

E-Learning Material Development on Earthquake in Geography Subject for High School Students

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ABSTRACT

This study aims at developing e-learning material on the topic of earthquake in geography subject in SMAN 5 Banda Aceh. The design of e-learning materials was first validated by the experts then tested to the students. The validity test deals with aspects such as content, presentation, interactivity (stimulus and response), and graphic design; each component got the average score of 4 which means good. Test on students' responses show the results that the use of e-learning provides better impact on learning. It increases learning outcomes, makes the learning easier and more interesting, makes the students more active during the learning process. Students' responses to the application of e-learning showed positive response: 76.2% of the students found it interesting.

Keywords : *E-learning, earthquake material, student responses*

1. INTRODUCTION

School is considered to be the best place where knowledge transformation on disaster preparedness will take place effectively; so the learners will be able to apply their knowledge in their lives. School plays an important role in developing students' interests, talents, and creativity. This is the reason why school is expected to develop students' knowledge natural disaster so they are ready to face the future risk and to minimize the impact [1]

An innovative and creative model of learning in the topic of disaster is the one which can manage and develop the learning components in a well-planned design. It includes media

which is believed as a necessary tool in enhancing students' creativity and interest in learning and in developing students' cognitive abilities [1]. When science and technology is growing very rapidly, the learning process is no longer monopolized by the presence of the teacher in the classroom. Students can learn anytime and anywhere [2]. In addition, information technology improves students' performance and allows activities be implemented quickly, precisely and accurately, and resulting in high productivity [1]. Thus *e-learning* as an electronic media will provide a positive impact and changes in the learning process in the way that the interaction between the students and the teacher will not always have to be face to face. They can learn by themselves using the electronic media as an intermediary. This will create more interesting, visual and interactive learning atmosphere.

E-Learning is a network which makes it possible to be *updated*, stored/retrieved, distributed and shared. Through the network, information can be sent to the user directly via a computer using standard Internet technology [3]. *E-learning* is also defined as the use of information and computer technology to create learning experience. So *e-learning* is an electronic-based instructional media using technology such as computers. The development of *e-learning* models in schools on the topic of earthquake will improve students' preparedness against the earthquake [4].

2. METHODS

The research method used is *Research and Development* which is to produce a particular product and to test the effectiveness of the product [5]. The study focuses on the development of internet-based learning system or *e-learning* on the *Web Centric Course* (WCC). This is based on the research finding in Kurniahayati, et al., (2012) which states that there was an increase in students' interest in learning after using the web compared to before using *the web* [6]. This research method is suitable to use since the purpose is to produce and develop a learning material. The Web Centric Course material in the topic of Earthquake in geography subject for high school level would be an innovation in the field.

The R & D design is summarized into three steps:

1. Preliminary studies, conducted to clarify the issues and to explore the continuation possibility of the study.
2. The model development, conducted to design the e-learning model, to have the design validated in terms of content and includes its suitability with standard competence, basic competence, the students' need, teaching needs, the feasibility of the subject matter, and benefits for knowledge.
3. The model Testing, conducted to test the validated model to the student.

The population of this study were all students of class X SMAN 5 Banda Aceh, which comprise 243 students. Samples were class X-4 which consists of 16 students (boys and

girls) and class X-3 which consists of 14 students (boys and girls). Sampling technique was the *purposive sampling*.

3. RESULTS AND DISCUSSION

3.1 Steps to use the e-learning

Prior to assigning students to learn using the medium of *e-learning*, they were asked to open a site that has been prepared for them, i.e. <http://gempabumi.pendidikankebencanaan.com>. The procedure of using the e-learning medium is as follows:

1. Set up an *e-mail* then open the site <http://gempabumi.pendidikankebencanaan.com>. Figure such as follows will appear:

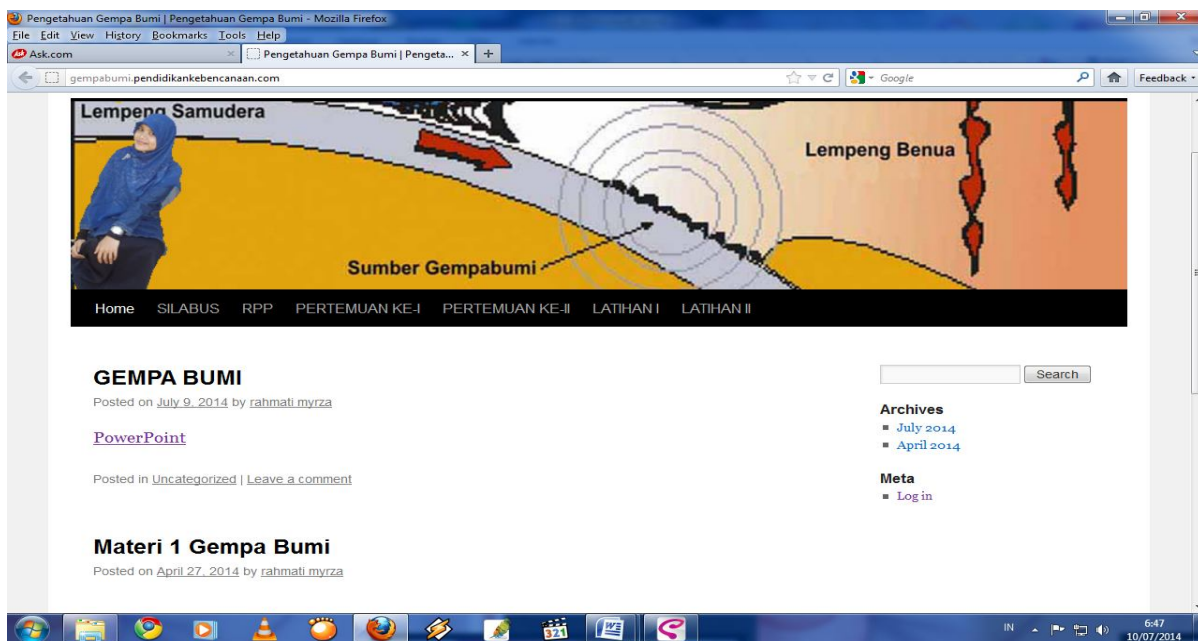


Figure 1. Display logs in e-learning

2. After you manage to open the web, then a figure containing *e-learning* Syllabus, lesson plans, MEETING I,-II MEETING, TRAINING I, II AND EXERCISE will appear as shown in Figure 2 below:



Figure 2. Display of material categories

3. Click MATERIAL 1, the MATERIALS and the Power Point will appear as shown in Figure 3 below:

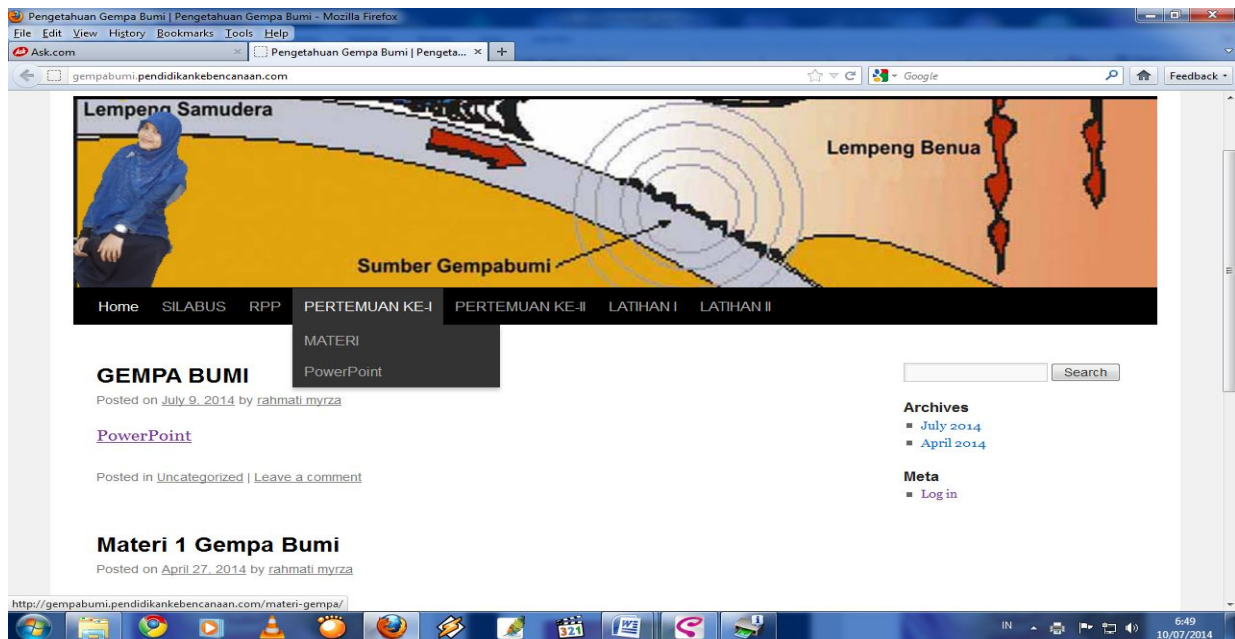


Figure 3. Display of material choices

4. Then select MATERIALS, figure as shown in Figure 4 below will appear:

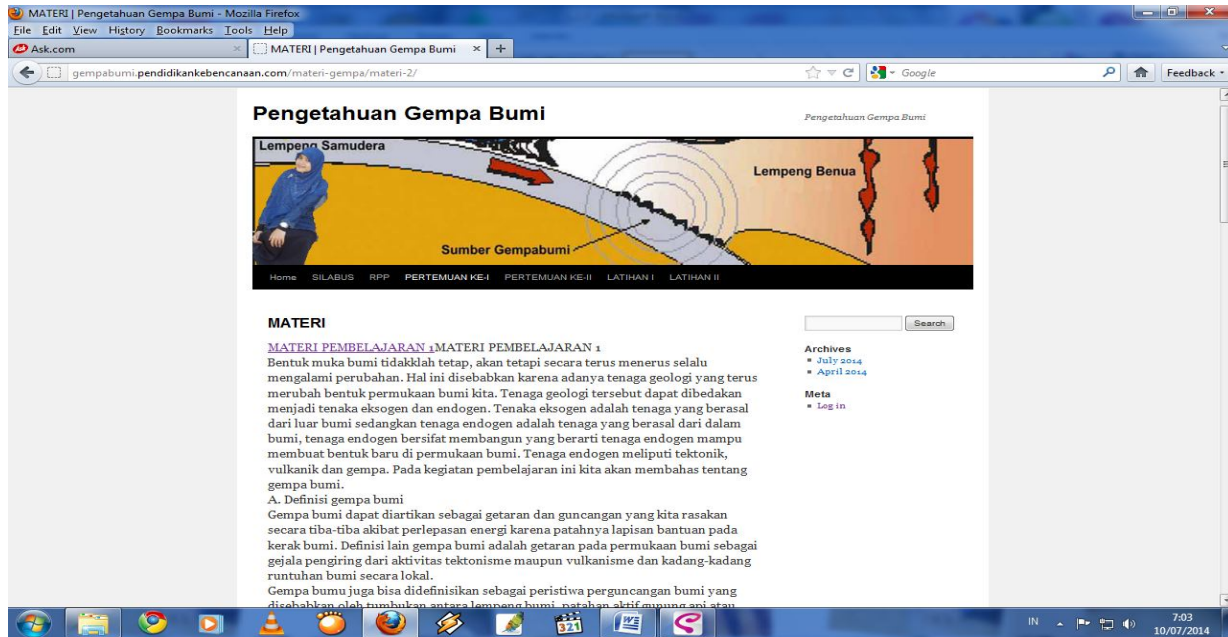


Figure 4. Display of chosen material

5. Select Power Point, then select open as shown in Figure 5 below:

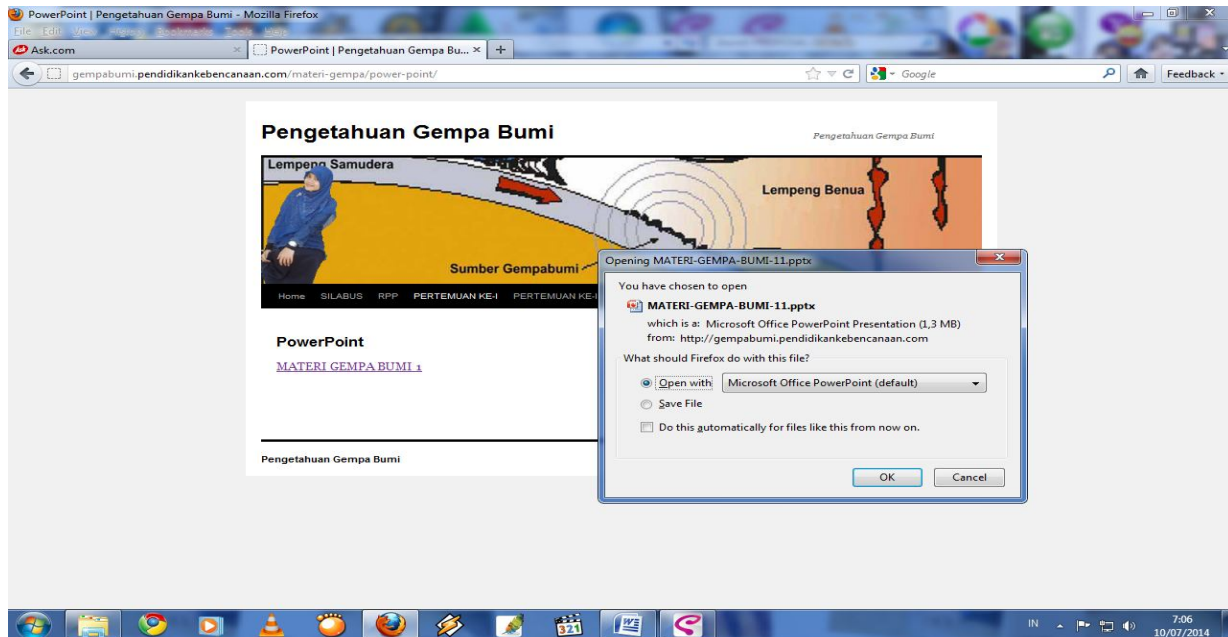


Figure 5. Display the material that you want to download

6. Select open with, then a figure as Figure 6 below will appear:



Figure 6. Display of downloaded power point

7. Then students are welcomed to answer questions already prepared. Click EXERCISE I, students are expected to fill in the fields that are available, ranging from name, email, and the subject (WRITE EXERCISES I). Then students can directly answer the question in the appropriate column as in Figure 7 below:

LATIHAN I

Nama

Email

Subject

1. Sebutkan definisi gempa menurut pendapat saudara. (20)

2. Sebutkan penyebab terjadinya gempa. (20)

3. Jelaskan pengelompokan gempa berdasarkan penyebabnya. (20)

4. Sebutkan perbedaan episentrum dan hiposentrum. (20)

5. Sebutkan faktor-faktor yang menyebabkan kerusakan akibat gempa. (20)

Figure 7. Display of exercise

8. After answering all the questions, click *send*. As in Figure 8 below:

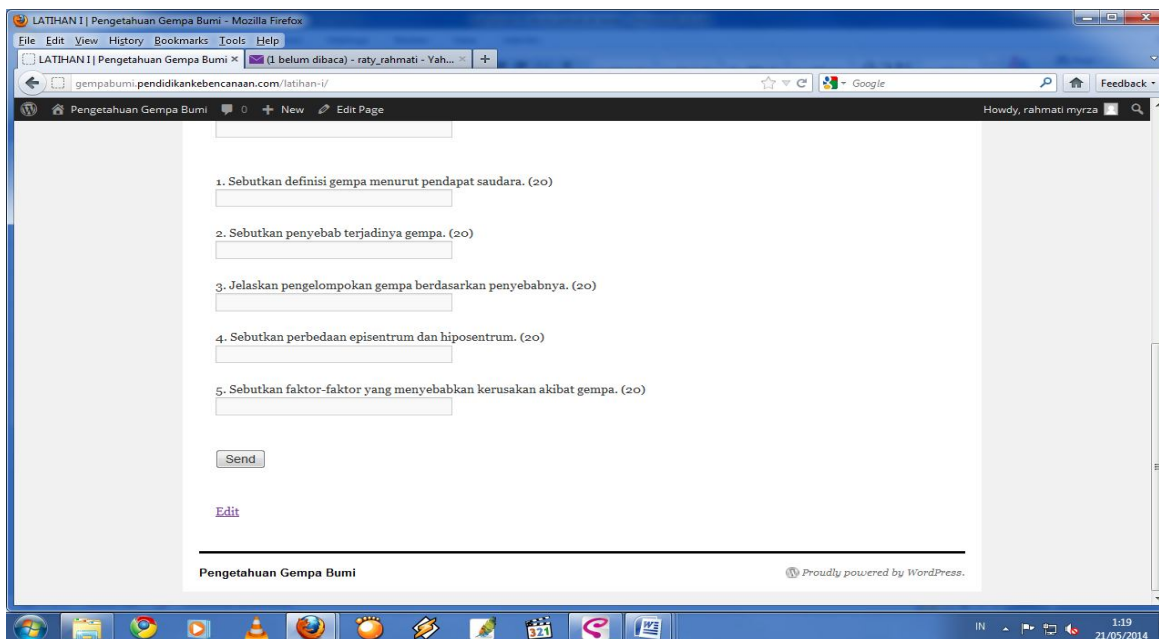


Figure 8. Display *Send* to send the exercise

9. After clicking *send*, and the information says you are successful, the students' work will automatically be sent to students' and teacher's email.

3.2 Validations

The validity of the *e-learning* material is validated in terms of content and includes its suitability with standard competence, basic competence, the students' need, teaching needs, the feasibility of the subject matter, and benefits for knowledge. It also includes judgment on the language which consists of aspects such as legibility, clarity of information, compliance with the Indonesian rule, and the effective and efficient use of the language. In addition, validation also involves the presentation which includes the clarity of purpose, order of presentation, motivation, information completeness, and interactivity (stimulus and response). Furthermore, validation on the graphic consists of the font (type and size), lay out, illustrations, graphics, images, photos, and display design. All categories respectively got score 4 in average, which means that the developed *e-learning* material is a viable learning method.

3.3 Student Response

Students' responses were measured by calculating the responses to the questionnaire which consists of seven questions. The results show that the use of *e-learning* provides better impacts on learning. All students (100%) like the method because it allows them search for information and make them active. Students' responses on the application of *e-learning* showed that there are 76.2% students interested in the method and only 23.8% are not. The process of teaching and learning through e-learning model can enhance the capabilities of students. The results indicate that the implementation of e-learning models can create more interesting learning atmosphere. It also creates effective teachers and students interaction, so students are more interested in learning [1]. Furthermore, the use of electronic-based learning can increase the learning process and outcomes. Since it provides a breakthrough in learning model development, universities are encouraged to engage experts in education and information technology so as to create a modern learning system capable in bridging the cultural values inherent in the conventional learning system [7]. As for the conventional education system e-learning functions as enriching learners' knowledge and understanding and as a part of habituation process to literacy learning resources, especially internet technologies [8].

3.4 CONCLUSIONS

1. The development of the *e-learning* method through the use of computer technology or the Internet can be implemented by connecting the students, learning resources, and the teachers. Interaction can be done directly (*synchronously*) or indirectly (*asynchronous*).
2. E-learning is not merely learning on the Internet. E-learning is that the learning process is put through the internet technology. It has principles such as simple, personal, and quick. These characteristics are the keys for its attractiveness.
3. Therefore the principles and communication in e-learning model should be designed just like the ways they occur in a conventional learning, so it is appropriate to the needs, such as to improve earthquake preparedness.
4. Student responses to the model of e-learning are positive because beside it is found to be more effective, this model also makes the students more active in the learning process.

3.5 SUGGESTIONS

1. The utilization of *e-learning* requires sufficient facilities to get the best results.
2. The utilization of *e-learning* requires the culture of self/independent learning and habits to learn. Lack of interaction between teachers and students or among students can slow down the development of the culture or *values* in the learning and teaching process.

4. ACKNOWLEDGMENTS

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