



Development of Electronic Teaching Materials Using Google Sites in Grade IV Elementary School

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Abstract. Development of Electronic Teaching Materials Using Google Sites Materials on Rights and Obligations need to be developed as an alternative in delivering material in learning activities. This development intends to produce electronic teaching materials that are suitable for use by material experts, media experts, users, and are interesting and practical for students. This development model is ADDIE which consists of five stages, namely analysis, design, development, implementation, and evaluation. Data collection techniques used interviews, expert validation questionnaires, attractiveness and practicality questionnaires of students, documentation. This development data analysis uses quantitative and qualitative data. Obtaining the results of expert validation and product testing obtained 93.7% of material experts, 91.6% of media experts, and 95.8% of users with very valid and usable validity criteria. The practicality and attractiveness of the product were obtained based on small group trials getting 98% results and subsequent group trials getting 94% results in the very practical category. From the data information above, it can be concluded that electronic teaching material products using google sites can be used.

Keywords: Electronic Teaching Materials · Google Sites · Elementary School

1 Introduction

The rapid development of the times requires humans to make changes for the better. Changes can be made through education, which is a place to train and produce qualified people. Not only teachers, students must also be able to adapt and keep up with the increasingly rapid technological developments. In line with Mahanani's opinion that teachers are required to have four competencies, namely professional, personal, social and managing learning as well as possible [1]. The learning process in the classroom requires teaching materials, namely the tools used and contain information about learning materials. In line with Faridy's opinion in Putra [2, 3] that the learning process of teaching materials is an important part. Teachers need media containing material that can support understanding and make students enthusiastic [4, 5]. Electronic teaching materials can be a solution to this problem, these teaching materials have been structured in such a

way as to be easy to read and use, and can also be accessed and used through electronic devices.

The selection of teaching materials must be interesting and practical so that students do not get bored when absorbing the material presented. Interviews were conducted on March 7, 8, 9 2022 with grade 4 teachers at Sumbergedang 1 Elementary School, Anak Bangsa Smart Elementary School and also Ukhuwah Islamic Elementary School found several problems, some of the following problems were identified. (1) The teaching and learning process is not running optimally, (2) the media used for learning by students is only in the form of teachers, student books, and the environment, (3) electronic teaching materials are not yet available, (4) students' enthusiasm in reading is still not enough.

Several developments in teaching materials related to technology have been carried out by Tri [6] to get very good category results with a percentage of 87%. Responses from students get very practical results. Research by Indasari [7] with results of 85.7%, teacher validation with results of 85.93%, by students with very practical results occupying a percentage of 87.16%. Research by Purwanto [8] obtained a percentage of 81.72% from the validator and was very valid, and was categorized as very practical by the teacher with a percentage of 81.25%.

Based on the above problems, fourth grade students need electronic teaching materials that are interesting and practical to use. This web-shaped teaching material will be more interesting because in this electronic teaching material there are not only materials and questions, but also embedded learning videos, materials, sample pictures, practice questions, summaries and evaluations. Based on information on the location of the problems and needs, researchers want to innovate with electronic teaching materials needed by students, the lack of teaching materials that use electronics, it is necessary to develop research entitled Development of Electronic Teaching Materials Using Google Sites Material Rights and Obligations of Class IV Elementary Schools.

2 Methods

This development research uses a type of research (Research and Development) and uses the ADDIE model. According to Molenda in [9] the ADDIE model uses a pattern approach. The pattern approach divides a lesson planning process into several steps, evaluating the results of each step as input to the next step. Meanwhile, according to [10] research and development is a way of research that intends to create a certain product, then the product is tested for its effectiveness.

According to Tegeh [11] way development in this study consisted of five stages, namely, analysis (Analysis), planning (Design), development (Development), implementation (Implementation), and the evaluation stage (Evaluation). At each stage an evaluation is carried out, which aims to produce an appropriate product. For more details, the development steps of this research can be seen in Fig. 1.

The type of data used in this study uses two types of data, namely qualitative and quantitative data. This type of qualitative data is obtained from comments, criticisms and suggestions in general about the product made by material experts, media experts and teachers as user validators.

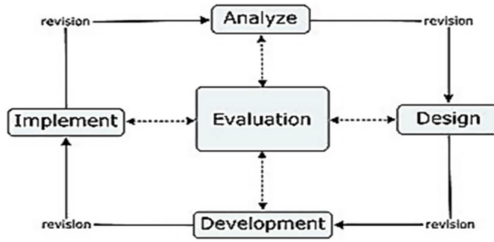


Fig. 1. ADDIE Model Development Chart

Data collection techniques to be carried out in this study are:

- (a) Questionnaire. Questionnaire for expert validators and questionnaires for students. Expert validator questionnaires are used to obtain information that teaching materials are appropriate for use. The validator consists of material experts, media experts, and teachers as users.
- (b) Documentation. The documentation used in this study is in the form of photos during product trials. Documentation is used to complete the questionnaire data.

In this study using qualitative and quantitative data. The responses written on the validation questionnaire are a source of qualitative data. This data is used as a reference for making improvements to the product being developed. Quantitative data to be analyzed are the results of questionnaires from material experts, media experts, teachers, student responses. Data for material experts, media experts, and users use a Likert scale. According to Sugiyono [12] the instructions for a very good score (sb) score 4, good (b) score 3, not good (kb) score 2, not good (tb) score 1. Next, the questionnaire data is processed to be converted into a percentage by the calculation uses the formula from [13] as follows:

$$Vah = \frac{Tse}{Tsh} \times 100\%$$

Information, Vah = expert validation, Tse = total score achieved, Tsh = expected total score. According to Akbar [13] the results of calculating the percentage of each validator are then interpreted by the results of each percentage, the results of 85.01–100.00 are in the very valid category and can be used without revision, the results are 70.01–85.00 with the category quite valid and can be used with minor revisions, results of 50.01–70.00 are in the invalid category and may be used with major revisions, results of 01.00–50.00 are invalid and may not be used. So it can be concluded if the percentage of validity reaches more than 70% then electronic teaching materials can be used with minor revisions. However, if it has not reached 70%, a major revision is needed.

Questionnaires given to students were analyzed using the Guttman scale. According to Sugiyono [10] on the guttman scale, namely “agree” with a value of 1 and “disagree” with a value of 0. Furthermore, the results of the data will be presented using the formula from Arikunto [14] as follows.

$$P = \frac{\sum x}{N} \times 100\%$$

Information, P as Percentage of score, Σx as Total Score, N as Total. The criteria for the outcome category according to Yamasari [15] can be categorized as follows, achievement results $76 \leq P \leq 100$ in the very practical category and can be used without revision, then $51 \leq P \leq 75$ in the practical and usable category, but needs minor revision, $26 \leq P \leq 50$ in the less practical category and may be used with major revisions, $0 \leq P \leq 25$ in the impractical category and may not be used. So it can be concluded that if the practicality percentage reaches more than 50% then electronic teaching materials can be used with minor revisions. However, if it has not reached 50%, it is necessary to carry out major revisions based on suggestions and input from students.

3 Results and Discussion

At the analysis stage, the researcher conducted interviews with grade 4 teachers from several elementary schools. The interview was conducted at Sumbergedang 1 Elementary School, Anak Bangsa Smart Elementary School, Ukhuwah Pandaan Islamic Elementary School. Interviews were conducted on March 7, 8, 9 2022 and obtained information that Civics learning was not being carried out effectively. The next step is an analysis of the curriculum and materials based on interviews with the homeroom teacher of class IV at SDN Sumbergedang 1. From the results of the analysis, the materials needed in learning are selected as well as materials that have problems. Therefore, this product was developed with material on Rights and Obligations in everyday life where this material has real examples in everyday life.

The results of the curriculum analysis are, in KD 3.1 Understanding the meaning of the relationship between symbols and the precepts of Pancasila, the existing teaching materials are in the form of E-Modules PPKn KD 3.1 and 4.1 Class 4 SD Flip Book PDF by Mutiah [16]. Furthermore, in KD 3.2, namely identifying the implementation of obligations and rights as citizens in everyday life, existing teaching materials are in the form of Class 4 PPKn KD 3.2 Rights and Obligations Learning Videos by Eko [17]. KD 3.3, namely explaining the benefits of the diversity of individual characteristics in everyday life, existing teaching materials in the form of learning videos on PPKn material KD 3.3 Class 4 Theme 8 "Physical diversity, preferences and characteristics" by Ummi [18]. Furthermore KD 3.4, namely Identifying various forms of ethnic, social and cultural diversity in Indonesia that are bound by unity and unity, existing teaching materials are in the form of Class 4 SD Learning Videos Content PPKn KD 3.4 Diversity in Indonesia by Murdhiyah [19].

The teaching material products that will be realized are electronic teaching materials assisted by Google sites. The stages in making electronic teaching materials include compiling a product framework by creating blank pages on Google sites. The next stage is to design the main cover by choosing a writing style, choosing an image and selecting a background color on the menu found on Google sites. Adding material that was previously summarized using Microsoft word. After that, add pictures and learning videos to the sites page. The product in the form of an electronic teaching material on Rights and Obligations was created using Google Sites.

In the third stage, namely development, electronic teaching materials using Google sites have been developed and then carried out in consultation with the supervisor to

ensure that the product is in accordance with the research objectives and is feasible to be tested.

The results of the validation by the material experts are as follows, for the suitability of the content of the material, a score of 12 is obtained, for the aspect of assessing the coverage of the material, a score of 11 is obtained, for the aspect of assessing the accuracy of writing, a score of 11 is obtained, for the aspect of assessing the presentation of the material, a score of 11 is obtained. And if it is accumulated the total score obtained from the validation of material experts is 45 with a percentage of 93.7% which is categorized as very valid and can be used without revision.

Based on the results of the material expert validator, a percentage of 93.7% was obtained. Based on the validation categorization criteria, the results of 93.7% fall into the percentage range of 85.01–100.00%. It can be concluded that electronic teaching material products have a very valid category so that the product can be used without revision. Even so, revisions will still be made by taking into account the suggestions and input from expert validators for the perfection of this product. Product development receives suggestions and input from material experts, namely the definition of Rights and Obligations needs to be changed and adjusted. It is necessary to add learning objectives to the product, not just KI and KD. The language used should not be too convoluted.



The results of the validation by media experts are as follows, for the appropriateness of the content of the material, a score of 11 is obtained, for the aspect of assessing the coverage of the material, a score of 11 is obtained, for the aspect of assessing the accuracy of writing, a score of 11 is obtained, for the aspect of assessing the presentation of the material, a score of 11 is obtained. And if it is accumulated the total score obtained from the validation of media experts is 44 with a percentage of 91.6% which is categorized as very valid and can be used without revision.

Based on the results of the media expert validator, a percentage of 91.6% was obtained. Based on the validation categorization criteria, the results of 91.6% fall into the presentation of 85.01–100.00%. It can be concluded that electronic teaching materials have a very valid category according to media experts so that the product can be used without revision. However, there were several suggestions and inputs from media experts for the development of this electronic teaching material so that the trial decisions were still adjusted to the notes and input of media experts, a percentage of 91.6% results was included in the category that could be used without revision.

The validation results by the user are as follows, for the suitability of the content of the material, a score of 12 is obtained, for the aspect of assessing the coverage of the material, a score of 12 is obtained, for the aspect of assessing the accuracy of writing, a score of 10 is obtained, for the aspect of assessing the presentation of the material, a score of 12 is obtained. And if the total is accumulated, the score obtained from user validation is 46 with a percentage of 95.8% which is categorized as very valid and can be used without revision.

Based on the results of the user/teacher validator, namely the homeroom teacher of class IV, a percentage of 95.8% was obtained. It can be concluded that electronic teaching material products have a very practical category so that the product can be used without revision. The user validation assessment result sheet contains all the detailed aspects of the product assessment. However, if there are some suggestions and input

Table 1. Group Trial

Small group trial	Large group trials
The trial was carried out in class IV at SDN Sumbergedang 1 with a total of 5 students on April 13 2022.	The large group tryout was carried out at SDN Sumbergedang 1 with a total of 10 students on April 14 2022.
	

from the user/teacher for the development of this electronic teaching material so that the results of the trial decision are still adjusted to the user/teacher's records where a percentage of 95.8% results is included in the category that may be used without revision. The development of teaching material products obtains suggestions and input from users/teachers, namely writing and punctuation must be in accordance with enhanced spelling.

This trial phase was carried out to determine the level of practicality of electronic teaching material products according to fourth grade elementary school students. To find out the level of practicality of this product students are given a questionnaire, where the results of the questionnaire will be calculated based on the Guttman scale. Students answer "Yes" then get a score of 1, if students answer "No" then get a score of 0.

As for the data from the trial results in Table 1 of electronic teaching materials on Civics material, namely the rights and obligations as follows. The small group tryout was attended by 5 grade IV students, and they were given a practicality and attractiveness questionnaire which was intended as an evaluation material for the perfection of electronic teaching material products. The results of the practicality and attractiveness questionnaire which were filled in by 5 students in small groups resulted in 98% of students answering "Yes" and 2% of students answering "No" to the questions asked. Based on the results of the questionnaire evaluation, it can be concluded that electronic teaching material products are very interesting and practical. There are several opinions from students, including good and understandable teaching materials, but the writing is not big enough. Whereas for trials in groups with more participants, followed by 10 grade IV students, the results of the analysis from the student response questionnaire showed that 94% of students answered "Yes" and 6% answered "No" to the questions asked. Based on the results of the practicality questionnaire, that the percentage of 100% is included in the achievement level of 75.01%–100.00%, based on the results of trials on students it can be concluded that electronic teaching material products belong to the very interesting, practical, fun category. And increase knowledge insight. There were several opinions from students, including the lack of color in the teaching materials, the pictures in the teaching materials were blurry, and the size of the writing was not large enough.

The last stage in developing electronic teaching materials using Google sites is to carry out evaluations as reference materials to improve products if there are deficiencies. The evaluation carried out was to analyze qualitative data from media experts, material

experts, and teachers to improve electronic teaching material products using Google sites. The following describes the results of the evaluation in the form of suggestions and input from media experts, material experts and teachers.

The results of the student practicality questionnaire in using electronic teaching material products were filled out by 5 students of SDN Sumbergedang 1, the results of the analysis of the student response questionnaire were obtained that 98% of students answered “Yes” and 2% of students answered “No” to the questions asked. Based on the results of the questionnaire evaluation, it can be concluded that electronic teaching material products are very interesting and practical. There are several opinions from students, including good and understandable teaching materials, but the writing is not big enough.

The results of the practicality questionnaire in the tryout group consisting of 10 students at SDN Sumbergedang 1, obtained the results of the analysis of the student response questionnaire that 94% of students answered “Yes” and 6% answered “No” to the questions asked. Based on the results of the practicality questionnaire, that the percentage of 100% is included in the achievement level of 75.01%–100.00%, based on the data obtained it can be concluded that electronic teaching material products are classified as very interesting, practical, fun and can increase knowledge insight. There were several opinions from students, including the lack of color in the teaching materials, the pictures in the teaching materials were blurry, and the size of the writing was not large enough.

The results of the material expert validation resulted in a percentage of 93.7% which based on the validation criteria according to [12] the percentage of 93.7% belongs to the percentage of 85.01%–100.00% The results indicate that electronic teaching material products are on rights material and obligations are included in the very valid category so that the product can be used without revision. However, product improvements are still being improved based on suggestions and input from the validator, suggestions and input from material experts that the product is very good, can be used for learning. Electronic teaching material products on rights and obligations are valid according to material experts and in accordance with 4 aspects of the assessment, namely aspects of material suitability, material coverage, accuracy of writing and presentation of material.

According to Munir [20] the first aspect of the assessment is product appearance, in this aspect it has 3 indicators including the appearance of teaching materials adapted to the age of elementary school children, the use of type and size of letters in electronic teaching materials and the suitability of images with the material made. An attractive and bright display of products will more easily attract students’ interest in learning, in accordance with Indah’s opinion [21] that attractive image media is a learning tool that can increase students’ interest in learning.

The second aspect of assessment according to Munir [20] is electronic teaching materials, in this aspect assessing the ease and practicality of electronic teaching materials to access and implement. Electronic teaching materials are adjusted so that they can be run via smartphones or computers using a website link. The third assessment aspect is the use of the product, the ease of use of the application, the availability of navigation buttons and electronic teaching materials that can be used anywhere and anytime.

The last aspect of the assessment is the presentation of the product, which evaluates the variety of teaching material products, the suitability of the material with the teaching material and the presentation of electronic teaching material in a systematic and coherent manner. These three aspects of assessment are a form of facilitating students in carrying out electronic teaching materials and understanding the material provided. According to Sri (Sri., 2019) that manuals and material coherence can make it easier for students to understand the material presented by the teacher.

Based on the three aspects of assessment, the validation results of media experts produce a percentage of 91.6%, where based on the validity criteria according to Sugiyono [10] the percentage of 91.6% belongs to the range 85.01%–100.00%, this indicates that the teaching material product electronic materials on rights and obligations are included in the very valid category so that the product can be used with minor revisions. However, the suggestions and input from the expert validator remain the basis for improving this electronic teaching material product, while the suggestions and input given by media experts are that the sentence length should be adjusted, because if the reading is too long it will be difficult for students. After the product was revised, the electronic teaching material product on rights and obligations material was valid according to media experts and in accordance with the 4 aspects of the assessment, namely aspects of product appearance, electronic teaching materials, product use and product presentation.

The assessment aspect consists of 4 aspects based on Nurul's opinion (Nurul, 2013), namely the suitability of the material, the presentation of the material, the presentation of the product and the use of the product. Each aspect of the assessment consists of 3 different indicators, for assessments from a score range of 1–4 with poor to very good criteria. The material suitability assessment aspect consists of 3 indicators, namely conformity with KI-KD, indicators and learning objectives. The second assessment aspect is the presentation of the material, consisting of 3 assessment indicators, namely the presentation of material that is systematic, easy to understand, complete and accurate.

Product presentation is the third aspect of the assessment, in which the indicators assessed are attractiveness, the level of ability of electronic teaching materials to be used by students. This aspect of the assessment emphasizes the attractiveness of an interesting product and enhances student enthusiasm for learning. In line with Yunita's opinion [24] the learning process using electronic teaching materials is more recommended in the implementation of learning so that it attracts students' learning interest.

Based on the user/teacher practicality questionnaire, a percentage of 95.8% was obtained, this indicates that electronic teaching materials belong to the very valid category and can be used without revision. The validation category refers to the opinion of Sugiyono [10] where the percentage of 95.8% is included in the range of 85.01%–100.00%. However, there are suggestions and input from users/teachers, that is, the material for the rights and obligations of the electronic teaching materials presented is very good. These suggestions and input become a reference for products, so that electronic teaching material products are included in the very valid category and can be used without revision. Electronic teaching material products for rights and obligations can be used because they are valid according to the user/teacher and are in accordance with the 4 aspects of the assessment, namely the suitability of the material, the presentation of the material, the presentation of the product and the use of the product.

The trial was conducted twice, namely the first trial for small groups and the second trial for large groups. The trial was carried out on fourth grade students at Sumbergedang 1 Elementary School. According to Rusdi [25] the trial phase was carried out with the aim of determining the level of practicality of the product according to fourth grade students according to research and development objectives. The following is a discussion of small group and large group product trials.

The small group tryout was carried out on April 13 2022 at SDN Sumbergedang 1 and was attended by 5 randomly selected class IV students. The tryout was carried out to find out to what extent the electronic teaching material products were interesting and practical according to students. The results of the practicality and attractiveness of students in small-scale trials obtained a percentage of 98% of students answering “Yes” and 2% answering “No” to the questions asked. Based on the results of a practicality questionnaire, according to Sugiyono [12] that the percentage of 95% is included in the achievement level of 75.01%–100.00%, it can be concluded that electronic teaching materials belong to the category of very interesting and practical.

The large group trial was held on April 14 2022 at SDN Sumbergedang 1 with 10 students in class IV who were randomly selected. The trial was carried out limited to 10 students. The trial activities carried out were not much different from before, namely learning was carried out by involving students in running electronic teaching material products, followed by giving practicality and attractiveness questionnaires to be filled in according to students’ personal opinions. In accordance with the opinion of Waryanto Waryanto (2008) the questionnaire given aims to determine the level of practicality of the product.

The results of the student attractiveness and practicality questionnaire in the large group trial were filled in by 10 students of Sumbergedang 1 Elementary School, the results of the analysis of the student response questionnaire were that 94% answered “Yes” and 6% answered “No” to the questions asked. Based on the results of a practicality questionnaire, according to Sugiyono [10] that the percentage of 100% is included in the achievement level of 75.01%–100.00%, it can be concluded that electronic teaching material products belong to a very interesting and practical category. In addition to practicality and attractiveness questionnaires, evaluation activities were also carried out in this large group trial. The purpose of carrying out the evaluation is to find out how far students understand the material that has been presented. The evaluation results show that the average student score is 87 out of an average minimum criterion of 75. It can be concluded that electronic teaching material products apart from being interesting and practical, students can also understand the material conveyed through this product.

4 Conclusions

The implementation of research and development of electronic teaching materials using Google Sites which was tested at SDN Sumbergedang 1 has been tested for the validity of electronic teaching materials by material experts, media experts and validation by teachers, as well as practicality and attractiveness tests by students. The results of validation by material experts obtained a total score from material expert validation of 45 with a percentage of 93.7% which was categorized as very valid and could be used

without revision. The validation results by media experts get a total score of 44 with a percentage of 91.6% which is categorized as very valid and can be used without revision. The validity test by the user or teacher gets a total score of 46 with a percentage of 95.8% which is categorized as very valid and can be used without revision. Product trials were carried out twice at SDN Sumbergedang 1. The first try-out was carried out in small groups with 5 grade IV elementary school students at SDN Sumbergedang 1, after this small group trial was carried out this electronic teaching material product obtained average results in the student response questionnaire was 98% with a very interesting and practical category. The second trial was carried out in a large group with 10 fourth grade students at SDN Sumbergedang 1, after the large group trial was carried out this electronic teaching material product obtained an average result in the student response questionnaire of 94% which is included in the very interesting and practical category. Based on these results, electronic teaching material products using Google Sites regarding rights and obligations can be declared valid according to material experts, media experts, practical according to users/teachers, practical and interesting for fourth grade elementary school students.

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