Promoting Prezi-PowerPoint presentation in mathematics learning: the development of interactive multimedia by using ADDIE model

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Abstract. Prezi-PowerPoint presentation results from developing learning media that combines PowerPoints with zoom-in and zoom-out effects, which are the hallmarks of Prezi. Prezi-PowerPoint presentation is a new learning medium for students designed to create an interactive and fun learning environment. The development of interactive learning media Prezi-PowerPoint presentations in mathematics learning aims to help students improve learning efficiency to achieve learning objectives. The research method used is research and development using the ADDIE model. The research implementation is limited to two media experts, one material expert, and three students. This is because the research was conducted at the time of the COVID-19 pandemic. The students response to the development of interactive learning media in the Prezi-PowerPoint presentation was good. It could happen because Prezi-PowerPoint presentation is a learning media that is new and attractive to students. Based on the feasibility test of learning media, it is obtained that the average percentage of the feasibility of developing learning media Prezi-PowerPoint presentation is suitable to use with good interpretation. Thus, Prezi-PowerPoint presentations are also relevant to use as an interactive learning media for students.

1. Introduction
The development of science and technology in the world of education is currently increasing rapidly from time to time. A teacher is one of the determining factors in the context of improving the quality of education. Thus, good quality education can be achieved with professional and competent teachers. Therefore, the improvement of educators’ quality is needed in order to create, develop, and maximize the use of learning media to produce the quality of human resources. The development of instructional media, especially those related to technology, has increased teachers’ knowledge about the urgency of learning media [1]. In line with this, it revealed that technology and information-based learning allows students to access learning materials anytime and anywhere [2]. In addition, the results showed that learning programs that used new technology were effective in improving the learning experiences and knowledge of students [3]. Hence the learning media becomes one of the supporting factors for the success of the learning process in schools. In line with this, the development of technology-based learning media has improved teachers’ ability to operate computers or laptops, including loading PowerPoint media.
Currently, many media are used as the basis for learning media which are proven to complement and support interaction activities between teachers and students in learning activities. Several ways can be done to develop existing learning media to be more interesting. For instance, the combination of the learning model with online learning media (virtual class) has been done by the researchers in one of the learning activities at SMK in Tasikmalaya. The researchers conducted learning by combining the Problem Based Instruction (PBI) learning model with WhatsApp, which showed very satisfying results. In addition, researchers innovated it by developing existing learning media, namely PowerPoint, and combined it with Prezi presentations. Prezi presentation has an innovative feature, namely the zooming effect (zoom in and zoom out) [4,5]. Therefore, Prezi presentation is an exciting learning media with the zoom in and zoom out effect as its characteristic. However, Prezi presentation has a weakness: the users cannot make interactive practice questions. Unlike Prezi, in the PowerPoint presentation media, we can create interactive practice questions. In this regard, PowerPoint and Prezi have their respective strengths and weaknesses. PowerPoint has provided a zooming effect facility which is the hallmark of Prezi presentations. Therefore, the Prezi presentation development can be done on PowerPoint media to produce effective presentation media with an attractive appearance.

PowerPoint is one of the media specifically designed to display multimedia programs attractively, easy to manufacture, use, and relatively inexpensive because it does not require raw materials other than tools for data storage [6]. The research results stated that the development of interactive PowerPoint media is effective and practical to encourage student motivation and interest of students in learning activities [7,8]. The results show that, in general, participants view PowerPoint positively, and it impacts the teachers [9]. Therefore it can be concluded that PowerPoint helps students and teachers in the teaching and learning process. The verse of PowerPoint that can be used to develop interactive learning media is at least PowerPoint 2019. This is because Ms. Office PowerPoint 2019 already provides a zoom feature in the insert menu, providing a zoom-in and zoom-out effect on a Prezi presentation. The specific part of Prezi media is its appearance in the form of a zooming presentation slide [10].

On the other hand, related to the Prezi presentation, the results showed that the development of Prezi learning media was suitable for use in learning activities [11]. The other results of the study showed that Prezi's presentation was well-accepted and very well-applied by the students [5,12]. Moreover, previous research concluded that Prezi presentation was preferred over other presentation media [13]. As well as other presentation software, Prezi is a web-based presentation program in the form of a mind map or a more modern mind map that can integrate text, images, animation, audio, video, and other presentation media that are placed on the presentation canvas and can be grouped in a frame [5,12]. Thus, PowerPoint and Prezi are learning media that can be developed into interactive learning media, which can transfer knowledge that can stimulate the students’ thinking process. For this reason, researchers are interested in developing Prezi media presentations made in PowerPoint media.

One of the standard models used to design or develop interactive learning media is the ADDIE model. The term ADDIE stands for Analysis, Design, Development, Implementation, and Evaluation. The development method using the ADDIE model is a systematic learning design model [14]. The ADDIE model is a systematic instructional design model representing dynamic and flexible guidelines for building effective teaching and learning tools [15]. Based on the results of research [16–20] that the ADDIE model is not only used to develop learning models but can also be used for the development of learning media and is proven to improve the quality of students in learning. The research result showed that software developers and teachers agreed that the integrated ADDIE Model effectively guided the software design process that supports the teaching and learning process [21]. Therefore, the integrated ADDIE model can be adopted and used to develop effective and qualified learning software.

Based on pre-existing research and development, the novelty in this study is to develop interactive learning media by combining PowerPoint media with the effects of Prezi presentation. This research and development aim to determine the feasibility and interest of student responses to the development of learning media Prezi-PowerPoint presentations in mathematics learning.
2. Methods
The method used in this research is research and development by using the ADDIE model. This is because ADDIE model is a design model that involves basic stages which are simple and easy to learn [19]. The research and development method is one type of research used to produce and test products [22]. This research was conducted in July 2020, with participants in this study are teachers, lecturers, and three students. Data validation was obtained from three validators that consisted of one FKIP lecturer at Siliwangi University and two Vocational High School (SMK) teachers. The product of this research is in the form of learning media that has been validated by material experts, media experts, including empirical evidence from teachers and students. ADDIE is a process commonly used in developing or designing effective teaching materials [23]. The following is the ADDIE model adopted from Taylor [21], shown in figure 1.

![Figure 1. ADDIE model development steps.](image)

The research instrument in this study used a non-test instrument in the form of questionnaires. There are four questionnaires: material experts, media experts, students’ responses, and teacher responses. After the Prezi-PowerPoint presentation learning media has been labeled as valid, the next step is to test three students in schools determined as research sites. This is because the research was carried out during the COVID-19 pandemic, so the Prezi-PowerPoint presentation learning media implementation was only tested on a limited basis. Some of these obstacles include not all students having smartphones, limited internet quota for students, no signal, and so on. The implementation stage will produce data that can be used to analyze aspects of practicality, usefulness, and quality of learning media. The indicators contained in the validation questionnaire for learning media development are divided into five aspects, which are modified from Baharuddin [18] as shown in table 1 below.

| No | Aspects       | Indicators                                             |
|----|---------------|--------------------------------------------------------|
| 1  | Material      | Conformance with KD                                    |
|    |               | Material systematics                                    |
|    |               | Material suitability with student needs                 |
|    |               | Material delivery                                       |
|    |               | Suitability of sample questions with material           |
|    |               | Suitability of images with material                     |
| 2  | Language      | Understanding of the language                          |
|    |               | Conformity to the rules of the Bahasa Indonesia         |
|    |               | Shapes, model, and font size                           |
| 3  | Media Design  | Instructions for using media, backgrounds, and animations |
| 4  | Display Media | Learning videos                                        |
| 5  | Use of Media  | Ease in applying media                                  |
After the learning material was delivered through the Prezi-PowerPoint presentation, students were given a questionnaire sheet to assess the learning media that has been given. The indicators contained in the questionnaire for learning media development are divided into two aspects, which are modified from Baharuddin [18] as shown in Table 2.

Table 2. Student and teacher response questionnaire grid.

| No | Aspects | Indicators |
|----|---------|------------|
| 1  | Learning Media Design | Forms, models, and letters used in learning media  |
|    |                     | Ease of running learning media |
|    |                     | Presentation of learning media, animation, and display of question exercises |
| 2  | Learning Materials | Students’ understanding in answering the given practice questions |
|    |                     | Material presentation |
|    |                     | Shapes, model, and font size |
|    |                     | Material delivery |
|    |                     | Re-explanation of the material by the teacher |

Furthermore, the data analysis process was carried out by giving questionnaires to students, then the data was processed, and the results were analyzed descriptively. During the data collection process, the researchers experienced several obstacles, such as the limited internet quota that the respondents had, no signal, and difficulties determining the right time to fill out the research questionnaire. The use of Prezi-PowerPoint encountered various obstacles, one of which was that not all respondents had a PC or laptop installed with Microsoft 2019 or 2020.

3. Result and discussion

This media development was carried out using the ADDIE stage, namely the analysis, design, development, implementation, and evaluation. The following are the steps that researchers took in developing Prezi-PowerPoint presentations.

3.1 Analyze

At the analysis stage, the researcher conducted a needs analysis for students by collecting information through interviews. In addition, the researchers analyzed the Prezi-PowerPoint presentation learning media. The results of previous research indicate that the Prezi learning media development can be used in learning [11]. Other than that, PowerPoint is a learning medium that students like in delivering learning material [24]. Prezi is a presentation media that allows the users to zoom in and out their presentation media, and it makes the Prezi have its characteristics and advantages. Prezi presentation has a zoom-in and zoom-out facility [4,5]. It is supported by Špernjak it can be concluded that students are less familiar with Prezi presentation because many teachers use more PowerPoint presentations because generally, teachers do not know Prezi presentation [25]. In addition, Prezi has a weakness, which is challenging to enter mathematical symbols and cannot make interactive quizzes. Based on the condition, the development was carried out by combining the effects of Prezi with PowerPoint. PowerPoint was chosen as a complement of Prezi because PowerPoint has easy access to mathematical symbols. In addition, it can bring up question practice slides as evaluation material for students; therefore, the learning media will be more interactive.

3.2 Design

At the design stage, the researchers began to compile goals to be achieved, create storyboards for instructional media, and create content or subject matter. The overview that was done on the main slide
used a video background creating attractiveness on the presentation. Therefore the video-based PowerPoint media developed is effective and practical in implementing learning [1,7]. Using a Prezi presentation, of course, would have a zoom-in and zoom-out effect on each slide shift. Then, as an evaluation for the teacher, so the students were given practice questions that can be answered. In this question exercise, if students chose the correct answer, an animation or notification would appear, which informs that the selected answer is correct, and vice versa.

3.3 Develop
At the development stage, the researcher carried out the activities such as creating learning media and building all content and components based on the design stage. The researcher developed the combination of Prezi effects available on PowerPoint 2019 or 2020 to make the zoom-in and zoom-out effect of the characteristics of Prezi. In addition, at the end of the presentation, there were exercises for students as material for teachers’ evaluation.

3.4 Implementation
At the implementation stage, the researcher implements learning media limited to three students. The development of learning media was conducted in one of the Vocational High Schools (SMK) in Tasikmalaya Regency on two-dimensional geometry materials. The implementation of this learning media is carried out on a small scale or piloting. Students conducted the mathematics learning activities with the help of Prezi-PowerPoint presentations. Furthermore, after the teacher had given the learning material, students were given five interactive quiz to understand students’ understanding from the learning that has been delivered. Students are pretty enthusiastic about implementing the development of learning media that researchers have developed. This is because the Prezi-PowerPoint presentation learning media are new and exciting learning media for them.

3.5 Evaluation
At the evaluation stage, the researcher evaluated the feasibility of learning media, investigated the achievement of learning objectives, the impact of the teaching and learning process when using this learning media, and identify changes and modifications for future delivery. The evaluation was carried out after the development of this learning media was realized, which was practiced in one of the Vocational High Schools (SMK) in Tasikmalaya Regency. As an evaluation material, the researcher asked teachers and students to assess the "Prezi-PowerPoint Presentation" by asking for their criticism and suggestions. This evaluation was based on validation by media experts and teachers covering material, language, media design, media appearance, and media use aspects. The design of learning media that has been validated is still conceptual. In other words, it is not perfect because it has not been tested directly in the following research process.

From the results of the activities above, the learning products produced in this study were Prezi-PowerPoint presentations. Prezi-PowerPoint presentations are learning media that use PowerPoint media but can provide the zoom-in and zoom-out effect of the Prezi presentation. These Prezi-PowerPoint presentations have content in the form of learning materials and quizzes. The learning evaluation contained in the Prezi-PowerPoint presentation is in the form of multiple-choice questions. If students click on the wrong answer, an incorrect notification will appear, and if the student clicks on the correct answer, a correct notification will appear. Therefore active learning through student PowerPoint presentations can improve the active teaching and learning process [26]. In figure 2, the following are the main display of learning media Prezi-PowerPoint presentation.
Figure 2. The main display of learning media Prezi-PowerPoint presentation.

The main view of the Prezi-PowerPoint presentation consists of five main icons, and there are an introduction, first material, second material, evaluation, and closing. Clicking on the icon in each learning activity will display a zoom-in effect. Then, if one of the learning activity agendas has been presented, it will return to the main page displaying the zoom-out effect. In figure 3, the following are material to be studied.

![Basic Competencies (KD)](image)

Figure 3. Material to be studied.

The introduction explains that three essential competencies are learning materials that must be achieved and mastered by students. So, before the teacher explains the learning material to be delivered, the teacher must explain the rules and guidelines in learning; therefore, learning objectives can be achieved. In figure 4, the following are learning videos in learning media Prezi-PowerPoint presentation.
Figure 4. Learning videos in learning media Prezi-PowerPoint presentation.

To deliver learning materials in the Prezi-PowerPoint presentation through learning videos. This is, therefore, the learning material can be conveyed clearly; therefore students can easily understand the material. Then through learning videos, the material can be delivered more creatively, effectively, and efficiently therefore, the learning objectives can be achieved. In figure 5, the following are quiz questions in learning media Prezi-PowerPoint presentation.

Figure 5. Quiz questions in learning media Prezi-PowerPoint presentation.

At the end of the lesson, students are given an evaluation to find out their understanding of the material that has been delivered. The evaluation is in the form of multiple-choice questions that are designed to be as attractive as possible. When students click on the wrong answer in the quiz, a sad emoticon will appear, whereas if the student's answer is correct, a happy emoticon will appear.

Media experts and material experts validated the development of learning media for Prezi-PowerPoint presentation. Therefore, the media can be used as a teaching aids for students. The feasibility test of the three validators showed that the Prezi-PowerPoint media got a percentage level of achievement with very feasible qualifications. This indicates that the Prezi-PowerPoint presentations can improve understanding of the material and are effective and practical in learning activities [7,27,28]. The following is an illustration of the percentage scale of the feasibility test for the development of
Prezi-PowerPoint presentation learning media on mathematics learning, which is modified from Baharuddin [18].

| VIQ | IQ | FDQ | FQ | VFQ |
|-----|----|-----|----|-----|
| 0   | 20%| 40% | 60%| 80% |
|     |    |     |    | 100%|

**Figure 6.** Eligibility percentage test interval

The suggestion from the validator for the development of learning media Prezi-PowerPoint presentation was that the display of the quiz section must be more attractive. Therefore, students would become interested and excited to join the quiz. Other variations, it cannot be denied that to do math problems, the appearance of an interesting question influences students to solve the problems [29]. In addition, the learning media should be shortened, so students could understand the material presented by the teacher when using Prezi-PowerPoint presentations. In addition, students need a re-explanation of the learning videos included in the learning media. Both validators and students responded positively to the use of Prezi-PowerPoint in learning activities. This is in accordance with the results of the study that the learning environment that uses multimedia has a positive effect on student achievement [30]. Therefore, learning media helps complement, maintain, and even improve the quality and learning process, increasing learning outcomes, activities, and students’ learning motivation [1].

4. Conclusion

Based on the results of the study, it can be concluded that the interactive learning media Prezi-PowerPoint presentation can be used as a media in mathematics learning for students. The steps for developing interactive learning media using the ADDIE model were beneficial as a guide in developing Prezi-PowerPoint media. The percentage of the feasibility of developing Prezi-PowerPoint learning media fell into the very feasible category. Thus, Prezi-PowerPoint presentations are learning media that can be used in learning activities. In addition, this learning media helped students to be able to review the material that the teacher has delivered. In addition, students could also examine to what extent they understand the topic. Thus the Prezi-PowerPoint presentation learning media is attractive to students so that it makes students happy and enthusiastic in learning mathematics. In addition, the teacher stated that the Prezi-PowerPoint presentation learning media was suitable for use as a media for learning mathematics. Interactive learning media by using PowerPoint media, which was given by the Prezi presentation, was new for students and made the learning process more enjoyable.

5. References

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