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# IMPLEMENTATION OF DIGITAL INTERACTIVE MULTIMEDIA DEVELOPMENT BASED ON ARTICULATE STORYLINE

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**Abstract.** The research aims to determine the application of developing teaching media by implementing articulatory storylines in learning. Respondents in this study were limited to fourth grade students, the method used was Research and Development by combining the ADDIE model. Feasibility is seen through expert validation, several tests, small group trials, and field trials with indicators of student responses and learning outcomes. The field test was carried out on 40 students. The research results show that digital interactive multimedia and the Articulate Storyline application have great potential for use in learning. Expert validation results obtained an average of 97% with the classification "Very Decent" reinforced by the N-Gain achievement reaching a percentage of 74% in the "High" category, and getting good results with a student response percentage value of 93.1% and response teachers by 94% with the criteria "Very Eligible". Students gave a positive response to interactive multimedia assisted by an articulated and developed storyline application. It can be concluded that digital interactive teaching media is practically used in learning in Theme 9 Subtheme 2 Learning 5 and meets the valid criteria and is very suitable for use in learning in class IV elementary schools.

**Keywords:** *Articulate Storyline*; Development; Interactive media; Validation

## I. INTRODUCTION

The development of the times along with the unstoppable development of technology makes the world of education unable to remain silent. Considering that student learning resources only rely on textbooks that are not balanced with the use of learning media, this can affect the quality of student learning. In this regard (Nurjanah, 2018) suggests that efforts should be made by teachers and schools to improve the quality of learning by presenting learning media that are more relevant to the times, namely using technology that can help teachers in teaching so that they can clarify the material.

Similarly, suggest et Novita, et al, (2020) said that the learning process would be better if you use media and learning media that vary according to the material, while Sudjana & Rivai in Nurita Teni (2018) stated the benefits of learning media in the student learning process, namely: Lessons will attract more students' attention so that they can cause learning motivation. Learning will be clearer in meaning so that it can be better understood by students and allow them to master and achieve learning objectives.

Learning using interactive multimedia can be the right solution to be combined with current technology. One of them is by utilizing *Articulate Storyline.* As conveyed by (Yasin, 2017) learning using *an Articulate Storyline is* Considered able to attract the attention of users because it can combine text, images, video, and sound so that it can provide more attractive visual results, users have full control in choosing what activities they want next, so it is more interactive.

The publication results in the form of HTML5 files, which can be accessed using *Android*, through the internet network. This fact is also supported by the results of research that has previously been conducted (Rohman, 2020) that learning media uses *Articulate Storylines* Able to increase student independence and learning motivation. In harmony with (Suardi, 2021) *Articulate Storyline* Effectively increases student learning motivation which has a major influence on student learning outcomes. Arsyad (2016) The advantage of interactive multimedia is that can stimulate the mind, and willingness to learn. The weakness of interactive multimedia is that it requires an internet network or *smartphone* which is sorry.

Based on preliminary studies on the learning process and interviews conducted by researchers in grade IV of Ciomas 06 State Elementary School Bogor City, several problems were found both in terms of students and teachers. The problem can be seen from the teacher's knowledge of using technology is still low. This can be seen in the teaching materials used by teachers in the form of printed teaching materials (teacher books and student books) into primary teaching materials used in classroom learning.

The language used in the textbook used for students uses high language as a result of which students do not understand the content of the material. In addition, the teaching materials used have not been developed according to contextual learning and the lack of use of IT in the development of teaching materials. Professional teachers in carrying out the learning process consider aspects that are oriented to the development of students and the way of thinking of students. Critical thinking is not a skill that humans are born with but is acquired through training carried out in learning. Learning that is carried out by thinking critically and in accordance with

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the needs of students will be more useful, especially in elementary schools (Fitria et al., 2018). However, according to Rahman, M.H & Latif ( 2020) in the field, many teachers have not been able to develop their own teaching materials. Even though the scope of material or information contained in teacher books and student books related to the theme is still lacking.

One of the efforts to improve learning outcomes and increase students' understanding of the material delivered by teachers during the teaching process is by implementing the development of assisted teaching media *articulate storyline* . According to Purnama (2015) characteristic *Articulate Storyline* Able to combine text, images, audio, music, animation, images, videos to achieve learning objectives. Not much different from Full Moon, Pratama (2019) argues that *Articulate Storyline* Makes it easy to visualize material that is difficult for teachers to explain. Similarly, according to Ariani (2017) *software Articulate Storyline* Easy to learn for beginners who have mastered *Microsoft PowerPoint*, can develop creativity and innovation in designing learning equipped with characters and other supporting features. Disadvantages of *Articulate Storyline* Is *backsound* On multimedia can not be played from start to finish *silde* multimedia, but music only plays on *Slide* or *Layer* where the music is added by the media creator.

## II. RESEARCH METHOD

The method used is the Research and Development (R&D) method. According to (Sugiyono, 2019) research and development is a research method that produces a certain product and tests the effectiveness of the product. According to (Wulandari, 2019) Research and development methods in the field of education can produce various kinds of products, such as learning media, teaching materials, LKPD and so on. The research model used is the ADDIE model *(Analyze, Design, Development, Implementation, Evaluation).*The method is combined with quantitative research.

Product development in this study is in the form of digital interactive learning media based *on Articulate Storyline* software in Theme 9 Subtheme 2 5th Learning class IV-C SD Negeri Ciomas 06. In developing interactive multimedia products that are in accordance with research objectives require logical and systematic stages. So researchers use the ADDIE model which consists of five steps, namely, *(Analysis, Design, Development, Implementation and Evaluation).*

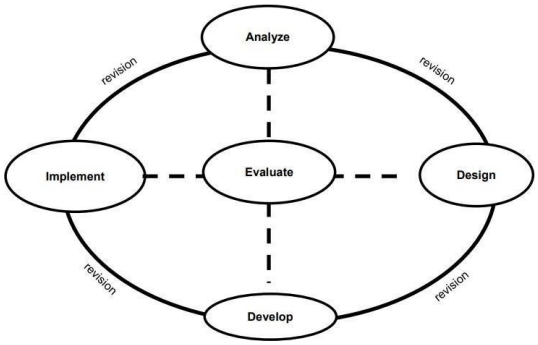


Figure 1. ADDIE Model Steps
(Wulandari, 2019)

The product development steps are presented in the following diagram.

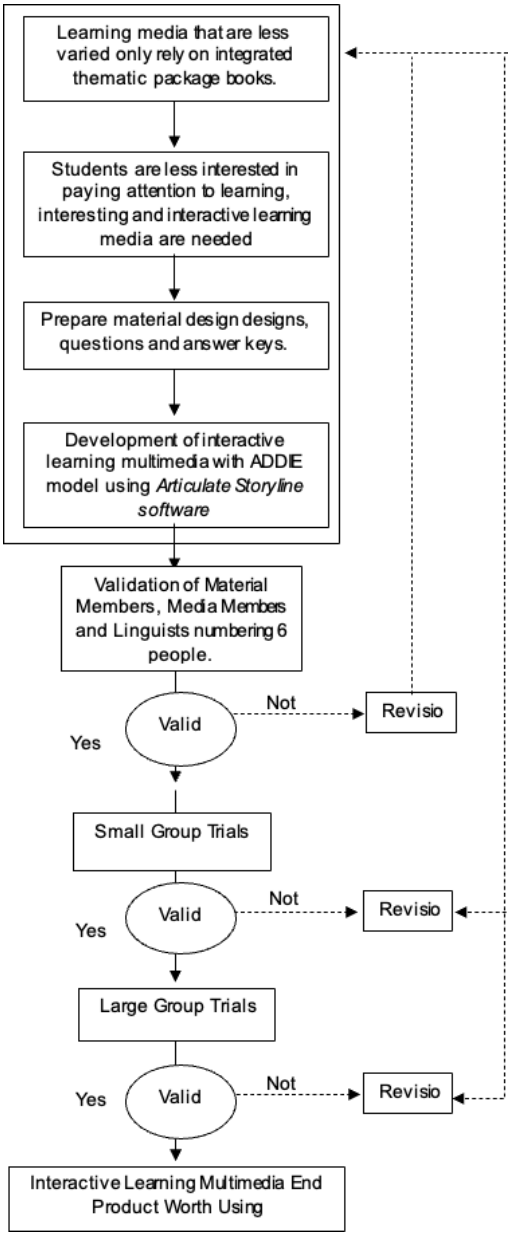


Figure 2. Product Developing Steps
(Nugraheni, 2019)

## III. RESULT AND DISCUSSION

Interactive multimedia learning Articulate Storyline *based on* Articulate Storyline software *entitled "*Kayanya Negeriku" on SBdP and Social Studies materials. SBdP lesson content contains high, low, tone and tempo material in Indonesia and Natural Wealth in Indonesia material which is presented with a combination of various media such as images,

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text, video, audio combined with interactive quiz features. In addition, interactive multimedia can be accessed using laptops and *smartphones* that are effectively used by students when learning in class and outside the classroom. In developing this media, it is carried out with the ADDIE development model which includes 5 stages, namely (*Analyze, Design,* Development, Implementation, Evaluation).

**1) *Analyze* Stage**

Needs Analysis, making observations to obtain information about the circumstances and needs of students through interviews and observations in class IV-C SD Negeri Ciomas 06 as a preliminary study. Curriculum Analysis, SD Negeri Ciomas 06 uses the 2013 Curriculum with learning resources using Integrated Thematic Books. In this study, Theme 9 Kayanya Negeriku Subtheme 2 Utilization of Natural Resources in Indonesia was chosen 5th Learning with SBdP (Cultural Arts and Crafts) and Social Studies (Social Sciences) lesson content. Characteristic Analysis and trials, conducted on 40 students.

**2) Design *Level* (Planning)**

This stage designs the display design,collects materials, images, videos, symbols,*backsounds,* quiz questions, makes a grid of expertvalidation sheet instruments based on the needs analysis that has been done before. The interactive multimedia development process *of Articulate Storyline* is made with an attractive display design with a variety of *colorful backgrounds,* beautiful audio, examples of appropriate images, videos, interactive quiz features, assessment scores, games, functional navigation buttons, and certificates as *rewards* for students. *Expert judgement* is an expertin media, language and material.

**3) *Development* Phase**

At this stage, the finalization of the interactive multimedia design design based on *Articulate Storyline* that has been made will then be carried out product testing to determine the feasibility of the product developed. The results of expert validation are outlined as follows. Product validation was carried out by 6 validators consisting of three lecturers of the Faculty of Teacher Training and Education, Pakuan University and three grade IV teachers of SDN Ciomas 06. The results of expert validation of the development of interactive multimedia are presented as follows.

**a) Media Expert**

Validation by media experts is aimed at assessingthe design aspects of media display, audio aspects, video aspects and aspects of media suitability with the material as interactive learning media. Suggestions and criticisms from experts are very important considerations for researchers. Advice from media experts becomesqualitative data illustrated in the following table.

TABLE 1. Product Revisions from Media Experts

| No. | Asesment Aspect | Value | Interpretations |
|---|---|---|---|
| 1 | Display Design | 42 | Very Good |
| 2 | Audio | 9 | Good |
| 3 | Video | 9 | Good |
| 4 | Suitability with the material | 32 | Verry Good |
| | Amount | 92 | Very Good |

The results of media expert validation, are described as follows.

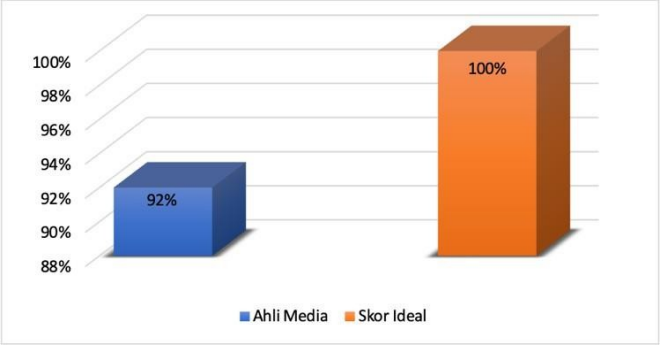


Figure 3. Media Expert Validation Results

The assessment results from media experts show that interactive multimedia-based development *Articulate Storyline* in Theme 9 Kayanya Negeriku Subtheme 2 Utilization of Natural Resources in Indonesia The 5th lesson is on the "Very Good" criterion so that implementation can be carried out.The percentage obtained reaches 92% of the interval of 90%-100%, which means thatinteractive multimedia is declared very feasible forfield trials, without revision.

**b) Linguists**

Validation by linguists is aimed at assessing the rules of writing and grammar used in interactive multimedia through validation sheets. Suggestions and criticisms by linguists become qualitative data depicted in the following table.

Table 2. Product Revisions from Linguists

| No | Assesment Aspect | Value | Interpretations |
|---|---|---|---|
| 1. | Appropriateness of terms and sentence structure | 23 | Very good |
| 2. | Language used is easy to understand | 24 | Very good |
| 3. | Effective and efficient language | 24 | Very good |
| 4. | Consistent use of punctuation | 24 | Very good |
| | Amount | 95 | Very good |

The results of linguist validation can be seen in the following diagram.


Figure 4. Linguist Validation Result

Interactive multimedia-based development *Articulate Storyline* on the qualification "Excellent". The percentage obtained reaches 95% of the interval 90%-100% which means interactive multimedia-based *Articulate Storyline* declared very feasible field trials, without revision. (Hendraskti, 2018) states that the advantage of interactive multimedia is that it can present information that can be seen, heard and done so that it is more interesting and interactive. The weakness of interactive multimedia is that, with theease with which there are teachers less active role in learning.

**c) Material Expert**

Material expert validation is intended to test the feasibility of the product in terms of material content. Revision by material experts into qualitative data in the form of suggestions illustrated in the following table.

Table 3. Product Revisions from Material Experts by Lecturers

| No | Assesment Aspect | Value | Interpretations |
|---|---|---|---|
| 1. | The material presented is in accordance with KI, KD and Learning objectives | 25 | Very good |
| 2. | Presentation of images and examples | 25 | Very good |
| 3. | Image suitability with material | 25 | Very good |
| 4. | Product carrying capacity for learning | 25 | Very good |
| | Amount | 100 | Very good |

Development of interactive multimedia based on *Articulate Storyline in* Theme 9 Kayanya Negeriku Subtheme 2 Utilization of Natural Resources in Indonesia The 5th lesson is in the qualification of "Very Good" so that implementation can be carried out as part of follow-up activities in the development stage. Thepercentage obtained reaches 98% of the interval of90%-100% which means that interactive multimedia is declared very feasible for field trials,without revision can be seen in table 4.9.

Table 4. Recapitulation of Expert Team Questionnaire Result

| No. | Expert Team | Sum |
|---|---|---|
| 1 | Ahli Media | 92% |
| 2 | Linguists | 95% |
| 3 | Material Expert | 100% |
| 4 | Material Expert | 98% |
| 5 | Material Expert | 97% |
| 6 | Material Expert | 100% |
| | **Average** | **97%** |
| | | **Very Worth It** |

**4. *Implementation* Phase**

Products that have been revised based on advice from experts, then trials will be carried out to determine the feasibility of the product using pre-test *and* post-test instrument measuring instruments. The results of pre-test and post-test instrument trials are described as follows.

**a) Pre-test *Instrument Trial Results***

Pre-test *trials* in the study were conducted to determine the initial condition of student abilities which were carried out on 40 students at the beginning of learning. The *pre-test questions* contain 10 HOTS questions in the form of Multiple Choice (PG) questions.

**b) Pre-test *Instrument Trial Results***

Pre-test *trials* in the study were conducted to determine the initial condition of student abilities which were carried out on 40 students at the beginning of learning. The *pre-test questions* contain10 HOTS questions in the form of Multiple Choice (PG) questions.

***5.* Post-test *Instrument Trial Results***

Post-test *trials* on the study were conducted to find out how effective the interactive multimedia product *Articulate Storyline* has been declared feasible by the six validators. The recapitulation of students' pre-test *and* post-test *scores is presentedin the following table.*

Table 5. Pre-Test and Post-Test N-Gain Calculationresult

| Criterion | Instrument Test | |
|---|---|---|
| | Pre-Test | Post-Test |
| Number of Students | 40 | 40 |
| Top Rated | 80 | 100 |
| Lowest Value | 20 | 60 |
| Average Rating | 45,25 | 86,25 |
| N-Gain | 0,75 | |
| N-Gain Score (%) | 74,70% | |
| **Information** | | **Tall** |

The table above shows that the *N-Gain Score* in class IV-C is 0.75 which falls into the "High" category. From these data, it shows that there is a fairly good increase in students' cognitive abilities between before and after learning using interactive multimedia.

From these data, it shows that there is a fairly good increase in students' cognitive abilities between before and after learning using interactive multimedia. In accordance with the opinion (Suardi, 2021) that *Articulate Storyline* is effective in increasing student learning motivation which has a major effect on student learning outcomes.

Referring to the *post-test* data above, it shows that there is

an increase after using the *Articulate Storyline product,* students better understand the content of the material that is packaged more interesting and interactive in SBdP and Social Studies learning in Theme 9 Subtheme 2 of the 5th Learning. The increase in value can beseen in the following figure.

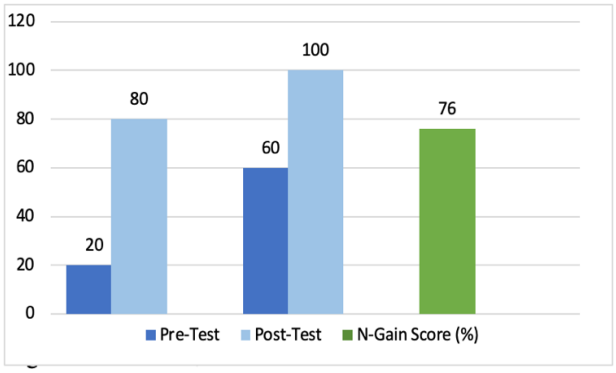


Figure 5. Pre-Test and Post-Test N-Gain

Calculation result From the results of the post-test showed an increase in learning outcomes compared to before interactive media was given *articulate storyline* about the natural wealth inIndonesia. This is in line with the opinion of Hidayat, et al (2018) that Learning outcomes are an overview of how students understand the material delivered by the teacher from these learning outcomes, teachers can receive information on how far students understand the material learned. Therefore, in order for students to learn actively and obtain maximum learning results, teachers need to create the right strategy.

**6. Evaluation Phase**

The Evaluation Phase is an assessment activity of the implementation of the product to find out how students' perceptions after implementing interactive multimedia based *on Articulate Storyline* through the distribution of student and teacher response questionnaires which are shared offline in class. The results of the student and teacher response questionnaire can be described as follows.

a. Limited Test Results Student Response

The trial was given offline to 40 students in class IV-C after learning using the product that had been developed. Data on the results of the questionnaire, presented in the following table.

Table 6. Scores of Grade IV-C Student Response Questionnaire Result

| Component | Questional Number | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| Score () | 183 | 188 | 189 | 190 | 187 | 183 | 185 | 191 | 182 | 184 | 1862 |
| Score () | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 2000 |
| **Average Percentage** | | | | | | | | | | | **94%** |

The results of the student questionnaire received a good response with an average score of 93.1%. This number is in the range of 80%-100% with the criteria "Very Good". From the data above, the product is worth using in learning.

b. Limited Test Results of Teacher Response

The limited trial was carried out at SD Negeri Ciomas 06 in class IV-C. The teacher response questionnaire contains 10 statements regarding the use of digital interactive multimedia based *on Articulate Storyline*. The results of the teacher's response after using the media are described as follows.

Table 7. Scores of Class IV-C Teacher Response Questionnaire Result

| Component | Questional Number | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| Score () | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 47 |
| Score () | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 50 |
| **Average Percentage** | | | | | | | | | | | **94%** |

The results of the teacher questionnaire receiveda good response with an average score of 94%, this number was between the range of 80%-100% with the criterion "Very Good". The teacher response questionnaire in the research data serves to obtain accurate data and information from respondents.

Based on the data above, interactive multimedia can help students learn independently, navigation buttons run according to their functions, language is easy to understand, while display design can motivate students in learning, the presentation of material, images, videos, games, and music attracts students' attention, the presentation of varied questions, not only that multimedia is able to facilitate an interactive learning process so as to clarify the content of the material.

Thus, interactive multimedia based on *Articulate Storyline* Theme 9 Subtheme 2 with the criteria of "Very Good" which is stated to be able to motivate students in learning independently, assist teachers in teaching and can provide variations on technology-based learning media, so that students are more enthusiastic and can be actively involved in learning.

## IV. CONCLUSION

The implementation of interactive learning media using the ADDIE model (Analyze, Design, Developmnet, Implementation, Evaluation) assisted by Articulate Storyline software in Theme 9 Subtheme 2 Utilization of Natural Resources in Indonesia grade IV State Elementary School Ciomas 06 received valid results. This is evidenced by the results of expert validation by three lecturers and three class IV teachers with an average validation result reaching a percentage of 97% which is declared "very feasible" to be tested on students. The implementation results showed that there was an increase in students' pre-test and *post-test* scores before and after using interactive multimedia with an *N-gain* score of 0.75. In addition,

the results og the student and teacher response questionnaires received good responses, the percentage of responses from class IV-C teachers was 94% while the results of student responses totalling 40 people received a percentage of 93.1%. Thus, the interactive multimedia *Articulate Storyline* developed is feasible to be applied in classroom learning.

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