

Development of Learning Media Using the Articulate Storyline Application in Integrated Thematic Learning

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Abstract: This research is motivated by the conventional nature of learning that takes place in the classroom, that is, it is still teacher-centered, not student-centered. This research aims to produce learning media using the Articulate Storyline application in integrated thematic learning that is valid, practical and effective to improve student learning outcomes in class III elementary schools. This research uses research and development (R&D) methods with the ADDIE development model which has five stages, namely Analysis, Design, Development, Implementation, Evaluation. At the analysis stage, observations and interviews were carried out with teachers and students in elementary schools, at the design stage a learning media was designed according to the data and facts obtained. At the development stage of the learning media that has been designed, validation is carried out to find out whether the product is valid for application. Validation is carried out in three stages: first, validation by five validators who are experts in their respective fields with an overall average result of 88 with a very valid category. The results obtained after evaluating the practicality test of the teacher response questionnaire obtained an average score of 91 in the very practical category, and the student response questionnaire obtained an average score of 90 which was in the very practical category. In the effectiveness test, the learning results obtained an average value of 89 in the effective category and for the N-Gain Score an average value of 0.74 was obtained with a percentage of 74, including the effective category. Based on the results of validity, practicality and effectiveness tests, it can be concluded that the learning media using the Articulate Storyline Application in thematic learning is a valid, practical and effective learning media.

Keywords: Learning media; Storyline application; Thematic learning

Introduction

The increasingly rapid development of the times demands a paradigm shift in learning from teacher-centered learning which tends to be passive to student-centered learning which develops students' critical and active thinking. A teacher should be able to play the role of an ideal teacher, including: being able to change attitudes or influence and motivate students; using varied methods; able to transfer knowledge to students; able to master the class; and Mastering the subject matter

(Hadiyanto, 2014). In the basic education process, information technology plays an important role. Explained by Astini (2020). Information technology can be used to help the learning process (Shatri, 2020). Harun et al. (2023) explains that in the world of education, apart from being able to encourage reform efforts to make the educational process more efficient, developments in science and technology can also make teaching and learning activities easier. Where information and communication technology, in the learning process, is used as a link in transferring knowledge without eliminating the initial model of face-to-face learning in

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the classroom (Faisal & Kisman, 2020). In line with this Pribowo (2020) explains that information technology can also make it easier for teachers to find various learning resources.

Integrated thematic learning is learning that integrates various competencies from various subjects into various themes (Akib et al., 2020; Ananda et al., 2023). Apart from that, integrated thematic learning is an integrated learning model (integrated instruction) which is a learning system that allows students, both individually and in groups, to be active in exploring and finding scientific concepts and principles holistically, meaningfully and authentically (Clark et al., 2024). It is hoped that this thematic learning can fulfill national education goals in cognitive, affective and psychomotor aspects. In Permendikbud No. 65 of 2013, it emphasizes thematic learning using a scientific approach. The scientific approach emphasizes student activity in learning, as well as providing opportunities for students to build concepts in their knowledge independently, familiarizing students with formulating, facing and solving problems found. Utami et al. (2020) explains that the role of teachers as organizers of education is required to be able to create a learning atmosphere that is meaningful, fun, creative and dynamic for students so that students are motivated to learn.

Based on the results of observations and interviews conducted by researchers at SDN 19 Cubadak Air Utara Kota Pariaman, several problems were found in the learning process, including during the teaching and learning process, the media used by the teacher was less effective. So that students feel bored and learning feels unpleasant so that it affects student learning outcomes; students do not actively participate in the learning process because the media is limited so it does not provide concrete experiences for students; teachers have taken advantage of developments Science and technology in learning media, but only limited to the use of media on YouTube. Teachers have not been able to develop learning media based on developments in science and technology; the YouTube media used is often not in accordance with the characteristics of students; and judging from their psychology, students tend to be happy with audio-visuals that can be watched directly.

The limited learning media used by teachers has made the learning process less enjoyable. This results in low student learning outcomes (Daryanes et al., 2023). One of the reasons for this situation is that the learning process has not been supported by technology-based media, so it is necessary to develop interactive multimedia-based learning media so that the learning process can run optimally. Where children are not only focused on viewing the media, but can also interact directly with the media, thus creating a two-way

learning process. According to Mairina et al. (2022) this is also supported by Minister of Education and Culture Regulation no. 22 of 2016 which states that one of the learning principles used is to utilize Information and Communication Technology (ICT) so that the efficiency and effectiveness of learning in schools increases (Rahayu & Ulumiyah, 2021). Students really need a learning design that focuses on student learning and can be shared by all students, so that they have many opportunities to express their ideas in learning activities both independently and together. With articulate storyline-based learning, students will get used to learning independently, creatively, and have many opportunities to express their ideas in learning activities, as well as learning to work together both in groups and other groups in solving a problem or problem.

Creating interactive multimedia-based learning media can be done using the Articulate Storyline application with content in the form of text, images, graphics, sound, video and even animation and simulation (Linda et al., 2021; Wahyuni et al., 2023). The reason for using the Articulate Storyline application in creating interactive multimedia in this research, apart from being a simple and easy application without having to master multimedia and animation application programs and even programming languages, this application can also combine text, images, graphics, sound, animation and video. And supported by interactive game-based learning. The same thing is also explained in research Chotimah (2018) that Articulate Storyline is software that is used as a communication tool or presentation media with templates that can be made by yourself or you can even make presentations using the templates provided and you can adjust the characters according to your taste. . So that teachers (educators) can design learning media according to the characteristics of students.

Method

Research and Development (R&D), which aims to develop a new product or improve an existing product. (Sarifah et al., 2022), suggests that the term product can be interpreted as hardware or software, such as interactive learning models, guidance models and so on. This research is educational research and development which aims to develop software in the form of learning resources.

Research and development methods can be interpreted as a scientific way to research, design, produce and test the validity of products that have been produced (Sugiyono, 2016). Based on this understanding, research and development activities can be shortened to 4P (research, planning, production and testing). Educational development research includes the

development process, product validation, and product testing. Through development research, researchers strive to develop a product that is effective for use in learning. Sindu et al. (2021) states that research and development aims to produce new products through the development process. Research and development products in the education sector can be models, media, equipment, books, modules, evaluation tools and learning tools such as curriculum and school policies.

The development model that will be used by researchers is the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. The ADDIE model was developed by Dick and Carry and the ADDIE model was developed (Adhiana et al., 2022; Mu et al., 2022). According to Rofiah et al. (2024), the ADDIE model is a general learning model and is suitable for development research. When used in development, this process is considered sequential but also interactive. Nechypurenko et al. (2021) stated that at the level of learning material design and development, systematicity as a procedural aspect of the systems approach has been realized in many methodological practices for the design and development of texts, audiovisual materials and computer-based learning materials. This ADDIE model can be used for various products such as models, learning strategies, learning models, media and teaching materials (Toni et al., 2024).

According to Kurt (2017) the steps for developing learning media using the ADDIE model are:

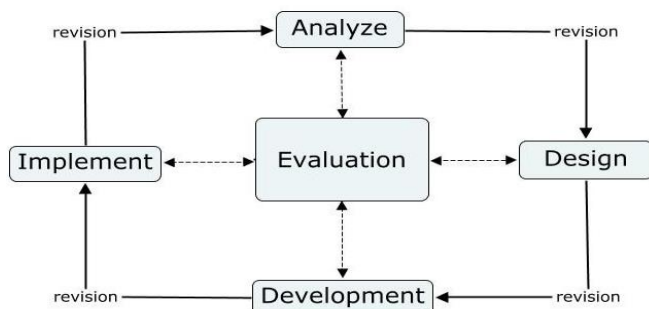


Figure 1. Development of the ADDIE model

Validity Test

The validity test aims to check the application, concept, management, form and appearance of the product through the applicable curriculum. Validity is carried out by experts and educational experts according to the field of research. The verifier's criticism, opinions and suggestions will become material for modifying the learning media being developed. The average validation score for all aspects observed using Formula 1 and the criteria is presented in Table 1.

$$\bar{X} = \frac{\sum X}{n} \times 100\% \tag{1}$$

Note:

\bar{X} = Average score

$\sum X$ = Score total

n = Amount value

Table 1. Kriteria Validasi

Percentage (%)	Categories
1 - 20	Invalid
21 - 40	Less Valid
41 - 60	Fairly Valid
61 - 80	Valid
81 - 100	Very Valid

Practicality Test

After being validated and revised, the learning media is tested in schools. Practicality is the level of practicality of research products used by teachers and students. Based on this definition, it can be concluded that the practicality test stage was carried out to determine the extent to which elementary school teachers and students benefit from the benefits and ease of use of learning media.

Interactive multimedia practicality analysis technique developed through interactive multimedia practicality questionnaires for teachers and students. The questionnaire consists of statements to determine the practicality of interactive multimedia which was developed using a Likert scale. Practicality scoring uses Formula 2 with the criteria in Table 2.

$$\%Practicality = \frac{Score\ obtained}{Score\ Maximum} \times 100\% \tag{2}$$

Table 2. Practicality Level Criteria

Percentage (%)	Category
1 - 20	Impractical
21 - 40	Less Practical
41 - 60	Quite Practical
61 - 80	Practical
81 - 100	Very Practical

Effectiveness Test

The effectiveness test aims to determine the actual effectiveness of using learning media (actual effectiveness) in improving student learning outcomes after using the learning media that has been designed. Data was obtained from student learning outcomes tests which were focused on measuring student learning outcomes. Before carrying out the test, the researcher first arranges the test items, creates an answer key, creates an assessment rubric, and validates the test items and assessment rubric.

The N-Gain score is used to determine the effectiveness of products developed in integrated thematic learning from student learning outcomes, which can be seen from the difference in the results of

the initial test and the final test. To analyze the initial test and final test, the effectiveness of the product developed in integrated thematic learning was calculated using the N-Gain score (Hake, 1999) with the Formula 3.

$$Score\ N - Gain = \frac{spost - spre}{smax - spre} \times 100 \tag{3}$$

Table 3. Learning Effectiveness Criteria

Percentage (%)	Category
< 40	Ineffective
40 - 54	Less effective
55 - 74	Effective enough
> 74	Effective

Table 4. Learning Effectiveness Criteria

N-Gain Value	Category
$g > 0.7$	Tall
$0.3 \leq g \leq 0.7$	Currently
$g \leq 0.3$	Low

The results of this calculation are matched with the effectiveness assessment criteria by Hake (1999) which can be seen in Table 3. The calculation results can also be compared with the effectiveness assessment criteria by Meltzer (2002) which can be seen in Table 4.

Result and Discussion

Product Eligibility Validation

The validity test aims to check the application, concept, management, form and appearance of the

product through the applicable curriculum. Validity is carried out by experts and educational experts according to the field of research. The verifier's criticism, opinions and suggestions will become material for modifying the learning media being developed.

Material Expert Validation Results

The material experts in the process of validating learning media based on the Articulate Storyline application are 3 experts. Validation carried out by material experts is related to aspects of material relevance. Validation by material experts apart from conducting feasibility assessments, material experts also provide comments and suggestions for improving the media. The following are the names of material or content validators that validate development products.

Based on Table 5, it can be concluded that the material expert aspect was obtained on average for each validator, namely: validator 1 (87.5), validator 2 (85.4), validator 3 (93.7) which are included in the category very valid. So overall, the learning media based on the Articulate Storyline application that has been developed by researchers can be tested. There are several suggestions given by material experts, namely, use large letters so that students do not have difficulty reading, and use pictures that are interesting to students, therefore revisions are needed, and the researcher revised the recommended parts.

Table 5. Validation by Material Experts

Rated aspect	Rating result		
	Validator 1	Validator 2	Validator 3
Content and Learning Objectives			
Conformity of content with Basic Competencies (KD)	3	4	4
Conformity of Indicators with Basic Competencies (KD)	3	4	4
Conformity of learning objectives with indicators	4	4	4
Suitability of the material to thematic learning	4	4	4
Clarity of material presentation	4	3	3
Material is presented systematically	4	3	4
Completeness of the material content	3	3	4
The level of difficulty of the material is appropriate to student development	3	3	4
Example of Material Image			
The images are presented attractively	4	3	4
Suitability of the image to the material	4	4	4
The image is equipped with a description	3	3	3
Images are clear and stimulate students to think contextually	3	3	3
Amount	42	41	45
Average	87.50	85.40	93.70
Validity Criteria	Very Valid	Very Valid	Very Valid

Language Expert Validation Results

Validation of language aspects in the Articulate Storyline Application-based learning media that researchers developed was carried out by an expert in

the field of language, namely Mr. Dr. Adrias, M.Pd. He is a lecturer in elementary school teacher education (PGSD). The language validation results can be seen in Table 6.

Table 6. Validation by Linguist Experts

Rated aspect	Assessment Results	
	Validator 1	
Communicative		
Understanding of messages or information	5	
Straightforward		
Accuracy of sentence structure	4	
Effectiveness of sentences	4	
Standardity of terms	5	
Dialogic and Interactive		
Ability to motivate students	5	
Compliance with student development		
Suitability to the intellectual development of students	5	
Suitability to the level of emotional development of students	5	
Conformity with language rules		
Language accuracy	4	
Spelling accuracy	5	
Number	42	
Average	93.3	
Validity Criteria		Very Valid

Based on the validation results by language experts, an average validity percentage value of 93% was obtained with a very valid category and could be tested with revisions according to suggestions from the validator. The advice given by the language expert validator is to pay attention to the effectiveness of sentences and use grammar appropriately, therefore revisions are needed and researchers revise this section.

Media Design Validation Results

Based on the validation results by media experts, an average validity percentage value of 80.5% was obtained. The validation results which are in the range of 81% - 100% are in the valid category, this means that the learning media developed can be tested with revisions according to suggestions from the validator. The suggestions and input provided by material experts are: the title on the cover has been changed to a more contrasting color, so it is clearly readable; navigation to move to another page is made more consistent with the same format so that it is easier for users to recognize; there is some writing that is too close to the edge and gives the impression of being full; and then the researcher revised it according to the suggestions and input provided by experts.

Implementation

Learning media that have been declared valid are implemented in two schools, namely SDN 19 Cubadak

Air Utara and SDN 22 Manggung with a total of 27 students and two teachers. The application of this product was carried out in each school observed by the author.

At the implementation stage, students are divided into groups so they can use laptops as learning media. And learning media is displayed in front of the class via a projector. Learning media is opened by students and the author guides students to understand the instructions for using learning media. After that, the learning media is used in learning guided by the teacher. The following is an explanation of activities at the implementation stage:

Distribute practicality questionnaires

At the end of the use of learning media, the author distributed a questionnaire to teachers and students to find out the response to the learning media used. The questionnaire distributed to teachers and students contained five aspects including the practicality aspect of use with 4 questions, the time efficiency aspect with 1 question, the suitability aspect of illustrations with 2 questions, the language aspect with 2 questions and the evaluation aspect with 3 questions.

Giving questions

Giving questions aims to measure the effectiveness of learning media after use. The questions prepared include questions regarding class III material, theme 8 about young praja karana, subtheme 4 I like creating. The questions chosen are guided by operational verbs that are appropriate for the HOTS question level so that students do not just do the questions but understand the meaning of the questions and answers they do.

Implementation

This stage is a continuation of the Development stage. At this stage, all media designs that have been developed are implemented after revisions are carried out. The learning media that has been developed is implemented in real situations, namely in the classroom. Implementation was carried out on class III students of SDN 19 Cubadak Air Utara on 10 - 15 June 2024 and SDN 22 Manggung on 17 - 20 June 2024. The results of the development were applied in learning to determine the quality of learning including the effectiveness, practicality and efficiency of the products that had been developed for student learning outcomes.

Table 7. Validation by Media Design

Variable	Indicators	Assessment Results
Appearance	Suitability of background use	4
	The correctness of font selection for easy reading	3
	The correctness of letter size for easy reading	3
	The correctness of text color for easy reading	4
	Image composition	3
	Image size	3
	Image display quality	3
	Image suitability with material	3
	Image attractiveness	4
	Sound effect accuracy	3
	Front cover attractiveness	3
	Appropriateness of appearance with content	3
	Appropriateness of learning media buttons	3
	Appropriateness with users	3
	Flexibility (can be used independently and guided)	3
Programming	Completeness of instructions for use	3
	Accuracy of navigation button use	3
	Accuracy of interactive link performance	4
Amount		58
Average		80.5

Evaluation Results

Practical results of learning media based on the articulate storyline application by teachers

Practicality is used by teachers to determine the practicality of the learning media that researchers develop. The practicality test is carried out by asking teachers to fill out a practicality questionnaire sheet for the learning media being developed. The results of the practicality test by the teacher can be seen in Figure 2.

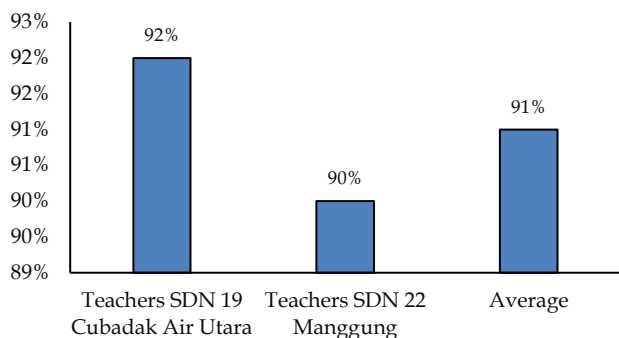


Figure 2. Practicality results by teachers

Based on the results of practicality by teachers regarding the learning media developed, an average practicality percentage of 94% was obtained in the very practical category. This shows that the Articulate Storyline application-based learning media developed is stated to be very practical to use and easy to operate independently and suitable for application in the learning process in class III of elementary schools.

Results of the Practicality of Learning Media Based on the Articulate Storyline Application by Students

The results of student responses were used to determine students' opinions regarding the practicality of learning media based on the Articulate Storyline application which has been tested on students. The practicality test is carried out by asking students to fill out a practicality questionnaire sheet for the learning media being developed. The results of the practicality test of learning media based on the Articulate Storyline application by students can be seen in Figure 3.

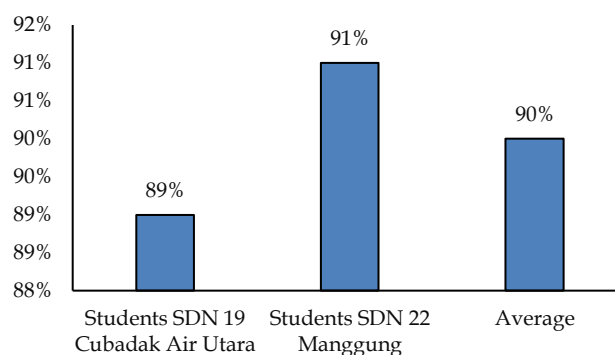


Figure 3. Practicality results by students

Based on the practicality results above, it can be seen that the average percentage of practicality in both schools is 90%. So the practicality category is "Very Practical". Based on the criteria contained in the practicality test on students, the Articulate Storyline application-based learning media produced is included in the criteria for being very practical to use.

After the researchers distributed questionnaires to students to obtain practical data. The next step is that the researcher carries out an effectiveness test stage based on

student learning outcomes (Posttest), if more students reach the KKM than those below the KKM, then learning using this learning media is considered successful.

Effectiveness Test Results on Student Learning Outcomes

The effectiveness test on student learning outcomes was carried out to see the extent to which learning outcomes in the knowledge domain had improved before and after using the Articulate Storyline application-based learning media (Junpahira & Pahlevi, 2023). Testing the effectiveness of student learning outcomes is carried out by giving pre-test and post-test questions to students. Then compare the results of the pre-test and post-test. The following is a recapitulation table of pretest and posttest scores.

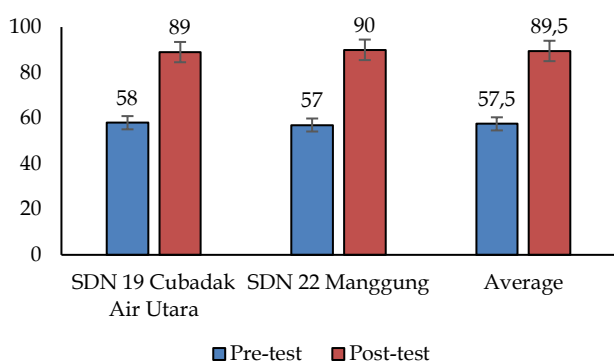


Figure 4. Recapitulation of pretest-posttest student learning results

Based on Figure 4, the average learning outcome score from both schools is 89 so it can be concluded that the Articulate Storyline application-based learning media can help students understand the material in theme 8 sub-theme 4 (I like creating) so that they get very good results and also include in the effective category (Fajarwati et al., 2023).

N-Gain Score

The learning outcomes after the pre-test and post-test trials obtained effective results. This statement is confirmed by looking at the results obtained with an average Pre-test score of 57, then a Post-test was carried out, there was an increase with an average score of 89. Then the Pre-test and Post-test results were analyzed using the N-Gain Score. The results obtained from the N-Gain test were 0.74 in the high category and the N-Gain Score percent was 74.00 in the effective category. So, it can be concluded that the learning media based on the Articulate Storyline application in theme 8 subtheme 4 (I like creating) that the author developed is effective in improving student learning outcomes.

The learning media used is declared effective if it has a good impact on students in achieving learning

goals. Learning media can provide learning experiences for students so they are active in learning (Nissa et al., 2021; Simatupang & Napitupulu, 2023).

Conclusion

The Articulate Storyline application-based learning media produced in this research is very valid from the material or content aspect with an average validity percentage of 89%. Very valid from the language aspect with an average validity percentage of 93%. Valid from the media aspect with an average validity percentage of 80.5%. These results illustrate that the Articulate Storyline application-based learning media developed is valid and can be used in the learning process. The results of the analysis of teacher and student responses show that the Articulate Storyline application-based learning media produced in this research has very practical criteria, namely teacher responses with an average of 91% and student responses with an average of 90%. These results illustrate that the learning media based on the Articulate Storyline application is practical to use and can assist in implementing the integrated thematic learning process in class III of elementary school. The effectiveness test is carried out based on the results of knowledge obtained after using the learning media that has been developed. Student learning outcomes from both schools with an average of 89% are in the very effective category. After looking at these two aspects of the assessment, it can be said that the learning media based on the Articulate Storyline application in theme 8 subtheme 4 (I like creating) is very effective in the learning process.

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Conflicts of Interest

The authors declare no conflict of interest.

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