

Development of Interactive Digital Teaching Materials Based on Problem Based Learning Cultural Diversity Materials in Social Sciences Learning

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Abstrak. Bahan terbuka yang beragam belum dikembangkan oleh guru untuk proses pembelajaran. Hal ini berdampak pada hasil belajar IPS siswa yang rendah. Tujuan penelitian ini adalah untuk membuat bahan ajar digital berbasis masalah yang mengajarkan keragaman budaya pada pembelajaran IPS siswa kelas IV. Penelitian ini merupakan jenis penelitian pengembangan yang menggunakan model pengembangan ADDIE. Tes non-tes berupa lembar kuesioner digunakan. Pada penelitian ini, produk diuji kelayakan oleh ahli isi mata pelajaran, ahli desain pembelajaran, dan ahli media pembelajaran. Uji keterpakaian produk dilakukan pada kelompok siswa individu dan kecil di kelas IV sekolah dasar. Hasil rancang bangun penelitian ini menghasilkan produk bahan ajar digital yang terdiri dari teks, gambar, video, dan kuis interaktif. Ahli isi mata pelajaran menguji produk tersebut dengan persentase 76,923 persen (baik). Uji kelayakan produk oleh ahli desain pembelajaran memperoleh 92,5% (sangat baik), ahli media pembelajaran memperoleh 93,75% (sangat baik), dan uji coba individu memperoleh 85,25% (sangat baik), dan uji coba kelompok kecil memperoleh 89,52% (sangat baik). Hasilnya menunjukkan bahwa bahan ajar digital berbasis masalah yang berfokus pada pembelajaran materi keragaman budaya dapat digunakan untuk pembelajaran IPS siswa SD kelas IV.

Abstract. Diverse open materials have not been developed by teachers for the learning process. This has an impact on students' low social studies learning outcomes. The aim of this research is to create problem-based digital teaching materials that teach cultural diversity in social studies learning for fourth grade students. This research is a type of development research that uses the ADDIE development model. A non-test in the form of a questionnaire sheet is used. In this research, the product was tested for feasibility by subject content experts, learning design experts, and learning media experts. Product usability tests were carried out on individual and small groups of students in class IV elementary school. The results of this research design produced digital teaching material products consisting of text, images, videos and interactive quizzes. Subject content experts tested the product with a percentage of 76.923 percent (good). Product

feasibility testing by learning design experts obtained 92.5% (very good), learning media experts obtained 93.75% (very good), and individual trials obtained 85.25% (very good), and small group trials obtained 89.52% (very good). The results show that problem-based digital teaching materials that focus on learning cultural diversity material can be used for social studies learning for fourth grade elementary school students.

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Introduction

The Covid-19 pandemic which has attacked the entire world, including Indonesia, requires regions in the yellow, orange and red zones to change learning methods to online (Anggrasari, 2020). The Covid-19 pandemic, which requires students to do online learning, has not changed the implementation of character education in the 2013 Curriculum (Asrial et al, 2020). Character education is the main issue in education today, character education is expected to become the main foundation in the world of education. Character education is a conscious and directed effort to develop human potential to have good attitudes, morals and morals through a learning environment (Azizul et al, 2018). Ministerial Regulation and Culture of the Republic of Indonesia Number 20 of 2018 concerning strengthening character education, has implemented character strengthening education through 18 character values, one of which includes the character of social care (Sulistyarini et al, 2020). The cultivation of social care character education can be found in Social Sciences (IPS) subjects.

Social Sciences education in elementary schools is a science that studies all aspects of human life and their interactions in society (Dwi et al, 2013). Social Sciences is a subject or field of study which is a combination and integration of social sciences which is packaged in an interesting, simple, easy to understand way for students and easy to learn for instructional purposes at school (Hidayah, 2017). Social studies learning in elementary

schools is a main subject in elementary schools which studies human interaction in society and learns about events, facts, concepts and generalizations that exist in social life, then packaged into material that is interesting, simple and easy to understand. by students (Lukman et al, 2014). The aim of social studies subjects is to shape students' personalities to become good citizens and to develop students' social abilities in mastering social sciences to achieve higher education (Musaddat et al, 2021).

Schools as formal educational institutions tasked with developing the younger generation, need to plan conceptual social studies learning education, so that character formation can be realized appropriately. In fact, it seems that social care character education through social studies learning has not yet been implemented optimally (Permatasari et al, 2021). Based on the results of observations with class IV students, it was found that social studies material, especially cultural diversity, was still difficult to understand because the material was quite dense, so the impact on conveying social care characters through this material was still not optimal.

Apart from oneself, low social care character can be caused by less than optimal delivery of learning material so that learning becomes less interactive and meaningful (Hutabri et al, 2019). The results of an interview conducted with one of the class IV teachers at SD No. 1 Kerobokan, it was found

that the only teaching materials used were printed books. Teachers have not used technology to create interesting, varied and interactive teaching materials. Teaching materials are very important in learning. Teachers must have the ability to select and create open materials that are interesting and easy for students to understand so that students feel that learning at school is not a burden for them. Interesting teaching materials will motivate students to learn.

One way to make teaching materials interesting is by using digital teaching materials as a learning resource for students. Regularly arranged open materials can help students understand lessons and improve the quality of their knowledge (Putri et al, 2018). Teknologi dapat membantu membuat materi pelajaran berbasis digital. Digital teaching materials are books that are displayed digitally and equipped with text, images, sound, animation and video (Sukmanasa et al, 2017).

In the online and offline learning process, digital teaching materials can be used as a communication tool between educators and students. Digital books, also known as e-books, are books that are presented in electronic form and can be accessed via smartphone, computer, or laptop (Tambunan et al, 2020). The types of teaching materials are handouts, books, modules, radio, videos or films and interactive multimedia. In this research the author will use digital-based teaching materials with interactive multimedia. For individual learning, the use of digital resources is considered effective because it allows students to learn without being accompanied by a teacher.

The delivery of interesting teaching materials is also supported by the selection of

appropriate learning techniques so that learning becomes more interactive. The learning technique that can be used to make online learning interactive is Problem Based Learning (Tambunan et al, 2020).

Problem Based Learning is learning that provides contextual problems that are often encountered in everyday life so that students more easily understand and relate learning material to the surrounding environment and learning becomes more meaningful (meaningful). Problem Based Learning is problem-based learning that is used to develop thinking skills, problem solving skills and self-regulation by using authentic problems to be used as the focus of learning. Problem Based Learning has advantages when applied in the learning process. The advantage is that problem solving techniques can make learning more meaningful. Apart from that, using problem solving techniques can challenge students' abilities to explore new knowledge, problem solving can increase students' learning activities (Winatha et al, 2018).

Previous research also found that digital education tools can help students learn anytime and anywhere. Other research also finds that problem-based learning can improve students' ability to think critically (Winatha, 2018). There are no problem-based digital learning sources regarding cultural diversity in social studies learning. The aim of this research is to create problem-based digital learning resources regarding cultural diversity in social studies learning for fourth grade students. It is hoped that problem-based digital teaching materials based on cultural diversity learning will help and facilitate students in learning social studies.

Method

Research on the development of digital teaching materials was carried out using the ADDIE development model. The model

consists of five steps, namely analysis, design, development, implementation and evaluation. (Khamidah et al, 2019).

At the analysis stage, researchers analyze the need to develop a new product (model, method, media and teaching materials) and analyze the feasibility and conditions for developing a product. The design stage in the ADDIE model begins with designing the concept and content in the product being developed. At the development stage, an instrument is created to measure the performance of a product. The

implementation stage is the stage of product application which is intended to obtain feedback on the product being developed. The implementation stage is carried out referring to the product design that has been created. At the evaluation stage, the feedback given on product use will be revised and made according to the evaluation results or needs that have not been met by the development product.

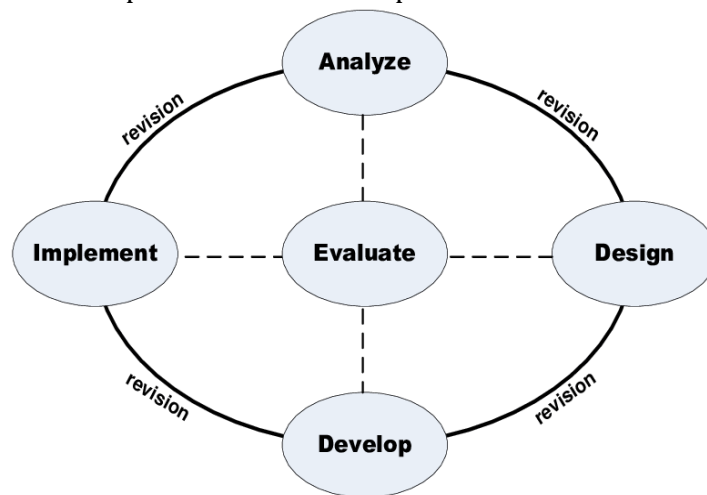


Figure 1. ADDIE Development Model

The types of data used in this research are qualitative and quantitative data. Qualitative data was obtained through questionnaire responses from individual tests and small group trials, subject matter content experts, learning design experts, and learning media experts. Qualitative data, namely student responses, converted into scores or grades and perceptions, is a source of quantitative data. The data collection used in this development research is a non-test method. This research uses observation, interview and questionnaire methods. The observation used is unstructured observation, namely the researcher directly observes the actual

situation in the field referring to the research objectives. The questionnaire method is a way to collect data through asking questions to the subjects studied (Indariani et al, 2018). This research uses a closed-ended form of questionnaire, where the questionnaire provided to research subjects is limited according to the existing questions. The instrument used in this research is a questionnaire or questionnaire. Questionnaire sheets are used to collect data from reviews by subject content experts, lesson design experts and learning media experts as well as to test individuals and small groups.

Table 1. Expert Validation Instrument Grid

No	Expert Validation	Aspek	Indicator
1	Subject Content Expert Validation Instrument Grid	Material	<ul style="list-style-type: none"> • Compatibility of material with KD • Compliance of the material with the indicator • Suitability of material to learning objectives • Adaptation of material to student characteristics • Depth of material • Supporting materials with appropriate media • Material is easy for students to understand

		Language	<ul style="list-style-type: none"> • The material presented is appropriate to real life • Use of appropriate and consistent language • Use of language that is easy to understand
		Evaluation	<ul style="list-style-type: none"> • Suitability of evaluation to the material • Quality of questions • Suitability of questions to learning objectives
2	Learning Design Expert Validation Instrument Grid	Objective	<ul style="list-style-type: none"> • Clarity of learning objectives • Suitability of the summary to the objectives • Conformity with learning objective indicators
		Strategy	<ul style="list-style-type: none"> • Clarity of user goals • Accuracy of user strategy • Material presentation strategies are able to motivate students • Provide students with opportunities for independent learning
		Evaluation	<ul style="list-style-type: none"> • Evaluations are given to measure students' abilities • Clarity of instructions for working on questions • The questions presented are in accordance with learning indicators
3	Learning Media Expert Validation Instrument Grid	Technique	<ul style="list-style-type: none"> • Ease of use of media • Media can help students understand the material • Media can motivate students to learn
		Appearance	<ul style="list-style-type: none"> • Display Quality • Screen display • Cover appearance
		Text	<ul style="list-style-type: none"> • Use of typeface • Use of font size • Use of spaces in writing • Use of punctuation
		Figure	<ul style="list-style-type: none"> • Use of images in digital teaching materials • Use of attractive images
		Video	<ul style="list-style-type: none"> • The use of videos supports understanding of the material • Use of interesting videos • The sound and image in the video are high quality
4	Individual and Small Group Trial Instrument Grid	Appearance	<ul style="list-style-type: none"> • The attractiveness of the display of digital teaching materials • Ease of use of media • Clarity of instructions for media use
		Text	<ul style="list-style-type: none"> • Text readability • Use of typeface • Use of font size
		Material	<ul style="list-style-type: none"> • Clarity of presentation of material • Material is easy to understand • The material presented is interesting
		Picture &Videos	<ul style="list-style-type: none"> • Use of images appropriate to the material • Use of videos that are appropriate to the material
		Evaluation	<ul style="list-style-type: none"> • Suitability of questions to the material • Clarity of instructions for understanding the questions

In this analysis development research, qualitative and quantitative descriptive are used to analyze the data. Qualitative descriptive techniques use data from subject content experts, product design experts, learning media experts, students and subject

teachers for analysis or processing. Quantitative descriptive data analysis carried out in this research was carried out by analyzing data from questionnaires that were given to respondents, namely content experts, media experts, learning design experts,

individual trial results and small group trial results. The provisions used to provide

meaning and decision making on the expert questionnaire sheet are presented in Table 5.

Table 5. Achievement Level Conference with Scale 5

Achievement Level	Qualification	Information
90%-100%	Very good	No Revision Required
75%-89%	Good	Slight revision
65%-79%	Enough	Revised Sufficiently
53%-64%	Not enough	Many things have been revised
0%-54%	Very less	Repeatedly Create Products

Results and Discussion

A. Results

The results of this research design are digital teaching materials consisting of text, images, videos and interactive quizzes that can help teachers and students in the learning process. To determine the condition of class IV A students' learning activities, researchers conducted an analysis of initial conditions through direct observation. This is done using a combination of online and face-to-face systems. The results of interviews conducted with one of the class teachers, it was found that there was less variety in the types of teaching materials. used during the learning process. Teachers only use student books, so students feel bored and learning is not optimal. Apart from that, the teaching materials used by teachers are not successful in increasing social awareness in students. It can be seen from the results of direct observations of students that there are several students who still throw rubbish carelessly and the level of cooperation is decreasing.

Content analysis includes selecting learning materials that are relevant to the product to be made and analyzing student characteristics. Based on this content analysis, the appropriate material was found to be material regarding Cultural Diversity in social studies learning content. The material is supported by various cultural diversity in Indonesia which is aimed at building social caring character in students. Cultural diversity material is quite dense and voluminous material. Plus, based on observations through questionnaires, students prefer learning

materials equipped with pictures, videos and interactive quizzes. At this stage, researchers carry out an analysis of KD and formulate learning indicators through interviews with class teachers to find out what learning requires innovative and interactive learning media. Based on the results of interviews and analysis, KD and indicators can be identified in Theme 7 "The Beauty of Diversity in My Country" sub-theme 2 "The Beauty of Cultural Diversity in My Country" Learning 3, still requires innovative teaching materials because the learning materials are quite dense and teaching materials that can build social care character of students.

The design stage involves selecting the software that will be used. The software used in developing this teaching material is Flip PDF Professional with the help of Canva.com to design digital teaching material pages and using the quiz-maker.com web to design quizzes used in digital teaching materials. Data collection in the form of material regarding cultural diversity, related images, videos and everything needed in the process of creating digital teaching materials. The material included in the digital teaching materials will be adjusted to the thematic syllabus for class IV elementary school in the social studies content that appears in theme 7, which will then be used as material in the digital teaching materials being developed. A storyboard is a sketch of a product's appearance that is arranged systematically. Making storyboards to make it easier for researchers to convey display designs for

digital teaching materials and preparing RPPs (Learning Implementation Plans) to help direct learning activities for students using the digital teaching materials developed and with the RPPs, learning steps can be arranged systematically.

This stage is more related to the process of making the product with preparations that have been made beforehand. The screen display was created using the Canva.com website. At this stage the researcher designs the screen display and placement of elements for text, images and videos. The display developed uses decorations that attract students. The material that has been prepared in the form of text and images is arranged according to a previously prepared plan. Teaching materials that have been designed via the Canva.com Web are downloaded in PDF form and then input into the professional flip PDF application to add videos, interactive quizzes and evaluation links in the form of Google forms. The video that will be used is previously cut and resized so that the size is not too large. The quizzes that will be added were previously created on the quiz-maker.com website. Adding quiz links and Google forms is done with the help of the action settings menu in the professional PDF flip application. The final stage is carried out by using the publish online menu on flip PDF professional to get a link that can be shared with students and can be opened via smartphone or laptop.

After the product preparation is complete, the next step is to prepare an instrument in the form of a questionnaire/questionnaire which will be used to validate this digital teaching material product by 2 experts who include subject content experts, learning media and learning design. The researcher also prepared an instrument in the form of a questionnaire to test the product being developed on students. The implementation stage of digital teaching material products should be applied to learning activities in schools, due to the

Badung Regency government's decision to instruct learning to be carried out using an online system, so it cannot carry out the learning process directly involving all class IV A students of SD No. 1 Kerobokan. So at the implementation stage, research on digital teaching materials cannot be carried out. The evaluation stage is carried out in order to find out the shortcomings of a product being developed so that it can be corrected and developed in accordance with product specifications. Evaluation in this research was carried out using formative evaluation which was carried out at each stage of product development, so that the product had good quality. Implementation of formative evaluation includes validation activities by experts and product trials carried out with a series of individual trials and small group trials.

The products produced in this research are digital teaching materials for class IV elementary schools. The digital teaching materials developed aim to facilitate fourth grade elementary school students to build students' social care character. The teaching materials developed contain material regarding the cultural diversity that exists in Indonesia for social studies learning content. Digital teaching materials are accompanied by supporting images, videos and interactive quizzes, to make it easier for students to understand the values conveyed in regional diversity when reading and observing these digital teaching materials. The teaching materials developed can be used as teaching aids that can be applied to online and offline learning. This product has gone through several stages of testing and improvement to perfect the media developed so that it meets the specifications outlined previously. The following is a discussion of the results of the development of digital teaching materials based on the results of reviews by subject content experts, learning design experts, learning media experts, individual trials and small group trials.

The results of the validity of the development of teaching materials obtained a percentage with very good and good qualifications. The following is a description of the results of the validity of the development of digital teaching materials, clearly explained as follows: The percentage obtained from subject content experts, namely 76.923%, is in good qualifications with assessment criteria including material, language and evaluation. Based on the results of the analysis, suggestions or comments obtained from subject content experts, none of them are revisions, because revisions have been carried out twice previously. The percentage obtained from learning design experts was 92.5% who had very good qualifications with assessment criteria including aspects of objectives, strategy and evaluation. Based on the results of the analysis, suggestions or comments obtained from learning media experts are revisionary suggestions, namely on learning indicators and learning objectives in digital teaching materials. Some of these suggestions are used as reference material for improving the digital teaching materials being developed. The percentage obtained from learning media experts is 93.75% and is in very good

B. Discussion

Digital teaching materials received good and very good qualifications because there are several things that make students interested in reading digital teaching materials about cultural diversity, namely the material is presented with pictures, interesting videos and interactive quizzes that motivate students to learn using digital teaching materials. developed and makes learning not boring. Digital teaching materials can be attractively designed containing videos and interactive quizzes. This causes students to be more interested in learning (Mella et al, 2022).

Other research findings also state that teaching materials containing videos can attract students' attention in learning (Nafidah et al, 2021). Interactive digital

qualifications with assessment criteria including technical aspects, appearance, text, images and video.

Based on the results of the analysis, suggestions or comments obtained from learning media experts are revision suggestions, namely on the training components of digital teaching materials. Some of these suggestions are used as reference material for improving the digital teaching materials being developed. The percentage obtained from the results of individual trials is 85.25% which is in good qualifications. Based on the results of the analysis, suggestions or comments obtained from students in individual trials, there are no suggestions for revision. The percentage obtained from the results of small group trials was 89.52% and was in very good qualifications. Based on the results of the analysis, suggestions or comments obtained from students in individual trials, there were no suggestions for revision in the digital teaching materials. Revisions are not carried out on digital teaching materials considering that the qualifications obtained are very good, so it can be considered as a consideration not to carry out revisions.

teaching materials containing text, images, videos, as well as interactive comment columns or quizzes, can make learning easier to understand and long remembered by students (Kaamilah et al, 2023). Apart from that, digital teaching materials are also easy to access, can be stored for a long time and are easy to carry anywhere. The components of teaching materials are material titles, subjects, competency standards, basic competencies, indicators, educational units, learning instructions for students and teachers, goals to be achieved, supporting information, exercises, worksheets and assessments (Siregar, 2023).

The role of the teacher when students solve problems is as a tutor who helps

students define what they know to solve problems (Sari et al, 2021). Problem solving using PBL will run effectively if the implementation is student-centered. Problem based learning generally emphasizes building students' knowledge through their involvement in the learning process (Setyo et al, 2022). The aim of Problem Based Learning is to develop critical thinking skills to solve problems and develop the ability to actively build one's own knowledge. The most prominent characteristic of Problem Based Learning is that the problems presented are authentic problems and collaboration with small groups to develop their knowledge (Marlina et al, 2023; Zulvira, 2022). The effectiveness of using learning in building social caring character is supported by research which states that the application of Problem Based Learning can improve learning outcomes (Widya et al, 2021).

Previous research findings also state that Problem Based Learning can help develop new knowledge gained and encourage students to carry out their own evaluation of their learning processes and outcomes through problem solving (Agustin et al, 2020). Other research findings also state that digital teaching will make it easier for students to understand learning material (Setiawan et al,

2023). The advantage of Problem Based Learning is that students can apply the knowledge they have in the real world by solving problems and students can develop an interest in learning continuously through problem solving, even though they have completed their formal education. The digital teaching materials developed can help students learn.

The limitation of product development in this research is that this product was developed based on the characteristics of elementary school students, so that the product developed was only made for elementary school students, especially in the Cultural Diversity material of social studies lesson content for fourth grade students, but in the product developed there was an inclusion of caring character. social which is Civics learning and stories that can be linked to Indonesian language learning subjects. The implementation of the development of digital teaching materials was carried out during the Covid-19 pandemic so that the implementation stage adapted to the conditions of the schools used for research. The implementation stage can be carried out through effectiveness testing if the school has implemented face-to-face learning.

Conclusion

Product feasibility testing in this research was carried out by subject content experts, learning design experts, learning media experts and product usability testing was carried out in individual and small group trials of fourth grade elementary school students. The result of this research design is a digital open material product consisting of text, images, videos and interactive quizzes. Subject matter experts tested the product with a percentage of 76.923 percent (good). The product feasibility test results of learning design experts were 92.5% (very good) and

learning media experts were 93.75% (very good). The small group test results obtained a percentage of 89.52%, while the individual test results obtained a percentage of 85.25%. The results of expert validation tests and trials carried out on students show that problem-based digital teaching materials are of very good quality. It can be concluded that problem-based digital teaching materials are suitable for use in the learning process and can help students understand social studies learning.

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