Development Of Interactive Multimedia Lectora Inspire Problem Based On Science

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Abstract. This research is a type of research development Research & Development (R&D) using the ADDIE model with quantitative and qualitative approaches applied in schools. This study aims to develop multimedia Lectora Inspire Problem Based in the field of science, knowing the feasibility of using multimedia, knowing the user's response in using the multimedia. Based on the testing of the feasibility of the multimedia and the field of science carried out by 2 material expert validators and 1 multimedia expert validator, it was found that the multimedia Lectora Inspire developed according to experts was declared feasible and could be used as multimedia learning in the field of science.

1. Introduction

The development of technology in this communication era has provided opportunities and expansion of interactions between teachers and students, between students and students, and likewise between students and learning resources can occur at any time without being limited by space and time (Wijaya et al, 2014). The rapid development of science and technology, especially in the development of interactive media can be seen from the many learning media used in the learning process. Interactive learning media can facilitate an educator in teaching abstract material (Permana et al, 2014).

Multimedia is a combination that comes from various media, where the combination can be used for learning purposes. The combination of various media is called by the name of multimedia (Latuheru, 1988: 81). In other words, conceptually multimedia is more than just the use of media in an effort to achieve learning goals. Multimedia includes the entire form of media used in a presentation of material, which is done systematically and structured.

Lectora Inspire is a software that can be used to create interactive learning media. Mas'ud (2012) states that lectora is an authoring tool for the development of e-learning content developed by Trivantis Corporation. Lectora is able to make online courses fast and simple. Lectora inspire is equipped with three features including camtasia for lectora, an application that is able to record activities performed on a computer work screen, so as to create a video of computer work screen activity and can be used also to edit videos and flash animations, snagit for lectora is an application that can make learning media more creative by involving and adding flash animations and special effects (Mas'ud, 2012). Lectora inspire can be used to combine
flash, record video, combine images and screen capture. The uniqueness and completeness of other Lectora inspires is its ability to insert exercises that are complete with feedback that shows right and wrong answers, and scores that can be known directly so that it makes it easy for teachers to make an assessment because scores or grades have automatically appeared (Shalikhah et al, 2017).

According to Mas’ud (2012: 5) lectora inspire has several advantages over other e-learning Authoring Tools, including:

1. Lectora Inspire is multifunctional, can be used to create websites, interactive e-learning content, and product presentations or company profiles.
2. The features provided by Lectora Inspire make it very easy for novice users to create multimedia (audio and video) learning.
3. For a teacher and instructor, the existence of lectora inspire can make it easier to make learning media.
4. The Lectora Inspire template is quite complete.
5. Lectora inspire provides a media library that is very petrified for users.
6. Lectora Inspire is very possible to use which converts Microsoft PowerPoint presentations to e-learning content.
7. Content developed by Lectora Inspire can be published to various outputs such as HTML, single executable file (exe), CD-ROM, and e-learning standards such as SCORM and AICC.

Development of ideas or knowledge can be done by providing real, direct, and relevant problems with the students' knowledge needs, so that in learning the teacher is required to be able to package learning activities with models that can provide opportunities for students to do simple explorations so that they do not just accept and memorize.

Problem-based learning is learning that exposes students to a problem that leads them to new knowledge and concepts that they have not known before. Problem-based learning focuses on change to make students think in real terms. Problem-based learning is not only a problem solving process, but also a pedagogy based on constructivism with real problems designed to learn with the surrounding environment where there are processes of discovery (inquiry), independent learning, information processing, discussion, and collaboration between groups (Dewi et al, 2013). Problem-based learning activities tend to be more concise, open, and easy to integrate and be organized with previous learning (Ambruster et al, 2009).

Based on the background description above, the researcher developed a problem-based multimedia lectora inspire in the field of science.

2. Method

The type of research to be carried out is research and development (R&D) research using the ADDIE model. The development carried out is the development of Multimedia Lectora Inspire. Where the steps include: 1. Media Analysis, 2. Product Design, 3. Development, 4. Implementation, 5. Evaluation.

![ADDIE Model Diagram]

2.1 Analysis.

At this stage the researchers conducted an analysis which included a needs analysis, curriculum analysis which included a study of material depth, media use and evaluation.

2.2 Design.

After data analysis, the design of multimedia lectora inspire based on problems is made. In the design phase the researcher makes the initial design in the form of a framework (outline), determines the
systematic development, designs the appearance, and makes a grid of practice questions, quizzes, and evaluations

2.3 Development.
At this stage the researcher makes the appearance of lectora in accordance with the design that has been previously designed. Then the lectora that has been made is validated by expert validation. Where validation is carried out by 3 validators namely 2 material experts and 1 media expert. After being validated the multimedia is revised according to the advice given by the validator.

2.4 Implementation
The next step is product testing. Where trials are conducted to determine the effectiveness of the products that have been developed.

2.5 Evaluation.
After the product is tested, it can be seen the weaknesses of the product. Weaknesses are then corrected so that the quality products are ready to use.

3. Results and Discussion
Based on a series of development steps that have been carried out, the resulting research and development products are in the form of problem-based multimedia lectora inspire. The results of the product discussion and development are as follows:

3.1 Analysis.
From the results of the analysis, it was obtained several components that were not in accordance with the feasibility standards of problem-based multimedia such as, competency standards, content standards, process standards, design / appearance, and media operation. In the analyzed media, there are no basic competencies and learning objectives. While the standard content of the material does not provide a description of the experiment, there are no games, and illustrations that are used in the media do not exist. Media is also not student-centered and does not encourage the growth of curiosity, and cooperation, design / appearance is less attractive, there are no icon buttons used to help operate the media, there is no animation. The complete tabulation of analysis results is shown in table 1.

The development carried out is based on the principle of research and development. The purpose of development is to obtain interactive products, namely problem-based lectora inspire according to the standards of problem-based multimedia feasibility. Components developed include competency standards, multimedia containing interesting games, and interesting illustrations. The product also features a button icon that is used to facilitate the use of the product, as well as being centered on students, encouraging student curiosity and collaboration between students. The fully developed components are shown in table 2.

Table 1. Tabulation of media analysis results

| Analyzed Component       | Explanation                                                                 |
|--------------------------|------------------------------------------------------------------------------|
| Content Standards        | a. competency standards and the purpose not available                        |
|                          | b. The material does not adequately describe the experiment                  |
|                          | c. There are no games yet                                                   |
|                          | d. Nothing the illustrations have been used to describe the material         |
|                          | e. The media is not student-centered                                         |
|                          | f. The media has not yet fostered a sense of cooperation                     |
|                          | g. The media has not aroused curiosity                                       |
| Standard of Graphic      | a. There is no icon button that helps the media                              |
Table 2. Tabulation of components developed based on the feasibility standard of problem-based multimedia

| Analyzed Component | Explanation |
|--------------------|-------------|
| Content Standards  | a. Standards and competencies according to KI and KD |
|                    | b. Games available |
|                    | c. Illustration used to describe material |
|                    | d. Multimedia centered on students |
|                    | e. Multimedia fosters a sense of cooperation |
|                    | f. Multimedia fosters curiosity |
| Standard of Graphic| a. There is no icon button that helps the media |
|                    | b. There is no animation yet |

3.2 Development Validation Results. Problem-based lectora inspire multimedia products are validated by the validator based on their area of expertise, namely material experts and media experts. The material expert validator consisted of two validators, namely two chemistry lecturers, and the media expert validator consisted of one validator.

3.2.1 Material Expert Validation.
Material expert validation is done by filling out the validation sheet which consists of 2 aspects of assessment based on the problem based multimedia feasibility provisions. The statement items on the instrument are given based on 2 criteria shown in table 3.

Table 3. Expert Material Validation Results

| Aspek               | Score (%) | Category     |
|---------------------|-----------|--------------|
| Content Feasibility  | 83,3      | Very Feasible|
| Content of Graphic  | 86,7      | Very Feasible|
| **Average**         | **85**    | **Very Feasible** |

3.2.2 Media Expert Validation.
Media expert validation is done by filling out a validation sheet consisting of 2 aspects of assessment based on the provisions of the feasibility of problem-based multimedia. The statement items on the instrument are given based on 2 criteria shown in table 4.

Table 4. Media Expert Validation Results

| Aspek               | Score (%) | Category     |
|---------------------|-----------|--------------|
| Content Feasibility  | 86,0      | Very Feasible|
| Content of Graphic  | 82,0      | Very Feasible|
| **Average**         | **84**    | **Very Feasible** |

3.3 Implementation.
There are trials in this study are small-scale trials. A small-scale trial was conducted on 15 students by filling out an assessment questionnaire sheet. The questionnaire data is presented in table 5.
Table 5. Results of Small Scale Trials

| Aspek                | Score (%) | Category          |
|----------------------|-----------|-------------------|
| Content Quality      | 82        | Very interesting  |
| Display Quality      | 84        | Very interesting  |
| Language Quality     | 82        | Very interesting  |
| **Average**          | **82**    | **Very interesting** |

Discussion

Presentation of the results of this development aims to develop problem-based multimedia inspector lectora that can be used in science. The data presented is a description of a series of development processes, results of validation of eligibility and results of trials.

Assessment by material experts in the form of tables and graphs. From the data validation results of the material experts in each aspect that the problem-based multimedia lectora inspire developed is categorized as very feasible to use, it can be seen from each aspect that scores above 80% with an average percentage of 85%. Thus the problem-based multimedia lectora inspire developed is categorized as very appropriate for use in the material side.

The category is very feasible on the side of the material because it meets the criteria of problem-based lectora inspire multimedia. The aspects of multimedia content that were developed already meet the criteria, among others: the availability of competency standards and objectives, illustrations, questions and quizzes, multimedia centered on students, foster curiosity, and cooperation. In the graphic aspect, the availability of button icons helps the use of multimedia and the availability of animation.

Assessments by media experts have an average percentage of 84%. Thus the problem-based multimedia lectora inspire developed is categorized as very appropriate for use in the media presentation.

Figure 1. Product Feasibility Chart

Figure 1 shows that multimedia that has been developed is categorized as "very feasible" and "very interesting" to be used as interactive multimedia in science learning.
4. Conclusions and suggestions

4.1 Conclusions
Based on the results and discussion it can be concluded that this research produces a product in the form of interactive multimedia based on problems, the quality and feasibility according to experts is very feasible namely from the results of validation on material experts with an average of 85% percentage of media experts 84% students' responses to the attractiveness of multimedia very interesting with an average percentage of 82%.

4.2 Suggestion
As for suggestions for further users and researchers, namely research and development needs to be followed up for research in the field of better multimedia development, multimedia that is developed only in science learning then further needs to be developed further for other fields with more varied content.

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