Edmodo-Based E-Learning Media Development in the Field of Science

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Abstract. This research uses the Research & Development (R&D) method with quantitative and qualitative approaches conducted in schools. This research aims to develop Edmodo media in the field of science, find out the feasibility of using media, find out the response of users in using the media. Based on the feasibility testing of the media and the field of science conducted by 2 material expert validators and 1 media expert validator it was found that Edmodo media developed according to experts was declared feasible and could be used as a learning medium in the field of science.

1. Introduction

Education is a government that must be obtained by all generations of the nation's successors[1]. The Learning curve Person 2014, a world education ranking agency explained that Indonesia was ranked last in the world quality of education, while in 2015 the quality of education in Indonesia was still in 10 countries that had low quality education, the ranking was obtained from the Global School Ranking[2]. The education system in Indonesia has enabled the government to facilitate schools with the internet and introduce the latest information and incorporate technology by using websites to support the education system at the elementary to tertiary levels of education[3].

Learning media have an important role in supporting the quality of the teaching and learning process. Media can also make learning more interesting and enjoyable[4]. The provision of dynamic, conducive and dialogical media and educational methodologies is essential for the optimal development of students' potential. This is because the potential of students will be more stimulated if assisted with a number of media or facilities and infrastructure that support the process of interaction that is being implemented[5]. Media really influences learning outcomes, by choosing an appropriate media, one of the benefits is that students become motivated and enthusiastic in following the process of learning[6]. However, many teachers have not included the media in the learning process. Learning media at this time is growing rapidly. Moreover, the media with regard to electronics. Learning media can be developed on mobile devices that are easy to carry anywhere such as smartphones and tablets[7].

Along with the development of technology and many educational institutions that began to develop the learning process using e-learning, many teachers are motivated to start designing the learning process by utilizing an online learning system at their school. The choice of e-learning in solving problems related to improving the quality of learning by facilitating interaction between students and teachers and between
students. Therefore, e-learning learning is the best solution in overcoming these problems. E-learning learning is very interesting and not bound by time and space.

One of e-learning based learning media is Edmodo. According to Ainisyah's explanation [8], that Edmodo aims to help teachers utilize social networking facilities in accordance with the conditions of learning in the classroom. Edmodo as a social network based on the school environment (school based environment). The Edmodo application is intended for teachers, students, and also parents of students. Edmodo is one of the social networks that can be accessed for free on the site www.edmodo.com. In addition, it can also be downloaded on a smartphone or android via Google Play Store. Edmodo was created using the concept of social working, which refers to the Facebook network so that this system has features similar to Facebook. This application can be used to support the online learning process. Edmodo is one of the development of internet technology which is a social media platform for teachers, students, and parents. The edmodo function is possible to be applied as a medium that can support the smooth learning process.

2. Method

This research is a research and development (R&D) research development using the ADDIE model. The development carried out is Edmodo-based e-learning media development in the field of science, with the following steps: (1) Analysis, (2) Design, (3) Development, (4) Implementation, (5) Evaluation. But this research is only limited to small scale implementations to expert validators, and response validators.

3. Result And Discussion

Based on a series of development stages that have been carried out, the results obtained from the development are:

3.1. Analysis

Beginning with observing the potential and problems that occur. There are some problems that often arise such as the lack of active students when learning, the influence of social networks that make students often ignore the lessons, and analysis of teaching materials used by students when the learning process takes place.

| No. | Content Feasibility | Max Score | Earn Score | Persentase | Information       |
|-----|---------------------|-----------|------------|------------|------------------|
| 1   | Material Coverage  | 8         | 4          | 50%        | Poor / Invalid   |
| 2   | Material Accuracy  | 24        | 19         | 79,1%      | Good Enough / Enough Valid |
| 3   | Update              | 16        | 11         | 68,75%     | Good Enough / Enough Valid |
| 4   | Productivity       | 16        | 9          | 56%        | Poor / Invalid   |
| 5   | Stimulate curiosity| 8         | 5          | 62,5%      | Good Enough / Enough Valid |
| 6   | Develop Life Skills| 16        | 12         | 75%        | Good Enough / Enough Valid |
| 7   | Contextual         | 8         | 5          | 62,5%      | Pretty good      |

**Avarange Persentase** 67% Pretty good

| No. | Content Feasibility        | Max Score | Earn Score | Persentase | Information        |
|-----|----------------------------|-----------|------------|------------|--------------------|
| 1   | Student development        | 8         | 5          | 62,5%      | Pretty Good        |
| 2   | Communicative              | 8         | 4          | 50%        | Not Good           |
| 3   | Dialogical and interactive | 8         | 6          | 75%        | Pretty Good        |
| 4   | Straigntforward            | 8         | 8          | 100%       | Good               |
| 5   | Coherence                  | 12        | 12         | 100%       | Good               |
| 6   | In accordance with Indonesian| 8         | 8          | 100%       | Good               |
| 7   | Use of terms, symbols, symbols| 8         | 8          | 100%       | Good               |

**Avarange Persentase** 85% Good
Table 3. Table of Presentation Feasibility Analysis Results

| No.   | Content Feasibility | Max Score | Earn Score | Percentsage | Information |
|-------|---------------------|-----------|------------|-------------|-------------|
| 1.    | Presentation technique | 32        | 30         | 93.75%      | Valid       |
| 2.    | Supporting presentation of material | 28        | 28         | 100%        | Valid       |
| 3.    | Presentation of learning   | 24        | 21         | 87.5%       | Valid       |

Avarange Percentsage 94% Valid

3.2. Design
At this stage, researchers gather information to design plans for the production of teaching materials on acidic and basic materials, ranging from design selection to the preparation of teaching materials that are developed.

Based on the data from the analysis table, it will be developed in aspects of:

Table 4. Tabulation of Development Results

| Components Analyzed | Components Developed |
|---------------------|----------------------|
| • Coverage of material | 1. Expand material by providing basic knowledge or apperception |
| Content Feasibility  | • Productivity 2. Add things that deepen the discussion about the material |
|                     | • Stimulate knowledge 1. Providing application of material in daily life |
|                     | • Contextual 1. Provide stimulus in the form of pictures that are in accordance with the subject matter |
| Language Feasibility | • Student development 2. Giving problems about the material |
|                     | • Dialogical and interactive |

3.3. Development
This stage the researcher will produce the final product in the form of edmodo-based e-learning media that is ready to use, then the product will be validated.

3.4. Material Expert Validation
Material expert validation is done by filling out the validation sheet which consists of 2 aspects of assessment, namely the aspect of content eligibility and language eligibility.

Table 5. Results of Expert Validation Results

| Aspect              | Score (%) | Category    |
|---------------------|-----------|-------------|
| Content Feasibility | 85.50     | Very worthy |
| Language Feasibility| 86.70     | Very worthy |

3.5. Media Expert Validation
Validation of media experts is done by assessing 2 aspects, namely: the feasibility of the contents of the media and the feasibility of the graphic.

Table 6. Results of Media Expert Validation

| Aspect             | Score (%) | Category    |
|--------------------|-----------|-------------|
| Content Feasibility| 88.50     | Very worthy |
| Feasibility of Finesse | 90.00 | Very worthy |

4. Implementation
This stage aims to assess and produce interesting and selective e-learning media. With a small-scale trial carried out on 15 students using an assessment questionnaire. The questionnaire data is presented in table 7.
Table 7. Results of Small Scale Trials

| No | Indicator                                      | Score (%) |
|----|-----------------------------------------------|-----------|
| 1  | Completeness of material                     | 88.50     |
| 2  | Clarity of language used                     | 96.00     |
| 3  | Complete media content                       | 96.00     |
| 4  | Clarity of language in the problem           | 96.00     |
| 5  | Ease of accessing media                      | 81.00     |
| 6  | Interest in media display                    | 92.00     |
| 7  | A pleasure in using media                    | 88.50     |
| 8  | Motivating in studying chemistry             | 85.00     |
| 9  | Interest in using media for other material   | 90.55     |
|    | **Average**                                  | **90.55** |

The results of the development of edmodo-based e-learning media produce products in the form of: (1) instructions for using the media, (2) teaching materials in the form of e-learning, (3) practice questions and quizzes, which contain multiple choice exercises, fields, correct statements and wrong, match and essay. The practice exercises function students' training facilities to find out the students' abilities after edmodo-based e-learning media is developed.

5. **Conclusion**

With various stages of the development of the research carried out and the results obtained, the following conclusions can be drawn: (1) this development research produces edmodo-based e-learning media with the results of the material expert validation of the development namely the feasibility of the contents of 85.50%, the feasibility of the language 86.70%, while the feasibility of media experts with 88.50% content worthiness, and the feasibility of 90.00% graphics. (2) the response rate of the results of small-scale trials with the results of 90.55% shows that the development of edmodo-based e-learning media is very feasible. (3) the use of edmodo-based e-learning media, among others, for the fields of science, the use of technology and the process of learning science itself.

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