

The Development of Teaching Media Based on PREZI Zooming Presentation on Heat and Temperature Subjects

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Abstract—Both teachers and students have become numb to conventional classroom presentations, where they are confronted with slide after slide containing too much information in quick, disjointed succession. Prezi's zooming presentation opens up the classroom to active learning and interactivity, making lessons understandable, memorable, and fun. It causes the researchers to be interested to develop teaching media based on Prezi zooming presentation. This study aimed to describe the validity, the practicality, and the effectiveness of the teaching media. This study was a research and development which refers to the 4-D model. The subjects of the tryout were students of a class X of SMAN 9 Banjarmasin. The results showed that (1) the validity of the teaching media was at valid category, (2) the practicality of the teaching media was at very good category, and (3) the effectiveness of the teaching media was at high category. It can be concluded that Prezi media is eligible to use in the learning process.

Keywords— *Teaching Media, Prezi, Zooming Presentation, Heat and Temperature*

I. INTRODUCTION

One key to the success of Indonesian development is education. Based on the Law of the Republic of Indonesia No. 20 Year 2003 on National Education System Article 1 Verse 20, Government Regulation on National Education Standards. Through education should be established. Everybody is expected to improve the quality of his/her presence in participating to support the development. Learning is one of the aspects of education which is involved in improving the quality of the individual. Besides teachers, teaching materials, and methods, the learning success is also influenced by the employed media. Appropriate choice of instructional media is a major factor in optimizing learning outcomes. The use of inappropriate media to students' conditions would lead to non-functioning of media optimally. Teachers should be able to create an atmosphere in the teaching and learning interactions so that it motivates them to learn well and seriously.

Media in the learning process can be used to clarify the abstract material that can be visualized by the appearance of the presentation. The media is used in order to make the

teaching materials become more attractive and easily understood by students [1]. The use of media is indispensable in teaching and learning physics for many phenomena and natural phenomena that cannot be presented and understood by students without the media, such as the movement of objects. In general, the study of physics still uses conventional media (for instance blackboard and Over Head Projector/OHP). Along with the development of media and computers, conventional learning media are less attracted to students.

Based on the observations at SMA Negeri 9 Banjarmasin, the obtained results at that school were that it has complete facilities such as available and quite good internet networks, computer, and projector. These facilities are able to support the learning becomes easier and more efficient, yet the utilization is not optimal. This condition demands teachers as one element of education to improve and develop in accordance with the current development of science and technologies.

One of the ways to overcome the problem is to use Prezi media as a tool in the learning process. Using the interesting media is needed to make students more easily understand physics that requires motivation and innovation in teaching and learning process. This will make them not easily get bored while studying.

Prezi media presentation is a software to present, which is similar to PowerPoint. Prezi has other advantages such as Zooming User Interface (ZUI), which allows Prezi users be able to zoom in and out to see their presentation media with collaborative and attractive colors through the provided slides. Prezi is made of a canvas that is not limited by a frame that can be joined with a wide range of text, video, audio, and images that can be modified by pull, move, or turn left or right in order to look more attractive and unique without replacing the slide [2].

Prezi gives greater possibility to improve the learning process more effective and efficient, so that students' learning outcomes can be improved. Some of the benefits are that the use of Prezi media can make students more active [3] and can improve critical thinking skills [4]. The research conducted by [5] states that Prezi is a very attractive media used in the

learning process. Also, Prezi can raise the students' motivation [6]. It also makes students' achievement improved [1].

Based on the description, the development of learning media named Zooming Presentation (Prezi) aimed to produce a decent media in the learning process. The specific objective of this study was to describe validity, practicality, and effectiveness of Prezi as learning media.

II. METHOD

This study was a research and developmental research. This study used 4-D (Define, Design, Develop and Disseminate) development model. In this study, the media was developed using Zooming Presentation in tenth grade of senior high school on second semester about Temperature and Heat.

The subjects were tenth grade students at SMA Negeri 9 Banjarmasin in the academic year 2015/2016. The study was conducted in January to July 2016. The study was located at SMAN 9 Banjarmasin.

This instructional media was tested in the early stages using pre-test and post-test group [7]. It was tested using the following steps:

$$O_1 \times O_2 \quad (1)$$

Where : O_1 = pretest, \times = learning process using Prezi based, O_2 = posttest.

The instruments used in the study were in the form of validation sheet of Prezi instructional media, observation sheet for teacher activity and achievement test. The data analysis techniques in research and development were as follows: an instrument has validity if the results meet certain criteria (correlates between the measurement results with these criteria). The way to know the correlation is by correlating measurement results with the specified criteria. Some criteria were used as a benchmark to judge the validity of an instrument. Correlation technique used to determine the alignment is by the standard deviation of the correlation product moment technique. Then, it was adjusted to the criteria validation aspects of media.

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}} \quad (2)$$

Where r_{xy} = the correlation coefficient between X variable and Y variable, two variables that is correlated; $\sum xy$ = the number of multiplications x and y; x^2 = squares of x; y^2 = squares of y.

The interpretation of correlation coefficient r_{xy} was done by comparing the results of the calculation of r_{xy} with the value of r_{xy} in the table of the critical value r_{xy} product moment. If the value of r_{xy} is more than or equal to r_{xy} table ($r_h \geq r_t$), it means the correlation is significant, which means that the test instrument can be said to be valid. While, if the value r_{xy} is less than r_{xy} table ($r_h < r_t$), it means the correlation is not significant, which means that test instrument is invalid. The value of r_{xy} table can be seen on the table of values r product moment [8].

The practicality of media can be measured through the teacher activities observation sheet which contains the steps that the teachers have done. The teacher activities observation sheet was observed to assess the average score \bar{X} each time in a meeting by using the equation 4.

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n} \quad (4)$$

Where \bar{X} = average score, X_i = the i informed score, and n = the total of questions

Then, the average score was converted into qualitative data. The criteria of scoring of teacher activities observation sheet can be seen on Table 1 [8].

TABLE 1 THE CATEGORY of TEACHER ACTIVITIES

Formula	Average Score	Classification
$X > \bar{X}_i + 1.8 \times sb_i$	$\bar{X} > 3.4$	Very good
$\bar{X}_i + 0.6 \times sb_i < X \leq \bar{X}_i + 1.8 \times sb_i$	$2.8 < \bar{X} \leq 3.4$	Good
$\bar{X}_i - 0.6 \times sb_i < X \leq \bar{X}_i + 0.6 \times sb_i$	$2.2 < \bar{X} \leq 2.8$	Good enough
$\bar{X}_i - 1.8 \times sb_i < X \leq \bar{X}_i - 0.6 \times sb_i$	$1.6 < \bar{X} \leq 2.2$	Less good
$X \leq \bar{X}_i - 1.8 \times sb_i$	$\bar{X} \leq 1.6$	Very less good

Where: $\bar{X}_i = 1/2$ (ideal maximum score + ideal minimum score), $sb_i = 1/6$ (ideal maximum score-ideal minimum score), and X = empirical score.

The observation was done by two observers so that the reliability of teacher activities observation could be calculated with this following equation 5.

$$KK = \frac{2S}{N_1 + N_2} \quad (5)$$

where: KK = coefficient of agreement, S = agreement, the number of same codes to the same object, N_1 = the total codes from first observer, and N_2 = the total codes from second observer.

The coefficient of agreement (KK) was used to determine the tolerance of observations with observation reliability testing techniques. After calculating the reliability using the coefficient of agreement, we could determine the category of a media through interpretation of the value of correlation coefficient (r). Value interpretation of the correlation coefficient (r) can be seen in Table 2 [7].

TABLE II THE INTERPRETATION OF VALUE OF R

The amount of r	Interpretation
0.800 s/d 1.00	High
0.600 s/d 0.800	Moderate
0.400 s/d 0.600	Rather low
0.200 s/d 0.400	Low
0.000 s/d 0.200	Very low

Effectiveness of learning was measured through achievement test by doing pretest and posttest. Equation 6 is a normalization gain test used to calculate the value of students' cognitive learning outcome [9].

$$\langle g \rangle = \frac{\% \langle G \rangle}{\% \langle G \rangle_{\max}} = \frac{(\% \langle Sf \rangle - \% \langle Si \rangle)}{(100 - \% \langle Si \rangle)} \quad (6)$$

Categories of effectiveness of learning process can be seen on Table 3 [9].

TABLE III. CATEGORIES OF EFFECTIVENESS OF LEARNING PROCESS

No	Score	Criteria
1	$\langle g \rangle \geq 0.7$	High
2	$0.7 > \langle g \rangle \geq 0.3$	Moderate
3	$\langle g \rangle < 0.3$	Low

III. RESULT AND DISCUSSION

The validation of the instructional media was done by the expert validators from an academician and a practitioner.

TABLE IV THE RESULT OF VALIDITY ON TEACHING MEDIA

Aspect	Validation Score	
	X	Y
Variations of Presentation	3	3
	3	3
Observation Enforceability	3	3
	4	3
Completeness of Media	3	3
	3	3
Design of Media	4	4
	4	4
Completeness of Display	3	3
Total	33	32
Average	3.3	3.2
The Value of r_{xy}	0.76	
Category	Valid	

Table 4 shows that the results of the validation analysis of instructional media that covers aspects of assessment of variations in the presentation, enforceability, completeness of media, media design, and overall appearance were at very well category. Based on the validation results, the developed instructional media was categorized valid.

Prezi is a presentation of visual design that is very fun and makes the presentation is interesting. Audiences are interested and focused to the presentation. Prezi is one tool that is used to keep classes interesting and interactive [10]. Based on the results of the validation, all aspects of instructional media have been fulfilled. This suggests that learning media can be used in learning. A valid product means the product can be used to measure what should be measured [11].

The practicality of the instructional media was measured from the observation sheet of teacher activities observation. The observation sheet of teacher activities was developed based on standards and basic competencies which become

indicators and learning objectives which were based on education level in the 2006 curriculum.

TABLE V. THE ANALYSIS RESULTS OF THE AVERAGE OF TEACHER ACTIVITIES FROM OBSERVATION IN EACH MEETING

Meeting	Average in each meeting	Reliability
I	3.65	0.80
II	3.73	0.85
III	3.70	0.90
Total	11.08	2.55
Average	3.69	0.85
Category	Very good	High

The observations of teacher's activities were conducted in three meetings. The first meeting was about heat material, the second meeting was about Black principles, and the third meeting was about heat transfer. The observation results of the teacher activities were 3.69 each meeting which was included in very good category. The first meeting was 3.65 and categorized as very good, the second meeting was 3.73 and categorized very good, and the third meeting was 3.70 and categorized as very good. The reliability value was 0.85 that was categorized as high reliability. Teachers' activities that were observed had consistency and stability in measuring the practicality of the developed instructional media. A product is said to be practical if the product can be used and the product is said to be effective if the results are in accordance with the objectives set in the development [12]. If practically and theoretically learning media can be applied in the class, it means that the media is categorized as good [13].

Learning with Prezi as instructional media Prezi really helps teachers in the learning process. Prezi learning media can help learning activities run smoothly, students become more active and inovatif. The use of media as a tool in the learning process makes teachers explain more easily, especially in presenting concrete examples in everyday life. It is appropriate with the function of media to overcome the limitations of space and time and energy and passion. Also, it can increase students' motivation in learning, as well as more direct interaction between students with the resources that are used in the learning process [14].

The effectiveness of instructional media was measured through achievement test. Student learning outcomes in this study were taken through pre-test and post-test. Table 6 shows the value of learning outcomes calculated using normality gain test.

TABLE VI. GAIN CALCULATION TEST

Total of Students	Average of Gain	Category
36	0.73	High

The effectiveness of teaching media based on test results was categorized high. It was also because the implementation of teacher activity observation sheet which was done properly and systematically. If the teacher activity is implemented

properly and systematically, it means that all learning objectives in the lesson plan are also conveyed properly. If the learning objectives have been performed well, the value of learning effectiveness that was measured through achievement test would also be good. This is because the used achievement test was set based on learning objectives in the lesson plan. The effectiveness is based on different levels of experience and the results of interventions are consistent with the purposes [13]. The effectiveness refers to the achievement of a goal. A product will be effective if the product can facilitate the achievement of students' learning outcomes in accordance with the standard score minimum decided by school [15].

Based on the validity, practicality, effectiveness results in this study, Prezi is worth using. This is the same as the general purpose of media, such as to make clear a message that is not too verbalistic, provide stimulus as well as the same motivation so it can stimulate attention, interest, thought, and students feeling in learning to achieve the objectives [14]. Therefore, using Prezi in the process of learning can enhance students' creativity [16]. The learning process can motivate students to be active and creative, can improve the imagination of students, can clarify the complex materials, and can reveal the material or object that cannot be displayed directly so that learning becomes innovative and fun. The application of Prezi, the zooming media presentations, on physics subject can give a significant impact on improving student learning outcomes [17]. An increase in levels of cognitive students who use the zooming presentation media in the learning process [2]. There is a huge increasing is students learning outcomes after using Prezi learning media [18].

IV. CONCLUSION

Based on the results of this research and development, it was acquired that: (1) the validity of Prezi media based in teaching is categorized as valid; (2) the practicality of Prezi is categorized as very good; (3) the effectiveness of Prezi media based in teaching is high. Based on the results of validity, practicality, and effectiveness, we can conclude that Prezi media based in teaching on the subject of temperature and heat is worth using.

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