Media analysis in development of physics e-module integrated with tsunami disaster

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Abstract. Indonesia located in disaster-prone geographical condition and several tectonic plates. On the land, the shifting triggers the catastrophic earthquake and volcano eruption while the ocean could cause earthquake which implicates the tidal wave. The tidal wave in a big scale could trigger the deadliest wave, Tsunami. In Indonesia, there is meeting point of tectonic plates under the ocean in Mentawai, West Sumatra. Integrating about Tsunami into textbook school is solution to enrich the students’ knowledge about Tsunami. Consequently, there only few textbooks contain mitigation of Tsunami lesson in the field. This research has purpose to develop the study material to e-module. This research aims to expand the e-module study material about mitigation of Tsunami which is valid, easy, and effectively. This research is research and development which is using development model by Plomp. The preliminary analysis about media of study, it brings the content quality and purpose with a value of 79, quality of learning 72, and technical quality 83. Hence, to enhance the quality of students’ competency about mitigation of Tsunami, it needs a development of an integrated e-module about Tsunami using inquiry-based learning model to improve the students’ preparedness and their competency.

1. Introduction

Learning media is an important tool on the learning process. One form of instructional media is Teaching materials. Teaching materials are all forms of materials used to assist teachers or instructors to carrying out Teaching and learning activities in class [1]. Teaching materials are all materials (both information, tools, and texts) systematically arranged, featuring a complete figure of competence that will be mastered by learners and used to the learning process for the purpose of planning and reviewing the implementation of learning [2].

Teaching materials is a set of tools that help students to achieving the competence of learning both print and non print. One of the non-print media under study is the e-module. In a good medium contains learning materials. Learning materials should be contextual and environmentally appropriate for learners to be effective and efficient. One of the contextual and environmentally appropriate learning materials is tsunami disaster material.

Research on integrated learning of tsunami disaster material has been done, that is, with the integrated teacher book tsunami disaster at junior high school. [3] [4] Learning by using scientific models in textbooks provides students with a thorough knowledge improvement.

The complete lack of learning guides and textbooks integrated with the tsunami disaster in schools has resulted in the inadequate knowledge of learners about tsunami disaster mitigation in Padang city. There is still no textbook, especially in high schools whose learning is integrated with tsunami disaster.
mitigation material. One of the most potent subjects to help learners understand about tsunami disaster is physics.

Based on the reason, this research will do the development of textbook in the form of e-module integrated tsunami disaster mitigation 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 Plomp.

2. Research Method
In this research the research method used is R and D and the model used is Plomp model. In Plomp model 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 was taken randomly. The sample in this study amounted to 32 students of SMA N 5 Padang. The tool used to obtain media analysis data in schools using a questionnaire, which contains some questions related to the availability and use of learning media in schools. Data collection was obtained through the distribution of questionnaires to high school students. Data processing is presented in descriptive analysis.

3. Results 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. The first to nine questions with percentage processing 74%; 86%; 81%; 82%; 77%; 81%; 73%; and 75%.

Figure 2 shows the percentage of scores of four questions asked to learners for learning quality indicators using school media. The first to fourth question with 82 percent processing percentage; 77%; 80%; and 52%.
Figure 2. Percentage of learning quality using school media.

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 76%; 84%; 83%; 77%; 79% and 99%.

Figure 4 shows the percentage of the values of indicators the learning media use in schools. The indicators are (A) quality of content and objectives, (B) the quality of learning, and (C) the technical quality of the learning media. The first indicator with an average percentage of 79.2%, second indicator 72.7%, and third indicator 83.5%.

Based on data analysis of instructional media used in school, assessment of media in low school on the second indicator is the quality of learning from the media used. The low quality of learning derived from media usage is caused by many factors. Accordingly, only 4 factors are indicated in this preliminary study. First, the media used has not been able to foster interest in learners (82%). Second, the media has not helped learners to understand learning (77%). Third, the media have not been able to motivate the students as a whole (80%). Finally, the media has not added learner’s insight into learning (52%).
The main factor causing the quality of learning to use media to be low is only 72.7% because the media have not been able to increase the insight of learners. The media used cannot deliver the right learning materials to the learners. This also depends on the preparation of learning materials, the context of learning materials, stimuli early learning is still weak. Context of learning materials that have not been integrated with the condition of the environment of learners also make the learning media used less interesting. Context of physics learning materials close to environmental conditions of high school students in the city of Padang such as earthquakes and tsunamis, considering the city of Padang is an area prone to earthquakes and tsunamis. Therefore, the media should be used in schools should be close to the environmental conditions of learners. So, the study focused on learning media in the form of e-module integrated tsunami disaster.

4. Conclusion

Good learning media based on preliminary studies of this research is media that is able to cultivate interest, motivation of learners and the context of learning materials close to its existence with the environment of learners. A media that is able to foster motivation and close to the environmental conditions of learners is the media in the form of integrated e-module with tsunami disaster.

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