Media Analysis in the development of E-Physics Module to improve the Hurricane Disaster Preparedness

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Abstract. In the world there is global warming which resulted in much of the earth that can cause natural disasters. One result of global warming is extreme weather. In Indonesia, extreme weather can lead to various disasters such as hurricanes. The hurricanes that occur in the tropics generally swirl with hundreds of kilometres of radius around extreme low pressure. In addition, hurricanes are usually experienced during the turn of the season. It caused a lot of damage. To improve the disaster preparedness of hurricane, it can be integrated into the teaching materials in the form of E-Physics Module. Media analysis is done to know the basic needs in designing and developing E-Physics Module. This research is a research development (research and development) using model development of PLOMP. Based on the result of media analysis, E-Physics Module is needed to improve the hurricane disaster preparedness.

1. Introduction

Government Regulation Number 32 of 2013 has enacted the Curriculum 2013. In the 2013 curriculum there is a demand for independent scientific learning in the classroom and must be supported by scientific self-contained learning media. Learning media is a tool that can be used to stimulate the mind, feelings, attention and skills or skills of learners in the learning process. Learning activities in the 2013 curriculum should also utilize the role of information and communication technologies to improve the efficiency and effectiveness of learning [1]. One of the learning media that utilizes the role of technology is e-module. The electronic module is a form of presentation of self-developed learning materials systematically arranged into the smallest learning unit to achieve the learning objectives presented into an electronic format in which there is an audio animation, a navigation that makes the user more interactive with the program [2].

Electronic media that can be accessed by students have different benefits and characteristics. It can be viewed from the benefits of electronic media itself can make the learning process more interesting, interactive, can be done anytime and anywhere and can improve the quality of learning [3]. Based on the above statement can be interpreted that the electronic module is a systematic instructional material that is equipped with multimedia support so that the learning process becomes more interesting and can be used anywhere.

In a good media should contain learning materials that are contextual and appropriate environmental conditions of learners for effective and efficient learning. According to BNPB (National Disaster Management Agency) hurricanes ranked fifth for the disaster that often occurs in Indonesia. This disaster has caused many losses, especially damage to buildings [4]. To minimize disaster losses, people...
need to know about this typhoon disaster. Not only public information for the community, this hurricane event can be used as a teaching material in the form of E-Module in the learning of physics.

Based on this reason, this research will develop a textbook in the form of physics e-module to improve disaster preparedness of hurricane in high school. This paper focuses on the analysis of the availability of school media as a need analysis to meet the preliminary stage of the research development model of Ploom.

2. Research method

The research method that used in this research is R and D and the model used is Ploom. In Ploom there are three stages of research that is, preliminary research, prototyping phase, and assessment phase. This study aims to determine the results of media analysis as one of the needs analysis conducted at preliminary research stage.

In this study the sample selection is taken randomly. The sample in this study amounted to 26 students of SMA N 8 Padang. The tool used to obtain data is the analysis of school media using a questionnaire, which contains some questions regarding the availability and use of learning media in schools. Data collection was obtained through the distribution of the questionnaire to high school students N 8 Padang. Data processing is presented in descriptive analysis.

3. Result and discussion

Figure 1 shows the percentage of values from the nine questions raised to learners for the quality indicator of the content and purpose of the media used in the school. First to nine questions with percentage processing 87%; 83%; 84%; 87%; 82%; 78%; 74%; 71%; and 72%.

![Figure 1. Percentage of conformity of quality of content and purpose of learning media in school.](image)

Based on Figure 1, it can be seen the percentage of each indicator of the statement. Of the 9 content quality statements and the purpose of learning media there is a revelation that is still low in the form of media graphs and diagrams that are on the book students are less complete.

Figure 2 shows the percentage of scores of four questions asked to learners for learning quality indicators using school media. First to fourth questions with percentage processing 76%; 79%; 78%; and 80%.
Based on Figure 2, it can be seen the percentage of each indicator of the statement. Of the 4 content quality statements and the purpose of learning media there is a revelation that is still low, the media in the book students foster interest in student learning.

Figure 3 shows the percentage of scores of six questions asked to learners for indicators of technical quality of media usage. The first to sixth questions with percentage processing 74%; 75%; 70%; 74%; 70% and 77%.

Based on Figure 3, it can be seen the percentage of each indicator of the statement. Of the 6 statements of technical quality of instructional media there are two statements that are still low that the image media contained in the student book describes the actual situation and media that can be used in the preparation of student books only visual media.

Figure 4 shows the percentage of the values of the three common indicator that proposed to learners regarding the use of media in schools. The indicators are the quality of content and objectives, the quality of learning and the technical quality of the learning media. The first indicator with an average percentage of 80%, second indicator 79%, and third indicator 73%.
Based on data analysis of instructional media used in school, assessment of media at low school on indicator of technical quality of media used. The low technical quality resulting from media usage is caused by many factors. However, only 6 factors are indicated in this preliminary study. First, the media contained in the student's book has not attracted the reader (74%). Secondly, the image media that is found in the student's book is unclear (75%). Third, the media images contained in the book students have not been able to describe the actual situation (70%). Fourth, the media diagrams and graphs contained in the student's books have not been clearly arranged (74%). Fifth, the media used in the preparation of student books only visual media (70%). And finally, the media in addition to visuals cannot be used in the preparation of student books (77%).

The main factor causing the quality of learning using media to be low only 70% because the media images contained in the book students have not been able to describe the actual state and media used in the preparation of student books only visual media. The media contained in the student's book has not been able to deliver the learning materials appropriately to the learners. It also depends on the preparation of learning materials and the context of learning materials.

Context of learning materials that have not been integrated with the environmental conditions of learners also make the learning media used less interesting. The context of physics learning materials close to environmental conditions of high school students in the city of Padang is like a hurricane. Therefore, the media should be used in schools should be close to the environmental conditions of learners. So research focuses on learning media in the form of physics e-module to improve disaster preparedness of hurricanes in high school.

4. Conclusion
A good media based on preliminary studies of this study is the media contained in the book students are able to attract reading, the images contained in the student's book clearly, describe the actual situation, and the context of learning materials close to its existence with the environment of learners. One of the media that is close to the environmental condition of learners is a form of e-physics module to improve disaster preparedness of hurricanes in high school.

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