1
Maximum	80	100	60	75	1
Sum	1475	2715	1240	1525	24.72

The pretest and posttest scores obtained an average score of 0.82 so that the scores obtained were included in the high category. Furthermore, if the percentage is obtained, a score of 82% is obtained. These results show that the digital teaching materials based on local wisdom (Batu Lingga) that were developed are effective for use in the science and science learning process, especially in Cultural Heritage material.

Table 11
Results of Student Response Questionnaire on Digital Teaching Materials Based on Local Wisdom (Batu Lingga)

No	**Statement**	**Total Score**	**Percentage**	**Category**
1.	The use of digital teaching materials based on local wisdom (Batu Lingga) increased my interest in studying science subjects	136	91%	Very high
2.	I am happy with science learning on cultural heritage material using digital teaching materials based on local wisdom (Batu Lingga)	143	95%	Very high

3.	The display of digital teaching materials based on local wisdom (Batu Lingga) is very interesting	135	90%	Very high
4.	I like using digital based on local wisdom (Batu Lingga) because it is more interactive	138	92%	Very high
5.	I can use digital teaching materials based on local wisdom (Batu Lingga) easily	145	95%	Very high
6.	I can understand the language used	141	94%	Very high
7.	The audio/sound in digital teaching materials based on local wisdom (Batu Lingga) can be heard clearly	131	87%	Very high
8.	This digital teaching material makes it easier for me to study independently and in class	134	89%	Very high
9.	The use of digital teaching materials helps me understand cultural heritage materials	139	93%	Very high
10.	Providing examples in the material can make it easier for me to understand the material	144	96%	Very high
11.	The presentation of examples and videos in digital teaching materials is clear and interesting	135	90%	Very high
12.	The presentation of questions in the evaluation is easy to understand	140	93%	Very high
	Overall Average		**92.2%**	**Very high**

Based on the data in table 11 showing the recapitulation of student response questionnaires, the overall average percentage was 92.2%. These results show that digital teaching materials based on local wisdom (Batu Lingga) received the "very high" category, this means that digital teaching materials based on local wisdom (Batu Lingga) received a positive response from students, so they can be used in the learning process in the classroom V Elementary School.

Evaluation Stage

At the evaluation stage, final revisions were made to the digital teaching materials based on local wisdom (Batu Lingga) that had been developed. Input obtained from response questionnaires during the learning process becomes the basis for the product revision process. Teaching materials that have been tested are re-evaluated by researchers to make them better.

This research was carried out at UPT SDN Baros 3, Baros District, Serang Regency, Banten on May 29 2024. The selection of the research location was carried out based on problems found by researchers in the learning process in class V of UPT SDN Baros 3, namely the lack of interest in reading by students. especially in teaching materials in the form of reading books and the lack of availability of teaching materials, especially in science and science subjects which contain local wisdom.

Conclusion

This research uses the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation) which has five stages, namely analysis, design, development, implementation and evaluation. The stages of developing digital teaching materials based on local wisdom (the Lingga Stone) on cultural heritage materials have been carried out well.

The results of validation by material experts show that digital teaching materials based on local wisdom (Batu Lingga) received the "very feasible" category. Validation results by media experts show that digital teaching materials based on local wisdom (Batu Lingga) received the "decent" category. The results of validation by question experts show that the evaluation questions in digital teaching materials based on local wisdom (Batu Lingga) received the "very feasible" category. The validity test results of material experts, media experts and experts show that digital teaching materials based on local wisdom (Batu Lingga) are very feasible and can be used in the science and science learning process in elementary schools. The research results show that the percentage of material, media and language validity tests is in the Very Valid category. So it is declared effective in improving the science and science learning outcomes of fourth grade elementary school students.

Reference

Branch, R. M. (2009). Instructional Design: The ADDIE Approach. . Springer US.

Ghaniem, A. F., Rasa, A. A., Oktora, A. H., & Yasella, M. (2021). Ilmu Pengetahuan Alam dan Sosial. Jakarta: Pusat Perbukuan Badan Standar Kurikulum dan Asesmen Pendidikan Kementrian Pendidikan, Kebudayaan, Riset dan Teknologi.

Kosasih. (2021). Pengembangan Bahan Ajar. Bandung: Bumi Aksara.

Lestari, I. (2013). Pengembangan Bahan Ajar Berbasis Kompetensi (Sesuai dengan Kurikulum Tingkat Satuan Pendidikan). Padang: Akademia Permata.

Santi, A. I. (2019). Panggilan Literasi Dampingi Anak Didik Berprestasi. Jakarta: Sekolah Don Bosco 2.

'Adawiyah, R., & Desfriyati, D. (2024). Pengaruh Kemajuan Teknologi Terhadap Perilaku SosiaL Siswa Sekolah Dasar. *Guruku: Jurnal Pendidikan dan Sosial Humaniora*, 01-08

Arsyad, A. (2017). Media Pembelajaran . Jakarta: PT. Raja Grafindo Persada.

Agustin, D. Y., Setyosari, P., & Suharti. (2020). Pengembangan Bahan Ajar Tematik Digital untuk Peserta didik Kelas V Sekolah Dasar. Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, 1793—1799.

Ahmadi, F., Sutaryono, Witanto, Y., & Ratnaningrum, I. (2017). Pengembangan Media Edukasi "Multimedia Indonesian Culture" (MIC) Sebagai Penguatan Pendidikan Karakter Peserta didik Sekolah Dasar. Jurnal Penelitian Pendidikan, 127-136.

Fajarini, U. (2014). Peranan Kearifan Lokal Dalam Pendidikan Karakter. Sosio Didaktika: Vol. 1, 123-130.

Hanik, E. U. (2020). Self Directed Learning Berbasis Literasi Digital Pada Masa Pandemi Covid-19 di Madrasah Ibtidaiyah. ELEMENTARY Islamic Teacher Journal, 182-208.

Juniati, G., Putrayasa, I., & Margunayasa, I. (2023). Pengembangan Bahan Ajar Digital Berorientasi Wana Kerthi Loka Bali pada Pembelajaran IPAS Kelas IV Sekolah Dasar. PENDASI: Jurnal Pendidikan Dasar Indonesia.

Kasnadi. (2023). Representasi Nilai Kearifan Lokal Dalam Babad Ponorogo. Jurnal Bahasa dan Sastra, 139-151.

Kemdikbud. (2022). gurudikdas.kemdikbud.go.id. Retrieved from https://gurudikdas.kemdikbud.go.id/news/peran-guru-dalam-menghadapi-inovasi-merdeka-belajar.

Kusuma, R. S. (2018). Peran Sentral Kearifan Lokal dalam Peningkatan Kualitas Pendidikan. Jurnal Pedagogik, 05, 228-239.

Meifinda, Y. (2022). Pengembangan Bahan Ajar Digital Berbasis Scientific untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik di Sekolah Dasar. Program Studi Magister Keguruan Guru Sekolah Dasar Fakultas Keguruan dan Ilmu Pendidikan Universitas Lampung.

Munajah, R. (2023). Pengembangan Bahan Ajar Digital Storytelling Berbasis Kearifan Lokal untuk Meningkatkan Keterampilan Menulis Cerita Peserta didik Kelas IV Sekolah Dasar. Program Pasca Sarjana Pendidikan Dasar Universitas Negeri Jakarta.

Nieto-Márquez, N. L., Baldominos, A., & Pérez-Nieto, M. Á. (2020). Digital Teaching Materials and Their Relationship with the Metacognitive Skills of Students in Primary Education. Education Sciences.

Nugroho, A., Lazuardi, D. R., & Murti, S. (2019). Pengembangan Bahan Ajar LKS Menulis Pantun Berbasis Kearifan Lokal Peserta didik Kelas VII SMP Xaverius Tugumulyo. KEMBARA: Jurnal Keilmuan Bahasa, Sastra, dan Pengajarannya, 1-12.

Priatna, I. K., Putrama, I. M., & Divayana, D. G. (2017). Pengembangan E-Modul Berbasis Model Pembelajaran Project Based Learning pada Pelajaran Videografi untuk Peserta didik Kelas X Desain Komunikasi Visual di SMK nEGRI 1 Sukasada. Jurnal Nasional Pendidikan Teknik Informatika (JANAPATI), 2089-8673.

Rahmawati, G. (2015). Buku Teks Pelajaran sebagai Sumber Belajar Siswa di Perpustakaan Sekolah di SMAN 3 Bandung. *EduLib*, 102-113.

Rayanto, Y. H., & Sugianti. (2020). Penelitian Pengembangan Model ADDIE dan R2D2: Teori dan Praktek. Pasuruan Indonesia: Lembaga Academic and Research Institute.

Sriwahyuni, I., Risdianto, E., & Johan, H. (2019). Pengembangan Bahan Ajar Elektronik Menggunakan Flip PDF Professional Pada Materi Alat-Alat Optik di SMA. Jurnal Kumparan Fisika.

Sugiyono. (2019). Metode Penelitian Kuantitatif. Bandung: Alfabeta.

Surma, T., & Kischner, P. A. (2020). Virtual Special Issue Computers in Human Behaviour Technology Enchanced Distance Learning Should Not Forget How Learning Happens. Computers in Human Behaviors.

Utari, U., Degeng, I. N., & Akbar, S. (2017). Pembelajaran tematik berbasis kearifan lokal di sekolah dasar dalam menghadapi Masyarakat Ekonomi Asean (MEA). Jurnal Teori dan Praksis Pembelajaran IPS, 39-44.

Violadini, R., & Mustika, D. (2021). Pengembangan E-Modul Berbasis Metode Inkuiri Pada Pembelajaran Tematik di Sekolah Dasar. JURNAL BASICEDU, 1210 - 1222.

Widiastuti, N. L. (2020). Pengembangan Bahan Ajar IPA Berbasis Konstektual Dengan Konsep Tri Hita Karana Untuk Meningkatkan Pemahaman Konsep Peserta didik. Jurnal Imiah Pendidikan dan Pembelajaran, 479-490.

Wicaksana, I. P., Agung, A. A., & Jampel, I. N. (2019). Pengembangan E-Komik Dengan Model ADDIE Untuk Meningkatkan Minat Belajar Tentang Perjuangan Persiapan Kemerdekaan Indonesia. Jurnal EDUTECH Universitas Pendidikan Ganesha., 48-59.

Widiastika, M. A., Hendracipta, N., & Syachruroji, A. (2020). Pengembangan Media Pembelajaran Mobile Learning Berbasis Android Pada Konsep Sistem Peredaran Darah

di Sekolah dasar. Jurnal Basicedu, 5(1), 47–64. https://doi.org/10.31004/basicedu.v5i1.602

Yudin, J. (2019). Pengintegrasian Literasi Budaya Dan Kewargaan Dalam Teks Hikayat Pada Buku Teks Bahasa Indonesia. Konferensi Nasional Bahasa dan Sastra (Konnas Basastra) V.