

Development of Interactive Media Based on Articulate Storyline to Enhance Student Interest at Junior High School on The Pressure of Substance's Material

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Abstract

Decreased student learning interest in the pressure of substance material is influenced by less interactive of learning media. The interactive media that we developed is based on articulate storyline application for junior high school's student. The ADDIE (Analyze, Design, Development, Implementation, and Evaluation) model is used to develop this product. The results were increasing value in the pre-test 41,4 to post-test 54,5. Then the result of the *t*-test analysis obtained a significance value of $0,001 < 0,05$. In addition, the percentage of the descriptive analysis shows that the majority of students were 'interested' in the interactive media is 76.66%. Thus, we get the conclusion that the development of interactive media based on Articulate Storyline is able to increase the student interest at junior high school in the pressure of substance material.

Keywords: *interactive media; articulate storyline; student interest; the pressure of substance.*

I. Introduction

The pressure of substance is related to a material consisting of solid pressure, liquid pressure, and gas pressure that applies to junior high school students. Many research states the decrease of student interest in the pressure of substance material for junior high school. This is caused by the existence of several internal and external factors that affect student learning interests. Based on the previous research conducted in several junior high schools in the city of Semarang, there are internal and external factors that affect students' understanding of science material [1]. The internal factors are their interest, motivation and talent while the external factors are related to school facilities [1]. Then the research at junior high school of Rantau Panjang found that many obstacles experienced by students

in studying liquid pressure material are related to the mass of density, hydrostatic pressure, Archimedes law, and pascal law [2]. The required solution is the development of interactive media [2]. According to Jayanti *et al.* many students experienced a decrease in understanding of the pressure of substances caused by the lack of students' interest in learning activities [3]. Thus, there is a connection between the student's interest and learning media [3]. Moreover, the more interesting of learning media, the higher of student learning interest.

Interactive media is a media innovation that can increase motivation for students to learn in classroom. Articulate Storyline is an application that is used to create interactive media in learning. Based on previous results, this media was successfully developed in light wave material of physics and received good responses from its respondents [4]. In addition, in football material of sports, this application is able to combine images, texts, videos and sounds which are packaged into applications, get an excellent satisfaction index and can be used in learning activities [5]. However, the development of media with articulate storyline in the pressure of substance on physics has never been developed before. All of these descriptions are becoming basis for carrying out our research. Therefore, the purpose of this research is "developing an interactive media based on Articulate Storyline to increase junior high school student's interest in the pressure of substance material.

II. Method

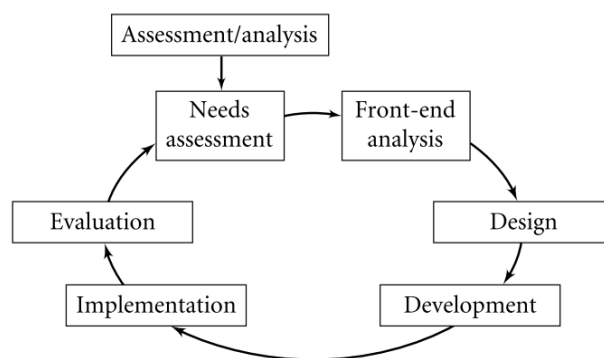


Figure 1. Model of ADDIE from Lee & Owens

This research used model of ADDIE (Analyze, Design, Development, Implementation, and Evaluation) to develop product [6]. The ADDIE model cycle is shown in Figure 1. The Analyze phase aimed to analyze problems of learning media in the field and found the solutions. This stage is carried out by surveys and interviews. The Design stage aimed to design a product as interactive media based on an Articulate Storyline on the pressure of substance. Then output of this product is converted into HTML 5 form which can be accessed via a computer or smartphone. The Development stage aimed to develop a product whose feasibility is assessed by experts. The feasibility aspects here are media,

material and lesson plan that are used in learning to judge the validity product. The Implementation phase aimed to apply the product on students at the classroom. In addition, 20 questions of pre-test and post-test instrument were used at the beginning and the end of the lesson. Then to get data on student interest, a questionnaire was also distributed to students at the end of lesson. Finally, the Evaluation stage aimed to analyze the results of the pre-test and post-test data, as well as the questionnaire, through statistical tests [7]. These stages are determined to know whether there is an influence of the interactive media based on the articulate storyline developed on student learning outcomes and student interests.

This research was conducted at SMPN 1 Kandat, East Java. The object of research was 31 students from class VIII B at SMPN 1 Kandat. The data collection technique uses a quota sampling technique, which the number of respondent is determined in a limited manner [8]. For the research design, we used a type of pre-experimental test design to test the effectiveness or test the hypothesis [9]. Specifically, the type was designed in one group pre-test and post-test ($O1 \times O2$). Where $O1$ is the pre-test before treatment, X is the treatment and $O2$ is the post-test after the treatment. The student interest questionnaire was carried out after the post-test had been taken.

The data obtained in the form of qualitative and quantitative. Then these data were analyzed by descriptive statistics. Statistical analysis was carried out by researchers with a paired sample test. The normality test of the pre-test and post-test data were analyzed with the Kolmogorov-Smirnov One-Sample normality test aiming to determine the results of the statistical test as normally distributed or not [10]. If the significance value is more than 0,5 ($> 0,05$), the data is normally distributed. If it is below 0,5 ($< 0,05$), the data is not normally distributed. The t -test (paired samples t -test) is one of the statistical analyzes used to determine the significance value about the acceptance of the hypothesis [11]. For the criteria of significance value for the hypothesis, we used a limit of 0,05. When the significance value is below 0,05 ($t < 0,05$), the initial hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Thus, there is a significant influence of the independent variable on the dependent variable. Where, the independent variable is the variable that causes the dependent variable occurs. Conversely, if the significant value is above 0,05 ($t > 0,05$), the initial hypothesis is accepted and the alternative hypothesis is rejected. Thus, there is no significant effect on the variable. There are 2 hypotheses in this research. The first hypothesis is carried out by using a conceptual understanding of the pressure of substance through 20 questions of pre-test and post-test to measure the increasement of student learning outcomes with our media. In other hand, the second hypothesis is using a student interest questionnaire to measure the presence or absence of the influence of interactive media developed on student interest in classroom learning.

The results of the survey data will be analyzed using a Likert scale. The Likert scale is used to measure the results of surveys given to respondents. The form is expressed in the form of satisfaction,

for example, very bad, bad, good, and very good. The satisfaction scores are sequential, namely very bad = 1, bad = 2, good = 3, and very good = 4. The feasibility and validity qualification achieved when the percentage is $\geq 61\%$. The intervals of feasibility and validity through the Likert scale can be seen in Table 1.

Table 1. The interval of feasibility and validity

Percentage	Qualification
80% - 100%	Very valid/ Very feasible
60% - 80%	Valid/ feasible
40% - 60%	Fair enough/ decent enough
20% - 40%	Invalid/ not feasible
0% - 25%	Very invalid/ very inappropriate

Mathematically, the percentage value of the Likert scale can be calculated by this equation below [12]. Where P is the percentage, $\sum x$ is the total score obtained, and $\sum max$ is the maximum score.

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

Table 2. The interval of student interest

Percentage	Qualification
80% - 100%	Very interest
60% - 80%	Interested
40% - 60%	Interest enough
20% - 40%	Not interested
0% - 25%	Very disinterested

Data on student's interest were obtained from the results of questionnaires filled by students in class VIII B in SMPN 1 Kandat, East Java. This data is also measured by the Likert scale adapted from Table 1 and we are presented in Table 2 [13]. The results of all Likert scales are followed by a reliability test using Cronbach's Alpha. If the Cronbach's Alpha value is higher than 0.60, then the results of the questionnaire are declared reliable. Conversely, if the Cronbach's Alpha value is lower than 0.60, then the questionnaire is declared unreliable.

III. Results and Discussion

a. Analyze

Based on the survey conducted at SMPN 1 Kandat, it was found that science teachers used learning media in the classroom, like PowerPoint or learning videos. Furthermore, based on the interview, it was found that the PowerPoint or learning videos made by the teacher were so simple. Thus, the interactive media based on several applications has never been used.

b. Design

At this stage, the design of interactive media has been made as good as possible in order to attract student's interest in learning. The examples of the product design are shown in Figure 2 below.



Figure 2. The appearance of interactive media based on Articulate Storyline

c. Develop

Table 3. The results of product assessment based on the material, media quality, and lesson plan.

Aspect	Indicators	Real Score	Percentage	Cualification
Media	Appearance	24	100%	Very valid
	Utility	47	98%	Very valid
	Feature	45	94%	Very valid
Material	Concept	29	100%	Very valid
	Presentation	37	66%	Valid
Lesson plan	Format	14	88%	Very valid
	Content	37	77%	Valid
	Language	12	75%	Valid
Average	Total	31	85%	Very valid

The interactive media, made from the design stage, are then assessed by experts regarding its materials, media qualities, and lesson plans. This determines whether the interactive media are valid or not. The results of the product assessment are shown in Table 3 below. In the Table 3, it appears that the average results by the experts have 'very valid' qualifications. The percentages of assessment in the media and

the lesson plan are having interval of 80%-100% with 'very valid' qualifications, but the assessment of material is having interval of 60%-80% with 'valid' qualifications.

d. Implementation

To begin with, the tests of product was initiated by the researcher giving a pre-test to 31 students of class VIII. Next, students were given a treatment with implementing interactive media based on Articulate Storyline in the pressure of substance material. After that, the post-test was given to students to measure their learning outcomes after being given treatment. The results of the pre-test and post-test are shown in data Table 4. Based on Table 4, the students' post-test scores have increased. Furthermore, the difference between the pre-test and post-test values is calculated to determine the effect. The difference scores is found 13,06. Because the difference value is positive, it can be concluded that there is an influence on the treatment of students' class VIII.

Table 4. The result of pre-test dan post-test score

N	Total score of Pre-test	Total score of Post-test	Average of Pre-test	Average of Post-test	The differences of Post-test & Pre-test
31	1285	1690	41,45	54,52	13,06

To analyze the data of pre-test and post-test, the researcher also conducted the One-Sample Kolmogorov-Smirnov normality test and the t-test (paired samples t-test). The One-Sample Kolmogorov-Smirnov normality test is used to test whether the data distribution of the residuals is normal or not. The results of the normality test are placed in Table 5. Through statistics, a significance value of 0,991 is obtained. Because the significance value is $0,991 > 0,05$, it can be concluded that the results of the pre-test and post-test data on students' class VIII have a normal distribution.

Table 5. The result of Normality test with One-Sample Kolmogorov-Smirnov

One-Sample Kolmogorov-Smirnov test		Unstandardized Residual
N		31
Normal Parameters a	Mean	1,75E-15
	Std. Deviation	18,92537
	Most Extreme Differences	
Most Extreme Differences	Absolute	0,078293
	Positive	0,078293
	Negative	-0,05058
Kolmogorov-Smirnov Z		0,435915
Asymp. Sig. (2-tailed)		0,991289

a. Test distribution is Normal.

Next, a t-test (paired samples t-test) is performed to test the alternative hypothesis (treatment) whether it is accepted or not. This is shown in Table 6 and Table 7. The hypothesis consists of alternative hypothesis (H_1) and initial hypothesis (H_0). The H_1 means that the treatment has a significant impact on interactive media with students' interest. Meanwhile, the H_0 means that the treatment does not have a significant impact on interactive media with students' interests.

The results of the t-test for the paired samples correlations section can be seen in Table 6. Table 6 shows the correlation data between the pre-test and post-test of 31 students. The result of correlation value was $0,546 > 0,05$, so there was no correlation with the research. In other hand, the significance value is $0,001 < 0,05$, so there is a close relationship from the pre-test and post-test to the treatment for students.

Table 6. The result of t-test in Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-test & Post-test	31	.546	.001

Table 7. The result of t-test in Paired Samples Test

		<i>Paired Differences</i>					<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
		<i>95% Confidence Interval of the Difference</i>			<i>Std. Error</i>				
<i>Mean</i>	<i>Std. Deviation</i>	<i>Lower</i>	<i>Upper</i>						
Pair 1	Pre-test - Post-test	-1.30645E1	19.17800	3.44447	-20.09906	-6.02997	-3.793	30	.001

The result of t-test in Paired Samples Test placed in Table 7. Based on the Table 7, we found the Sig. (2-tailed) value is $0,001 < 0,05$, so the H_1 is accepted and the H_0 is rejected. It means that the student's learning outcome with interactive media treatment based on the Articulate Storyline in the pressure of substance material obtained a result with a significant increasement.

e. Evaluation

Table 8. The result of Reliability test with Cronbach's Alpha

<i>Case Processing Summary</i>				<i>Reliability Statistics</i>	
		N	%	<i>Cronbach's Alpha</i>	<i>N of Items</i>
Cases	Valid	31	100.0	.888	18
	Excluded ^a	0	.0		
	Total	31	100.0		

a. Listwise deletion based on all variables in the procedure.

The results of the questionnaire on student's interest were analyzed to determine the percentage of students' positive responses after being treated with interactive media. The data is said to be reliable if the Cronbach's Alpha value has a coefficient $< 0,6$. We presented the results in Table 8 below. Based on Table 8, the Cronbach's Alpha value is $0,888 > 0,6$, so it can be concluded that our data are reliable.

Furthermore, a descriptive analysis was carried out on the scores of students' interest through a questionnaire. These results are contained in Table 9. Based on Table 9, the comparison of students' interest scores with the maximum score, gets a percentage of 76,66%. That is, as many as 76,66% of students have a positive interest using interactive media based on Articulate Storyline in the pressure of substance material.

Table 9. The result of descriptive analysis on student's interest.

<i>Descriptive Statistics</i>							
	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Sum</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Percentage %</i>
Interest score	31	36	64	1711	55,19	7,17	76,66
Maximum score	31	72	72	2232	72	0	
<i>Valid-N (listwise)</i>	31						

Our results show that interactive media based on Articulate Storyline is effectively used in the classroom. Because this media has various advantages such as, a) quite complete features such as videos, images, animations, audio and others; b) the application can be published in HTML5 or other form; c) the application can be accessed using a computer or smartphone; d) the function is almost the same as PowerPoint, so that the files from PowerPoint can be converted into the application; e) create student-centered learning [14]. This is relevant to the results of other studies in various fields of science, such as physics [4], sports [5] and others.

IV. Conclusion

The development of interactive media based on Articulate Storyline in the pressure of substance material was carried out using the ADDIE model and has been applied to students in junior high school. Based on the validity experts, the results of media qualities, materials, and lesson plans obtained a percentage 85%, so that the product is very valid to use. After that, the interactive media is applied to students in order to get the results of learning outcomes and students' interest. For the learning outcome, the score increased from the pre-test (41,4) to the post-test (54,5). Then these results are analyzed using the paired samples t-test and a significance value of $0,001 < 0,05$ was obtained. It shows that the increasement of student learning outcomes in the pressure of substance material are significant. In addition, students' interest in learning gets a percentage of 76,66%. It also explains that students show

a positive interest in the interactive media based on the Articulate Storyline used in the class. Thus, it can be concluded that this media is appropriate and effective to use in learning. The advantage of this media is that it can be used on various devices such as cellphones, laptops and computers that are often used by today's society. As for the drawbacks, this interactive media requires an internet connection when it is operated.

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