Integrated Thematic Teaching Materials with PjBL Based on Book Creator Application in Grade IV Elementary School

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A B S T R A K

Pembelajaran tematik terpadu memiliki tujuan untuk menyajikan pembelajaran dan pengalaman yang utuh bagi siswa. Namun data dan informasi yang diperoleh pada tahap penelitian melalui wawancara yang melibatkan guru dan siswa kelas IV SD masih diperoleh penggunaan bahan ajar cetak yang kurang menarik karena bahan kertas yang digunakan adalah jenis kertas koran. Sehingga penggunaan bahan ajar tidak dapat menarik perhatian siswa, menurut beberapa penelitian menyebabkan pemahaman dan pengetahuan siswa tidak maksimal. Penelitian ini bertujuan untuk membuat dan mengetahui kevalidan bahan ajar tematik terpadu model PjBL berbasis aplikasi book creator di kelas IV Sekolah Dasar. Penelitian pengembangan ini menggunakan model Borg and Gall. Dimana penelitian dimulai dari tahapan potensi dan masalah hingga uji coba produk. Instrumen yang digunakan dalam kegiatan penelitian ini adalah wawancara dan lembar validasi. Berdasarkan permasalahan yang ditemukan pada tahapan potensi dan permasalahan, dirancang bahan ajar dengan model PjBL berbasis aplikasi book creator. Dimana setelah divalidasi oleh lima validator, didapatkan hasil sebagai berikut, aspek kebahasaan masuk kategori valid, aspek isi masuk kategori sangat valid, aspek penyajian masuk kategori valid, dan aspek kegrafikaan masuk kategori sangat valid.

A B S T R A C T

Integrated thematic learning has the aim of presenting complete learning and experience for students. However, the data and information obtained at the research stage through interviews involving teachers and IV grade students Elementary School still obtained the use of printed teaching materials which were not attractive because the paper material used was paper newspaper type. So that the use of teaching materials cannot attract the attention of students, according to several studies, it causes students' understanding and knowledge to be not optimal. This study aims to create and determine the validity of integrated thematic teaching materials with the PjBL model based on the book creator application in the IV grade of elementary school. This development research uses the Borg and Gall model. Where the research starts from the stages of potential and problems to product trials. The instruments used in this research activity are interviews and validation sheets. Based on the problems found at the potential and problem stages, teaching materials were designed with the PjBL model based on the book creator application. Where after being validated by five validators, the following results were found, the language aspect in the valid category, the content aspect in the very valid category, the presentation aspect in the valid category, and the graphic aspect in the very valid category.

1. INTRODUCTION

The development and advancement of technology and communication is currently happening massively and rapidly so that it can affect all lines of human life. This technological progress will certainly be used to improve the standard of living of a nation so that the nation is able to compete with other nations in the world (Ghory & Ghafory, 2021; Valenci & Winata, 2020). In line with the emergence of the term industrial revolution 4.0 where all human activities are influenced by very advanced technology. Likewise in the world of education, many aspects are affected, such as distance learning applications, e-modules, e-reports and the emergence of technology-based interactive media (Century et al., 2020; Fahmi et al., 2019;

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Suryaningtyas et al., 2020). Therefore, in this 4.0 revolution period, problems or challenges based on time and place are no longer important because everything is connected to technology or called the internet of things(Ghufron, 2018; Wilianto & Kurniawan, 2018).

Based on the facts of human life that cannot be separated from the influence of technology and globalization in the field of education, of course as a teacher must be able to present the learning process to students based on the technology, so that in its development students are not left behind and are able to make these students think creatively and critical when faced with the problem-solving process (Dolapcioglu & Doğanay, 2020; Fitria et al., 2018). It can be seen in the implementation of the 2013 curriculum which teaches integrated thematic learning activities by combining existing concepts in subjects in a scheme, the ultimate goal of which is to provide complete experience and knowledge to students (Desyandri & Maulani, 2020; Ima Wahyu Putri Utami, 2019). In order for students to gain knowledge and experience as a whole, a tool or means is needed by the teacher. One of the tools or facilities needed by the teacher is teaching materials. The teaching materials in question are integrated thematic teaching materials that are able to make students gain experience that makes these students think creatively, innovatively, and interactively, so that with these teaching materials students become very enthusiastic in the learning process(Nurhadiyati et al., 2021; Sarkadi & Iqbal, 2020).

Integrated thematic teaching materials that are in accordance with the demands of the times are materials that are easily accessible, environmentally friendly and technology-based and able to facilitate not only teachers but students as well (Delfakhria & Solfema, 2022; Hendrizal & Chandra, 2018). In the integrated thematic learning process there are ideal conditions that must be created, among others, the teacher is able to develop processes and ways of learning that make students happy and fun, then the teacher is able to position himself as a learning facilitator not as a ruler in the learning process in the classroom. Furthermore, teachers are able to explore their potential in the form of interests and talents of their students, and finally teachers must be able to present and develop an active, innovative, creative and fun learning process for students(Khairi & Miaz, 2020; Sunita et al., 2019). In integrated thematic learning, learning outcomes are seen not only in one aspect but involve three aspects, namely knowledge, attitudes, and skills. The learning outcomes are a form of output from learning and learning activities. Based on a preliminary study that has been conducted in three public elementary schools in Nagari Koto Lamo, Kapur IX , Lima Puluh Kota, it is still found that the use of conventional teaching materials in the form of printed teaching materials made of newsprint, which in terms of appearance is not very attractive to participants. students and learning models that are presented in these teaching materials tend to be teacher-centered. So that many students become monotonous and apathetic in learning activities. In addition, interviews were conducted with teachers at the schools, it was found that the three schools had adequate facilities to use technology-based teaching materials, because these schools received 15 units of tablets and chrome books which were assistance from the Ministry of Education and Culture. However, the available facilities are not used optimally so that they only become a display cupboard in the teacher's room.

Based on the facts in the field, it is possible for the three schools to use technology-based teaching materials. One of the technology-based teaching materials that are very easy to use is the book creator application-based teaching materials. This book creator application-based teaching material is one of the applications used to create attractive teaching materials as possible so as to attract the attention of students in learning (Hanif Batubara et al., 2022; Prawiyogi et al., 2020). In addition, with the use of teaching materials based on book creators, the learning process that is able to provide complete experience and knowledge for students must use the right learning model. One of them is the project based learning (PjBL) model. This PjBL learning model presents a learning process that requires students to be active, creative, and innovative because the estuary of this model is that students are able to produce a product both individually and classically (Saputra & Sujarwanta, 2021; Steenhuis & Rowland, 2018).

So far as studies and searches have been carried out, there are several studies that discuss the validity and development of teaching materials based on book creator applications, including research conducted by previous researcher with the title Development of Digital-Based Modules in Instilling Values -The Value of Character Values for Grade IV Elementary School Students(Alfiani et al., 2021), further research title Learning Strategies for Physical Education Assisted by Digital Media Book Creators in Improving Students' Gross Motor Skills at the School Level Basic (Siti Rodi'ah, 2021). In connection with several studies that discuss the development and validity of teaching materials. This research has a newness compared to research conducted by previous researchers, as shown in the use of PjBL learning models that have not been carried out by other researchers. Therefore, researchers have an interest in analyses the feasibility of integrated thematic teaching materials with the PjBL model based on the book creator application in the IV grade of elementary school.

2. METHOD

The method that will be adopted in this research activity uses Research and Development (R&D) using a research design developed by Borg And Gall. The Borg and Gall research model in this study is a research step adopted by (Sugiyono, 2016) which consists of seven steps, the first starts with potential and problems, data collection, product design, design validation, design revision, testing. try the product and finally revise the design. Research with research and development methods has the aim of creating a product and conducting validation so that the product created can and is feasible to be applied in the learning process (Sari & Angreni, 2018). The product developed in this study is an integrated thematic teaching material with a PjBL model based on the book creator application in the classroom IV elementary school.

The activity carried out at the potential and problem stage is conducting a preliminary study to obtain what problems are being experienced by education practitioners, this activity is carried out at SDN 01, 02, and 03 Koto Lamo. Furthermore, at the data collection stage, it was carried out through interviews with teachers regarding the problems encountered so that after the data was collected the researchers would design a teaching material according to the needs of these students, in this activity it was set on theme 2, namely Always saving energy, in sub-theme 1 " Energy sources". Validation activities carried out in this study used instrument validity sheets. Where this Instrimunet validity sheet will be given to five validators who have expertise in their respective fields, such as 1 validator for the language section, 1 validator for the content section, 1 validator for education practitioners, and 2 validators for the design of the product created (Happy & Widjajanti, 2016). The procedure used when determining the level of validity of the product created is based on criteria as show in Table 1.

Table 1. Category determination level validity

No	Range	Category
1	25 - 43	Invalid
2	44 – 62	Not Valid
3	63 – 81	Valid
4	82 – 100	Very Valid

From the description of the Table 1, it can be stated that the material teaching that is said to be valid if it reaches an average number of ≥ 63 -81.

3. RESULT AND DISCUSSION

Result

The data obtained in this study were based on the stages of potential and problems carried out in three elementary schools, namely SDN 01,02, and 03 Koto Lamo, the results of a preliminary study in the form of a learning process carried out were still using aids in the form of conventional or printed teaching materials made from from newspapers that do not make students interested in participating in the learning process, then the teaching materials used also do not use learning models that increase the creativity and thinking power of students, and all three schools have adequate qualifications to use technology-based teaching materials. , but not used to the fullest. Of the various problems encountered resulted in students not gaining complete experience and knowledge, and thirdly carrying out the learning process. The learning process that does not vary and tends to be monotonous due to the lack of student activity causes students to lose their learning experience and results in low student understanding of the concepts being taught.

Based on the facts and problems encountered at the potential and problem stages and data collection, the researchers proceeded to the next stage, namely designing a technology-based teaching material using the steps of the PjBL model. The front page design of teaching materials can be seen in Figure 1. Base on Figure 1, show the front page design of these teaching materials is made in such a way as to describe the material to be delivered so that it can attract the attention of students. The validity test carried out on integrated thematic teaching materials with the PjBL model based on the book creator application in grade IV elementary schools was carried out by staff who were experts in their respective fields, namely four lecturers in the UNP faculty of education and one education practitioner who was a qualified teacher. master of education. The validity that is assessed on this teaching material includes several aspects, among others, the validity of the use of language, the validity of the content, the validity of the presentation, and the last is the validity of the graphic field. The results of the validity assessment on the aspects of the language used can be seen in Table 2 which has 6 assessment indicators.

Figure 1. Teaching material cover

Table 2. Linguistic Aspect Validation

No	Rated Aspect	Validity Value	Description
1	The sentences used are in accordance with Indonesian rules	89.00	Very Valid
2	Effective and efficient use of language	78.00	Valid
3	Correct use of Indonesian spelling	78.00	
4	The language used is short, concise, and easy for students to understand	78.00	Valid
5	Information clarity	78.00	Valid
6	How to write terms in writing according to PUEBI	78.00	Valid
	Average	**79.85**	**Valid**

Based on Table 2 regarding the results of the validity of the language aspect which consists of 6 assessment indicators, the average value of language validity is 79.85, where this number is included in the valid category. Values that are in the valid and very valid category for all indicators are in the range of 78.00-89.00. Furthermore, the validity assessment related to content can be seen in Table 3 which contains 12 assessment indicators.

Table 3. Contents Aspect Validation

No	Rated Aspect	Validity Value	Description
1	The suitability of teaching materials made with Core Competencies (KI) and Basic Competencies (KD)	89.00	Very Valid
2	The teaching materials made present information related to themes, subthemes, learning, content in lessons, KI, KD, indicators and learning objectives	78.00	Valid
3	Have supporting information related to the material to be taught	78.00	Valid
4	There are tests in the form of exercises for students	100.00	Very Valid
5	There are work instructions on teaching materials	100.00	Very Valid
6	According to the needs of students	78.00	Valid
7	Teaching materials made relevant to students' learning problems	78.00	Valid
8	The truth of teaching materials with the substance of learning materials	78.00	Valid
9	Able to be an effective means of communication between teachers and students	78.00	Valid
10	Conformity between moral social values and teaching materials	78.00	Valid
11	Fits and loads the PjBL model steps	100.00	Very Valid
12	Have an assessment in teaching materials	78.00	Valid
	Average	**84,42**	**Very Valid**

Based on Table 3, it can be explained that the average value for content validity assessment is 84.42 which is included in the very valid category. Values that are in the valid to very valid category are in the numbers 78.00 – 100.00. Next is the result of the validity assessment on the presentation aspect which has 5 assessment indicators as show in Table 4.

Table 4. Presentation Aspect Validation

No	Rated Aspect	Validity Value	Description
1	Clarity of the formulation of achievement indicators in teaching materials	89.00	Very Valid
2	Systematics of teaching materials	78.00	Valid
3	Teaching materials are able to make students motivated to learn	78.00	
4	Teaching materials are able to make students interact in learning	78.00	Valid
5	Have complete information	78.00	Valid
	Average	**80,20**	**Valid**

Based on Table 4, it is clear that the average value of validity in the presentation aspect is 80.20 which is included in the valid category. The values for the valid to very valid categories are in the range of 78.00-89.00. The last part of the validity assessment is the validity assessment on the graphic aspect, there are 4 assessment indicators in it as show in Table 5.

Table 5. Graphics Aspect Validation

No	Rated Aspect	Validity Value	Description
1	The writing on the display of teaching materials uses various written forms with proportional writing sizes	89.00	Very Valid
2	The layout of teaching materials is neatly arranged	89.00	Very Valid
3	Using various types of supporting components such as audio, video, images and others	89.00	Very valid
4	Design of teaching materials that are interesting and not boring	100.00	Very Valid
	Average	91.75	Very Valid

Based on Table 5, it can be explained that the average value of the graphic component is 91.75. With the four categories of indicators being in the very valid category, they are in the value range of 89.00-100.00. After analyzing the aspects of the validity assessment on the four aspects seen, then to determine the average value of the validity of integrated thematic teaching materials with the pjbl model based on the book creator application in grade IV elementary school, it can be done by finding the average value of the four aspects. starting from language, content, presentation, and graphics which can be seen in Figure 2.
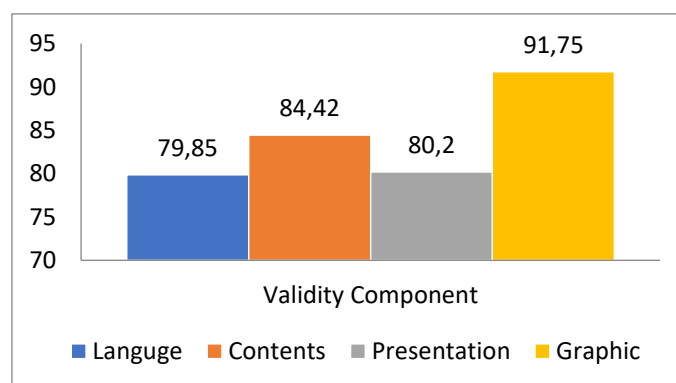

Figure 2. Validation Average Score

Based on Figure 2 above, it can be seen that the average value of each aspect in the assessment of the validity of teaching materials is in the range of 79.85 to 91.75, which if calculated the average of the four aspects of validity is 84.05. Based on the average value of the four aspects of the validity of integrated thematic teaching materials with the pjbl model based on the book creator application in grade IV elementary schools, they are in the very valid validity category.

Discussion

This research was carried out in the first stage, namely the potential and problems, where in this activity an observation was carried out in the school environment related to the use of teaching materials there. This activity was carried out by interviewing the IV grade teacher and several students there. It was

found that the learning process carried out still uses conventional printed teaching materials without considering the needs of students, students' interest in these teaching materials, as well as learning models that do not make students active and creative individuals. As in the educational objectives of the 2013 curriculum, which must provide complete learning and experience for students, it has not been accommodated in the teaching materials used today. Learning that presents complete experience and knowledge for students can make students be critical, creative and innovative which in the end will make students able to solve problems they encounter both in the learning process and in their daily lives (Džanić & Pejić, 2016; Edli & Mudjiran, 2015).

Based on the facts found, this research enters the next stage, namely the stage of designing teaching materials. One of the teaching materials that are expected to solve these problems is integrated thematic teaching materials with the PjBL model based on the book creator application. Teaching materials based on the book creator application are able to present material in the learning process into more varied materials, the material presented is not only in the form of text or images, but can be in the form of video, audio, sound recordings, or videos from YouTube links (Anjarwati, 2021; Tinja et al., 2017). By presenting various kinds of material presentation to students, students will be fulfilled all their needs for learning materials. The students themselves consist of individuals who have different characteristics in learning, there are students who have an audio type of learning, some are a visual type of learning, some are an audio-visual type of learning, and there are students who have a kinesthetic type of learning (Anggoro et al., 2012; Sheromova et al., 2020). To accommodate and make students interested and motivated in learning teaching materials designed with the help of the PjBL model based on the book creator application, this will play a very important.

Validity testing that displays the results of this teaching material related to four aspects of the assessment, namely language, content, presentation, and graphics, was found to be in the very valid validity category. The designed teaching materials are in this category due to the process of designing teaching materials through many things, one of which is revisions or suggestions for improvement from validators who are experts in their respective fields. Based on the results of the validation carried out by the validator, the product of teaching materials created is one of the teaching materials that is used as a reference or alternative teaching material for educational practitioners in elementary schools, especially in grade IV elementary schools.

In the aspect of assessing the validity of the language, it lies in the range of valid categories, because the indicators assessed are in the language aspect, one of which is the use of effective and efficient language, the language used is short, dense, and easy for students to understand, The way of writing terms in writing is appropriate. PUEBI, and Correct Use of Indonesian spelling. Where the validity assessment is in line with research which states that good teaching materials must be in accordance with PUBEI because it will make other people who read the teaching materials easy to understand (Qhadafi, 2018).

Furthermore, the assessment of the validity of the content aspect lies in the range of very valid categories, because the indicators assessed are on the content aspect, one of which contains the suitability of the material with KI and KD. The assessment obtained is in line with research conducted by previous study which provides an argument that appropriate teaching materials are teaching materials whose content is in accordance with core competencies and basic competencies in the learning (Kantun & Budiawati, 2016). In addition, in the teaching materials, material exercises are also provided for students so that they will make students understand learning well. The next validity assessment, which is seen in the presentation aspect, lies in the range of valid categories. Because one of the indicators of the assessment instrument is the clarity of the formulation and indicators, and the presentation of steps from the PjBL model used in teaching materials in accordance with the opinion expressed by previous study (Mufit et al., 2018). In addition, the graphic assessment aspect lies in a very valid category range. Because all the indicators of the assessment instrument are in the very valid category. This happens because of the preparation of the front display, the size and type of font used, animation or supporting sources that are able to attract the attention of students to use it.

Based on the validity assessment provided by the validator, the integrated thematic teaching materials with the PjBL model based on the Book Creator application in grade IV elementary schools are appropriate teaching materials to serve as alternative teaching materials for teachers in presenting a meaningful learning process and making students gain full experience and knowledge. So it is hoped that these teaching materials can be applied and used by all parties involved in the world of basic education. The limitation of this research lies in the scope of the research which is still very limited. This research only focuses on teaching material theme 2, namely Always saving energy, in sub-theme 1 "Energy sources". Therefore, it is hoped that future research will be able to deepen and broaden the scope of research related to thematic teaching materials that are integrated with the PjBL model.

4. CONCLUSION

Based on the results of the research conducted, the design of integrated thematic teaching materials with the PjBL model based on the book creator application in grade IV elementary schools was obtained which contained material on theme two, always saving energy with sub-theme 1 energy sources. Where the thematic teaching materials are integrated with the PjBL model based on the book creator application in grade IV elementary schools, validity tests have been carried out by taking into account four aspects of assessment, namely, language aspects, content aspects, presentation aspects, and graphic aspects. This validity assessment was carried out by five validators, consisting of 4 lecturers from the faculty of education at the Padang State University and one educational practitioner who is a teacher who has a master's degree in education. From the results of the validation test involving five expert validators, the final validity value was obtained, namely integrated thematic teaching materials with the PjBL model based on the book creator application in grade IV elementary schools in the very valid category. So that this teaching material can be used as an alternative teaching material for teachers in presenting complete experience and knowledge for students in accordance with the educational objectives of the 2013 curriculum.

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