

## Development of Scientific-Based Interactive Powerpoint Media to Improve Process Skills of Elementary School Students

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**Abstract.** The problem of applying process skills is that students only gain theoretical knowledge and without direct experience. So that students only listen to explanations from the teacher without carrying out meaningful learning activities that build students' new knowledge and experiences. The purpose of this research is to develop and test scientific-based interactive powerpoint media to improve the process skills of elementary school students. The research and development method used is the ADDIE Model which consists of 5 (five) stages, namely analyzing, designing, developing, implementing, and evaluating. The research sample used was fourth grade students in 2 (two) elementary schools in Trenggalek Regency. Data collection techniques used observation sheets and process skills questionnaires. While the data analysis technique used to analyze the research data is the paired sample t-test. The result of the research conducted is that Scientific-Based Interactive Powerpoint Media is effective for Improving Process Skills of Elementary School Students and there are differences in student's process skills before and after the effective use of Scientific-Based Interactive Powerpoint Media. The conclusion is that scientifically based interactive powerpoint media is able to solve students' problems, namely the low student process skills.

**Keywords:** Process Skills, Learning Media, Scientific Approach, Interactive Powerpoint.

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**INTRODUCTION** ~ Education is a process of intellectual learning, skills, and behavioral habits of a group of humans that are passed down from one generation to the next through teaching, training, and research. Education can also be defined as a conscious effort that is carried out systematically in creating a teaching and learning atmosphere so that students can develop their potential from within. As explained in Article 1 paragraph 1 of Law no. 20 of 2003 concerning National Education System is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and country.

Quality education is very dependent on the quality of learning management carried out by teachers. In the learning process, teachers should use effective learning media so that learning objectives can be achieved. In the implementation of learning media, the teacher's role is very important in it. The learning media is used by teachers in delivering information and knowledge to students, so that the delivery of material can be conveyed properly and appropriately.

Learning media is an intermediary tool used by someone as a distributor of information or messages from the source to the recipient of the message. According to Wati (2016) Media is an inherent or inseparable part of the learning process to achieve learning objectives. Meanwhile, according to Kustandi (in Aryanto, et al. 2018) states the media is a

tool used to enhance learning outcomes to achieve a goal in learning. Based on the opinion above, it can be concluded that the media is a tool for distributing learning information that is useful as a supporter of the course of a teaching and learning process.

In the educational process, of course, it will not be separated from various problems, one of which is about media problems. As explained above, media is one of the most important things in a teaching and learning process, with the existence of learning media, a process of learning activities will become more interesting and efficient. The media besides having a very important role in the learning process, in fact the media used by teachers today tend to be still not optimal. This is in accordance with previous research conducted by Alwi (2017) which states that current media problems tend to lie with teachers who are less able to use learning media. So schools should provide complete learning media and the education office should hold trainings for teachers regarding media. Based on many observations, it was found that in the teaching and learning process in fact teachers tend to have difficulty in developing media and using them. Teachers more often use conventional learning resources such as printed books, student worksheets (LKS), and teacher books continuously. Another problem is the absence of adequate, interesting and innovative media that will make students more motivated in learning. In addition, teacher readiness is also a very important problem factor in the learning carried out.

When the teacher is ready to carry out learning, it will be easier for the teacher to

achieve the learning objectives. This agrees with (Maheasy & ulfa 2018) which explains that readiness before doing learning must also be carried out properly and optimally, such as preparation of learning models, materials, methods and media to achieve learning objectives. In the application of learning media to be effective, it must go through a process approach, which aims to determine each process of the effectiveness of the application of the media carried out. The process approach is a learning approach that emphasizes the learning process, activity and creativity of students in achieving a goal. The application of this process approach is something that really needs to be done in every lesson so that it is easier for students to acquire knowledge.

The process approach is carried out in the learning process which pays attention to the process carried out from the beginning to the end of learning. According to Purnama, et al. (2017) stated, the process approach emphasizes formation in acquiring knowledge. Meanwhile, according to Sari, et al (2018) stated that the process approach is a learning approach that emphasizes the learning process, activity and creativity of students. The process approach is an approach that is often used in every learning process because the process approach focuses more on a learning process. The use of effective media in learning is needed, one of which is a interactive powerpoint media based on a process approach.

The interactive powerpoint media based on the process approach will facilitate the process of transferring knowledge to students. This media in the learning

process will help the teacher when explaining the material because this media is equipped with specifications for interactive design material, and audio which contains learning materials and cell phones that make it easier to regulate the use of interactive powerpoint media . So here the teacher is easier in a learning process. Interactive powerpoint media is a tool whose message content can be received through the sense of observing. Sadirman, et al, (in Prihnaharin, 2019) Interactive powerpoint media is media that will convey messages in an auditive form. Interactive powerpoint media is a board-shaped media and there are three-dimensional pictures as an explanation of media material so that it will make students more interested in each lesson.

Previous research conducted by Ratnasari in (2018) with the title "Development of Food Media (Three-Dimensional Environmental Board)" shows that this food media is very influential on students because it can make learning meaningful and integrated into all materials. While the research conducted by Mustika in (2017) with the title "Learning Media With Audio Systems for Empowering Education in the Community". The results of this study are successful in helping to arouse students' motivation because CAI (computer assisted instruction) can combine audio and video to produce interactive applications using text, sound and images this can help students to understand comparative learning just by listening to the teacher's explanation.

These two previous studies have similarities with the research that the researchers researched, namely by using Interactive powerpoint media, it is hoped

that it can improve student learning outcomes and learning becomes meaningful and integrated into all materials. Based on the description above, the author is interested in conducting further research on media, namely by developing learning media with the name interactive powerpoint media based on the process approach.

## METHOD

The research was conducted using a quantitative research model with a pretest and posttest research design. The location in this study was carried out at SDN 1 Sumbergedong, Trenggalek Regency. The population used in this study were all fourth grade students at SDN 1 Sumbergedong, Trenggalek Regency as many as 40 students. The sampling technique in this study is saturated sampling because in this study all members of the population were used as samples, namely the fourth grade students of SDN 1 Sumbergedong, totaling 40 students.

The instrument used in research and development to collect data is using a test in the form of questions. Pretest and posttest test questions Scores of students' test results in working on questions that include pre-test scores are given before the action, the results of student work in learning activities. These results will be used to see the achievement of student learning outcomes.

The effectiveness test is carried out by comparing the students' average score from the test with the KKM 75. To determine the effectiveness, it can be seen from the criteria for the effectiveness of the product. If the student's score is > 75, then the interactive powerpoint media

based on the process approach is considered effective, whereas if the student's score is  $< 75$ , then the interactive powerpoint media based on the process approach is considered ineffective. To test the effectiveness of the application of interactive powerpoint media based on the process approach, the researcher used the paired sample independent T-test formula with the help of SPSS 25.0 software.

## RESULTS

The research was conducted using a quantitative research model with a pretest and posttest research design. The location in this study was carried out at SDN 1 Sumbergedong, Trenggalek Regency. The population used in this study were all fourth grade students at SDN 1 Sumbergedong, Trenggalek Regency as many as 40 students. The sampling technique in this study is saturated sampling because in this study all members of the population were used as samples, namely the fourth grade students of SDN 1 Sumbergedong, totaling 40 students.

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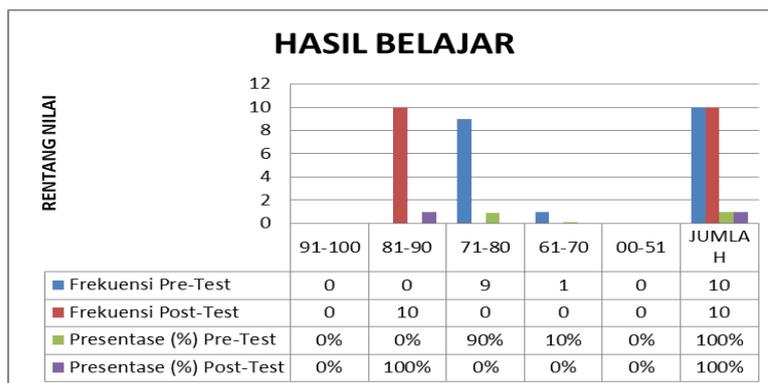
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## DISCUSSION

A trial of interactive powerpoint media based on a process approach was used to see the effect of using interactive powerpoint media on student learning outcomes by giving pre-test and post-test questions. The results on a small scale in the pre-test assessment obtained a score range of 71-80 as many as 9 students with a percentage of 90%, for a value range of 61-70 as many as 1 student with a percentage of 10%. and the post-test assessment showed a score range of 81-90 as many as 10 students with a percentage of 100%. In the range of values from 00-51, none of the students got that value. So it can be concluded that the assessment carried out on a small scale test with a value range of 81-90 gets the highest frequency with a percentage of 100%. The results of the assessment of student learning outcomes are classified in Figure 1 Below.

**Figure 1.** The results of the assessment of student learning outcomes.



The results of the bar chart calculations in Figure 1 above show the results as a guide to learning outcomes obtained in the post-test and pre-test assessments contained in the small-scale test. In the pre-test frequency is shown in the blue color bar. The highest score was obtained by 9 students with a value range of 71-80. While the post-test frequency is indicated by a brown block with the highest score obtained by 10 students with a score range of 81-90.

Furthermore, before testing the effect of using interactive powerpoint media, the board must perform a normality test and a homogeneity test. Normality test is used

to find out the data obtained from the research results are normally distributed or not. A data is said to be normally distributed if the significance level is 0.05, whereas if the significance level is <0.05 then the data is said to be not normally distributed. Normality test can be done in various ways. In the data normality test, if the data is normally distributed, it will be analyzed by parametric statistical tests. Meanwhile, if the data is not normally distributed, it will be analyzed by non-parametric statistical tests. This normality test uses SPSS 25 for windows with the Kolmogorov Smirnov-Z technique. The results of the normality test can be seen in the table below:

**Tabel 1** Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Class A	,138	20	,200*	,948	20	,336
Class B	,177	20	,103	,883	20	,020

The results of the calculation of the normality test that have been carried out get Z data for the control class to get a value of 200. Because the Kolmogorov Smirnov-Z value, it can be concluded that the data in the control class is normally distributed. Meanwhile, the normality test in the experimental class obtained the Kolmogorov Smirnov-Z value in the

experimental class, namely 0.103, it can be concluded that the data in the experimental class is normally distributed.

Furthermore, the results of the homogeneity test. The homogeneity test was used to determine whether the data from the research results in the

experimental class and control class had the same variance value or not. It is said to have the same/no different (homogeneous) variance value if the significance level is 0.05 and if the significance level is <0.05 then the data is

concluded not to have the same/different variance value (not homogeneous).

The results of the homogeneity calculation that have been carried out for the experimental class and control class are obtained in Table 2 as follows.

Table 2 Test of Homogeneity of Variances

Result Study			
Levene Statistic	df1	df2	Sig.
1,796	1	38	.188

From the results of the homogeneity test calculation, it is known that the significance value is 0.188. Because the value obtained from the homogeneity test with a significance level of 0.05, the data has the same/no different (homogeneous) variance value. Furthermore, data analysis will be carried out using the Independent Sample T-test.

2.  $H_a$  = identical/same population variance

The test criteria are as follows:

1. If the probability value (p) 0.05 then  $H_0$  is accepted
2. If the probability value (p) < 0.05 then  $H_0$  is rejected

The Independent Sample T-test is used to make a decision whether the research hypothesis is accepted or rejected, while the hypotheses tested are:

The results of the calculation of the Independent Sample T-test that have been carried out are obtained in Table 3 as follows:

1.  $H_0$  = population variance is not identical / not the same

Table 3 Independent Samples Test

		Independent Samples Test								
		Levene's Test for Equality of Variances			t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
<b>HASIL BELAJAR POST-TEST</b>	Equal variances assumed	1.796	0.188	-6.806	38	0.000	-9.35000	1.37377	-	-6.56895
	Equal variances not assumed			-6.806	32.825	0.000	-9.35000	1.37377	12.14552	-6.55448

The results of the Independent Sample T-test obtained a sig value of 0.000 (<0.05)

so that  $H_0$  was rejected. These results indicate that there are differences in

student learning outcomes before and after the use of interactive powerpoint media based on the process approach. Furthermore, an analysis will be carried out on the equal variances assumed line, it can be seen that the t-test results are 12,464 with  $df = 38$ ; mean difference = 16.55000; difference standard error = 1.32779. lower difference -12.13105; upper -6.56895.

The application of interactive powerpoint media in this study in particular, if observed from the student's learning ability which is reflected in students' understanding, memorization, interest and enthusiasm for learning activities with the use of media is very visible. Overall before the use of media in the control class went well. However, students are less able to accept metamorphosis material quickly because students have to record all subject matter based on rote alone without the application of media. In addition, when the teacher asked the test questions the students were too confused in answering the questions given. On the other hand, when learning is carried out using media, the level of student understanding is easier both in understanding metamorphosis material and increasing student learning outcomes. According to Kustandi in (Aryanto, et al. 2018), the media is a tool used to improve learning outcomes to achieve a goal in learning. In line with the opinion of Sadirman, et al (in Yamin, 2020) media is anything that can be used to channel messages from the sender to the recipient so that it can stimulate the thoughts and feelings and attention of students to improve learning outcomes.

The results of the application of interactive powerpoint media based on the process approach developed on the perfect and imperfect metamorphosis material, namely this media is effective in increasing understanding, memorization, and enthusiasm, motivation of students in learning. With this interactive powerpoint media, students quickly and easily find, and remember information on metamorphosis material. The results of this study are that there are significant differences before and after the application of interactive powerpoint media and is able to improve student learning outcomes. Previous research conducted by Ratnasari Tahun (2018) with the title Food Media Development (Three-Dimensional Environmental Board) shows that this food media is very influential on students because it can make learning meaningful and integrated into all materials. While the research conducted by Mustika Tahun (2017) with the title Learning Media With Audio Systems for Empowering Education in the Community. The results of this study are successful in helping to arouse students' motivation because CAI (computer assisted instruction) can combine audio and video to produce interactive applications using text, sound and images this can help students to understand comparative learning just by listening to the teacher's explanation.

## DISCUSSION

Use of interactive power point mediabased on a scientific approach is very influential on improving process skills students, and can make it easier for students to remember the material given to learning activities. In the application of scientific-based interactive powerpoint media, there are:the difference before and

after the use of media which was originally a process skills students are low because student activity is less so that it affects the student's process skills. With this media, it can make students interested in learning and make it easier for students to learn the material.

## CONCLUSION

The developed interactive powerpoint media has valid, interesting, and practical categories for use in learning. The use of interactive powerpoint media based on a process approach is very influential on improving student learning outcomes, and can make it easier for students to remember the material given to learning activities. In the application of this interactive powerpoint media, there are differences before and after the use of media, which initially the value of student learning outcomes was low due to lack of interest in learning so that it affected the value of student learning outcomes. With this media can make students interested in learning and make it easier for students to learn the material.

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