

Learning Media: PowerPoint vs Prezi

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Abstract

The research purpose was to determine the difference of biology learning outcome by implementation of PowerPoint media and Prezi media on students of class X of MAN 2 Model Makassar. The research is quasy experimental research and it used intac group comparison design. The measurement of learning outcome was done by giving valuating test (posttest) in ecosystem matter. Collected data was analyzed using descriptive statistical and inferential statistical analysis. The result of statistic descriptive showed that the average of biology learning outcome of the comparison class was 78.44 and the compared class was 73.05. Analysis of data using a test value t_p (Sig. 2-tailed) $0.036 < 0.05$ so H_0 rejected and H_1 accepted. From the research results can be concluded that there are differences in biology learning outcomes by implementation of PowerPoint media and Prezi media on students of class X of MAN 2 Model Makassar.

Keywords: Biology Learning Putcomes, PowerPoint, Prezi

1. Introduction

Education plays a very important role in determining the development and progress of a nation and state, including Indonesia. In this case, education improves the quality of Indonesian human resources, namely Indonesian people who are faithful, independent, developed, intelligent, creative, skilled, responsible and productive. Various educational efforts have been made to improve the quality of these human resources.

The rapid development of technology and information in the current era of globalization is inevitable to have an impact on the world of education. Global demands require the world of education to always adjust technological developments to efforts to improve the quality of education. In this case, especially in adjusting the use of information and communication technology for the world of education, especially in the learning process. As stated in Undang-undang No. 20 of 2003 Article 35 Paragraph 1 related to standards for educational facilities and infrastructure including the use of information and communication technology.

According to Sudjana & Rivai (2011), in teaching methodology, there are two aspects that are most prominent, namely teaching methods and teaching

media as teaching aids. Meanwhile, assessment is a tool to measure or determine the extent of achieving teaching objectives. From this description, it can be concluded that the position of teaching media as teaching aids is in the methodology component, as one of the learning environments regulated by the teacher.

Gerlach and Ely (in Asyhar, 2011) say that the media has a very wide scope, namely including humans, materials or studies that build a condition that makes students able to acquire knowledge, skills or attitudes. Learning media includes all the resources needed to communicate in learning, so that the form can be in the form of hardware, such as computers, televisions, projectors, and software (software) used in that hardware. In this case, educators can also be included in a form of learning media so that it becomes a study of learning delivery strategies (Degeng, 2001). So, learning media are not only inanimate objects, but also living objects, such as humans. As a living object, the media can also be a message that can be learned.

The use of media in learning can generate new desires and interests, increase motivation and stimulation of learning activities, and even have a psychological effect on students (Hamalik (1986), Winata (2017), Febrita & Ulfah (2019), Puspitarini & Hanif (2019). Sudjana & Rivai (2011) put forward several benefits of media in the student learning process, namely: (i) it can foster students' learning motivation because teaching will attract their attention more; (ii) the meaning of the

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teaching material will become clearer so that it can be understood by students and allows for the mastery and achievement of teaching objectives; (iii) teaching methods will be more varied, not based solely on verbal communication through words; and (iv) students do more activities during learning activities, not only listening but also observing, demonstrating, doing hands-on, and acting out (Nurseto, 2011).

With regard to improving the quality of student learning, one of the solutions that can be taken is through the use of ICT-based media such as multimedia. Multimedia aims to present information in a fun, interesting, easy-to-understand, and clear form. Information will be easy to understand because as many senses as possible, especially the ears and eyes are used to absorb information. According to Arsyad, (2014), the more sensory tools used to receive and process information, the more likely it is that the information is understood and retained in memory. Dhimitri & Sinani (2013) also mentioned that more and more ways of utilizing sensory tools in learning can create complex activities that help students in learning.

Multimedia that is often used in learning is multimedia presentations. Presentation media is a media that can be used in various conditions, both speeches, seminars, demonstrations, and so on (Moulton et al., 2017). According to Najjar (1995), multimedia presentations can help students in learning.

Multimedia presentations that are currently widely used in schools are PowerPoint. PowerPoint is a media that has become very common among teachers and students. Microsoft Office PowerPoint is a popular and most widely used presentation application program today for various presentation purposes, both learning, product presentations, meetings, seminars, workshops, and so on. This program has become easier to create and use with the facility of integration to the internet becoming easier and faster. In addition, this PowerPoint program can be integrated with other Microsoft such as Word, Excel, Access, and so on (Rusman & Riyana, 2011). In addition to PowerPoint, currently there are many presentation applications developed with a variety of features. One of them is Prezi. Prezi is a presentation application with a unique and attractive appearance with the slogan "The Zooming Presentation".

PowerPoint and Prezi are popular presentation software and psychologically appealing alternative options (Moulton et al., 2017). Basically, these two types of presentation media have something in common. Both can combine all media elements such as text, video, animation, images, graphics, and audio so that they can accommodate students in the learning process. But the two have different presentation looks.

The advantages offered by PowerPoint through audiovisual capabilities can be useful for people who have different ways of capturing information. The idea is to create more experiences for the audience as opposed to one-way conversations. PowerPoint is capable of improving attention span, integrated audio/video, and improved content aesthetics (White, 2011).

But with all the advantages offered, there are many claims that the most disappointing thing about PowerPoint presentations is the dynamic visual appearance of the equipment provided. According to Anderson (2004, in White (2011), the fundamental problem is that (PowerPoint) the script tends to be lectured. Another drawback according to Miltenoff and Rodgers (2003, in White (2011) is that if a PowerPoint file is moved and runs the presentation from a different computer, all the video clips must be inserted again.

Unlike Power Point, Prezi provides a more free space to pour creations in the creation of presentation slides. One of the advantages of Prezi is that there is a zoomable canvas, so that users can focus slides on each sentence with quite dynamic and varied slide movements. This will greatly facilitate the audience to understand the information conveyed. Its ease in inserting images, photos, or videos into slides which also supports the ease of compiling presentation slides (Rosadi, 2012). Prezi ushers in a new way of thinking through the frame of mind on the presentation slides (Anderson-Williams & Sylvia IV, 2015).

Although Prezi has several advantages, many also see the disadvantages of this media. Leberecht (in White (2011)) says that many users who first use Prezi struggle with the challenge of filling a "blank canvas", as they can become overwhelmed as a result of not being as used as with the use of PowerPoint templates. There are even problems with this zoom ability because it can create disturbance and confusion for the audience. Jumping from one item to another, sliding in and out of the overall view can be a headache and eventually exit the message being tried to be presented (White, 2011).

Based on the description above, the researcher is interested in conducting a research with the research title "Differences in Student Learning Outcomes through the Application of PowerPoint and Prezi Learning Media". Based on the description from the background above, the formulation of the problem that will be studied in this study is: (1) What are the results of learning biology through the application of PowerPoint media to class X MAN 2 Model Makassar students? (2) What are the results of learning biology through the application of Prezi media to students of class X MAN 2 Model Makassar? (3) Are there differences in biology learning

outcomes through the application of PowerPoint media and Prezi media to class X MAN 2 Model Makassar students?

2. Method

This research is a quasi-experimental with an intact group comparison design (Setyosari, 2010), which was carried out in the even semester of the 2012/2013 school year, precisely in May 2013 and located in MAN 2 Model Makassar. The population in this study was all students of class X MAN 2 Model Makassar. The sample of this study was class X8 as a comparison class that used PowerPoint media and class X9 as a class compared to those using Prezi media, each class consisting of 32 people. Time allocation to explain the material as many as 3 meetings (6 x 45 minutes) and 1 time meeting (2 x 45 minutes) to carry out the evaluation (posttest). The material taught is ecosystem. The instrument used in this study is a learning outcome test of 40 numbers that have been validated by expert validators. The student scores obtained are analyzed to determine the value of learning outcomes using the formula (Arikunto, 2009) as follows:

$$Mark = \frac{\text{the number of scores obtained}}{\text{total score}} \times 100 \quad (1)$$

The student learning outcomes that have been obtained are analyzed descriptively and inferentially using the Statistical Package for Social Science (SPSS) system version 20.0. Descriptive statistical analysis, aimed at describing the biology learning outcomes obtained by students in both groups. Learning outcomes are compared and grouped based on categorization guidelines from Arikunto (2009), can be seen in Table 1.

Table 1. Guidelines for Categorizing Student Learning Outcomes

Interval Nilai	Kategori
80-100	Very good
66-79	Good
56-65	Enough
40-55	Less
30-39	Fail

(Source: Arikunto, 2009)

Inferential statistical analysis techniques are used to perform normality tests, homogeneity tests, and hypothesis tests with significance levels $\alpha = 0.05$. The normality test is used to find out whether the sample

under study is normally distributed or not through the Kolmogorov-Smirnov normality test. Data on learning outcomes from the population will be distributed normally if the sig(2-tailed) $> \alpha$ (0.05). The homogeneity test aims to find out whether the data in this study have the same variance (homogeneous) or not through Levene's Test of Equality of Error Variances. With the test criteria if $\alpha = 0.05 \leq \text{sig}$, it can be concluded that the data in this study have a homogeneous variance.

Hypothesis testing is carried out to find out whether there are differences in learning outcomes between the two media used through the t-test. As for the test criteria, if the sig (2-tailed) $> \alpha$, then H0 is accepted and H1 is rejected and vice versa, if the sig (2-tailed) $< \alpha$, then H0 is rejected and H1 is accepted.

3. Result and Discussion

Description of Biology Learning Outcomes through Application of PowerPoint Media

The descriptive statistical value of biology learning outcomes of students taught through the application of PowerPoint learning media can be seen in Table 2 below:

Table 2. Distribution of Biology Learning Outcomes through the Application of PowerPoint Learning Media

Descriptive Statistics	Mark
Number of samples (N)	32.00
Lowest mark	55.00
Highest mark	97.50
Average	78.44
Median	77.50
Modus	77.50

Based on the overall mark of student learning outcomes, if grouped in the categorization of grades, it can be distributed as shown in Table 3 below:

Table 3. Frequency Distribution and Percentage of Biology Learning Outcomes through the Application of PowerPoint Media

Comparator Class		
Frequency	Percentage (%)	Category
15	46.88	Very good
15	46.88	Good
1	3.12	Enough

Comparator Class		
Frequency	Percentage (%)	Category
1	3.12	Less
0	0.00	Fail

Description of Biology Learning Outcomes through Application of Prezi Media

The descriptive statistical value of biology learning outcomes of students taught through the application of Prezi learning media can be seen in **Table 4** below:

Table 4. Distribution of Biology Learning Outcomes through the Application of Prezi Learning Media

Descriptive Statistics	Mark
Number of samples (N)	32.00
Lowest mark	47.50
Highest mark	92.50
Average	73.05
Median	75.00
Modus	75.00

Based on the overall mark of student learning outcomes, if grouped in the categorization of grades, it can be distributed as shown in **Table 5** below:

Table 5. Frequency Distribution and Percentage of Biology Learning Outcomes through the Application of Prezi Media

Compared Classes		Category
Frequency	Percentage (%)	
9	28.13	Very good
17	53.12	Good
2	6.25	Enough
4	12.50	Less
0	0.00	Fail

Differences in Biology Learning Outcomes through the Application of PowerPoint Media and Prezi Media

Differences in student learning outcomes for the two classes can be seen through the results of inferential statistical analysis. The results of inferential statistical analysis are presented for hypothesis testing using a t-test with a significance level of $\alpha = 0.05$. This statistical

analysis was assisted by the SPSS program version 20.0. The condition that must be met for hypothesis testing is that the data obtained are normally distributed and have homogeneous variances. Therefore, a normality test and a homogeneity test are first held.

1) Normality Test

Based on the results of data processing, the level of significance of the normality test in the comparison class was obtained through the application of PowerPoint media of $0.776 > \alpha 0.05$ and in the compared class through the application of Prezi media of $0.162 > \alpha 0.05$ which means that the data in both classes came from normally distributed samples.

2) Homogeneity Test

Based on the calculation of data processing, then for testing the homogeneity of variance, a sig value of $0.859 > \alpha 0.05$ was obtained. So it can be concluded that students in the comparison class through the application of PowerPoint media and classes that are compared through the application of Prezi media have the same or homogeneous variance.

3) Hypothesis Test

Based on testing the normality and homogeneity of the variance, t-test statistics were carried out to test the research hypothesis. The statistical results of the t-test ($\alpha = 0.05$) show a sig value (2-tailed) of $0.036 < \alpha 0.05$ then the hypothesis H_0 is rejected and H_1 is accepted. Thus, it can be concluded that the hypothesis in this study is accepted, namely that there are differences in biology learning outcomes through the application of PowerPoint media and Prezi media to class X MAN 2 Model Makassar students.

This research is in the form of comparing the learning outcomes of two classes by applying different learning media, namely PowerPoint and Prezi media. The material given to the two groups is material about the ecosystem. Based on descriptive data analysis, the learning outcomes of students who were taught using PowerPoint learning media with students who were taught using Prezi learning media showed differences.

Tables 2 and 4 show that the average score in the comparison class using PowerPoint media was higher by 5.39 points compared to those in the class that used Prezi media.

The results of the inferential analysis also showed differences in biology learning outcomes between students who were taught using PowerPoint media and those who were taught with Prezi media. Judging from the significance value of $0.036 < \alpha 0.05$, it means that H_0 is rejected and H_1 is accepted. So, there are differences in learning outcomes between students who are taught with the help of PowerPoint media and students who are taught with Prezi media.

The difference in the learning outcomes of these two classes is due to the application of different learning media. In the compared classes, they are taught using PowerPoint learning media, while the comparison class is taught using Prezi learning media. This difference shows that the learning outcomes of students who are taught using PowerPoint media are higher than students who are taught using Prezi media.

When presenting each learning media in the classroom, it can be seen that students' attention becomes more focused. Both of them have the ability to improve student learning outcomes because it is multimedia. It not only loads text or images but is capable of loading videos, animations, and can be connected to the required web address. As Arsyad (2014) mentioned that multimedia aims to present information in a fun, interesting, easy-to-understand, and clear form. Information will be easy to understand because as many senses as possible, especially the ears and eyes, are used to absorb information. The more sensory tools used to receive and process information, the more likely it is that the information is understood and retained in memory. However, based on observations made during learning, it appears that students' attention to the comparison class taught using PowerPoint media is more "durable" than students who are taught using Prezi media. PowerPoint and Prezi media display can be seen in Figure 1 and Figure 2.



Figure 1 PowerPoint Media

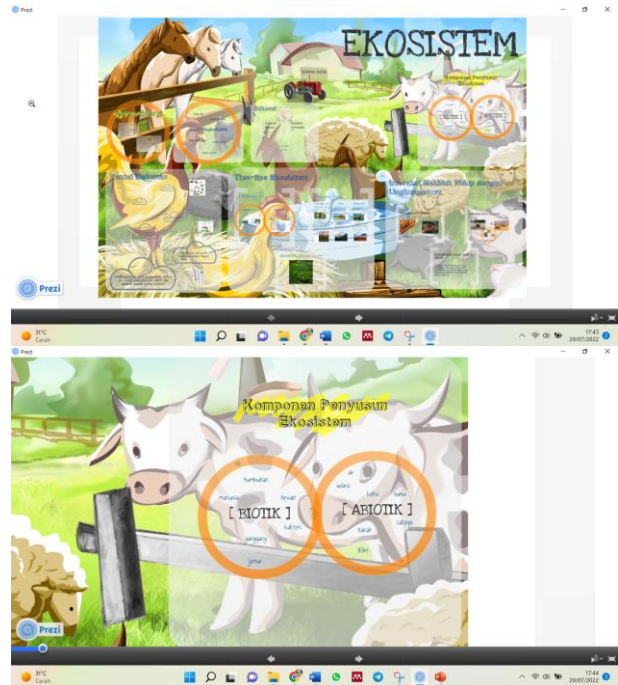


Figure 2 Prezi Media

PowerPoint is a presentation media that has long been known in the world of education as a learning media. Many say that PowerPoint is boring and monotonous because the script tends to only dictate and lecture. This, of course, can reduce the interest in learning from students. According to Anderson (2004, in White (2011), the fundamental problem is that (PowerPoint) the script tends to be lectured. But actually most such things can happen depending on the person who made or designed it. In order for this to be avoided, as much as possible the user must be able to develop his idea so that what is stated in the manuscript is only the important points and the explanation will be added from the teacher. Because after all, the role of a teacher must not be separated from learning even though there is already a learning media.

Prezi is one of the new breakthroughs in the world of presentation. Unlike PowerPoint, Prezi provides a freer space to pour creations in the creation of presentation slides. One of the advantages of Prezi is that there is a zoomable canvas, so that users can focus slides on each sentence with quite dynamic and varied slide movements. This will greatly facilitate the audience to understand the information conveyed (Rosadi, 2012).

In this case, it is hoped that the existence of a unique appearance and dynamic movement can increase students' interest in learning. But based on what's going on in the classroom, some students seem to be quicker to distract them from learning. This can be caused by the

weak point of this new media, where many users who first use this media become confused and dizzy with its movements. According to White (2011), jumping from one item to another, sliding in and out of the overall look can be a headache and eventually exit the message being tried to be presented.

This is in line with the research conducted by Nicole L. White in her research "Prezi v. PowerPoint: Finding the right tool for the job". In the survey he conducted that most audiences said that Prezi excelled in terms of design and visuals so that it attracted the attention of the audience more, but was weak in information and content. Whereas PowerPoint is weak in terms of design and visuals, but stronger in providing information and content. Although the information provided in the two presentation media is the same, it seems that people are more accustomed to the information presented with PowerPoint.

This study aims to compare which presentation media is more effective in learning. Based on the results obtained that PowerPoint is better for providing information, while Prezi is a pleasant design tool. Even so, this does not necessarily prove that one of the presentation media is better than the other. According to White (2011), Prezi's main obstacle is because he is not very well known by the audience so he is not used to his zooming display. Because actually this zooming ability is an interesting method.

4. Conclusion

Based on the results of research, data analysis, and discussion, it can be concluded that: (1) the results of learning biology through the application of PowerPoint learning media to class X MAN 2 Model Makassar students are in the good category. (2) the results of learning biology through the application of PowerPoint learning media to students of class X MAN 2 Model Makassar are in the good category. (3) there are differences in biology learning outcomes through the application of PowerPoint learning media to class X MAN 2 Model Makassar students.

The existence of this research can be suggested to stakeholders such as the Education Office to hold training on the use of learning media for teachers, especially presentation learning media such as PowerPoint and Prezi.

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