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The Development of Interactive Tutorial videos of Efront LMS as a Source of Independent Learning for High School Physics Teachers

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ABSTRACT

The existence of qualified and professional teachers is an absolute requirement in the present system and qualified educational practices. The regulation of the Minister of National Education of the Republic of Indonesia Number 16 Year 2007 explaining that the pedagogical competence stated that the subject teachers should utilize information and communication technology in teaching and learning processes. Based on the professional competence, the subject teachers should also be able to utilize information and communication technologies in communication and for self-development. This research aims at developing interactive tutorial videos of Efront LMS as a source of self-learning for high school physics teachers. This study used research and development procedures. The research and development procedures are as follows: (1) the research problems, (2) the data collection, (3) the product design, (4) the design validation, (5) the design revision, (6) the small-scale product trial, (7) the product revision, (8) the large-scale trial, (9) the product revision, and (10) the mass production. The assessment result of experts and high school physics teachers shows the average percentage score of products is 85.37% and 89.36%. This suggests that the product is valid to be used as a source of independent learning high school physics teachers. Their response to the product developed as 83.10% of the ideal score. This indicates that the product developed is acceptable and can be used as a source of self-learning high school physics teachers. This study is limited to produce media interactive tutorial videos and knowing the quality of feasibility. Further studies on the effectiveness of the use of the products and the influence of the product usage on increasing the competence of High School physics teachers.

Key Word: Interactive Tutorial Video, Efront LMS, Self Learning Resources

INTRODUCTION

Qualified teachers and professionals is an absolute requirement presence systems and practices of quality education (Mugara, 2012). Qualified teachers and professionals must be met in order to improve the quality of education in Indonesia in order to compete with other developed countries. One indicator of professional and competent teacher is a teacher is able to adapt to the development of science and technology is becoming more sophisticated. In addition, professional teachers must also be able to apply models and methods of learning based on the times and the needs of learners.

The regulation from Minister of National Education Republic of Indonesia Number 16 Year 2007 explains that each teacher must meet the standards of academic qualifications and competence of teachers who apply nationally. The Competency standards teachers tables contained in the regulation from the Minister of National Education Republic of Indonesia Number 16 Year 2007 explains there are 24 core competencies for

teachers in the SD/MI, SMP/MTs, SMA/MA, and SMK/MAK complete and detailed. In the pedagogical competence stated that the subject teachers should utilize information and communication technology in the classroom. Moreover listed also on the professional competence that subject teachers must be able to utilize information and communication technologies in communication and for self-development.

Research conducted by Sumintono (2010) from the Faculty of Education University of Technology Malaysia on a survey of science teachers in Indonesia on the use of information and communication technologies in teaching concluded that only 47% of teachers who use ICT in learning. The software used in the study limited to Microsoft Office. The survey also concluded that the source of mastery of ICT skills possessed by teachers of science comes from following a course as much as 11%, the training of service as much as 11%, 71% self-learning and can not be used as much as 7%. This is a very interesting finding that the greatest science teacher

mastery of ICT is obtained by self-learning. (Sumintono, 2010).

One use of ICT in education is the use of E-learning as a learning medium. One elearning tools used in learning activities at school is a Learning Management System / LMS (Darmawan, 2014). LMS is a package solution designed for the delivery, tracking, reporting and management. LMS can contain materials that are packed in the form of multimedia (text, animation, video, sound), which is given as a supplement and enrichment for the development of learner competence. Results of the study Efendi (2014) on the development of elearning media using Efront LMS stated that online learning media using Efront LMS is capable of creating self-learning, active, effective, and efficient. In addition the use Efront LMS can improve the understanding of student learning or cognitive outcomes.

Efront has 5 characteristics of excellence that has been chosen by the user. Five of these characteristics are the maintainability, compatibility, usability, modularity, and accessibility (Giurgiu, 2014). Efront LMS won the award of Elearning Magazine as the Best Open Source Solution in September 2012. Efront LMS has the advantage on the category needs a digital library compared LMS Moodle. LMS eFront also supports the activities of the upload (assignment upload), the storage file personal files (personal file storage), the capacity evaluation lessons (course evaluation capacity), the results page (results page), chats, forums, wikis, message (Fariha, 2014)

One medium that can be used in studying physics independently are using video tutorials (Ekawati, 2010). Teachers can share the role by using the media so as to have time to pay attention to other educational aspects, such as helping students' learning difficulties, the formation of personality, motivation to learn, and others. With the use of this tutorial video, the teacher does not have to explain the subject matter repeatedly. The material can be restated as easy, simply by way of re-publish. Video tutorial learning can also be prepared as well as possible so that students do not feel bored. Video tutorials also can make students learn or do the work of a material as shown in the video. Students can repeatedly be able to watch videos until they really understand the material (Abulencia, 2013).

From the above description, the number of teachers who are very few in the acquisition and use of LMS in learning, motivation and spirit of self-learning teacher enormously in improving the professionalism and performance of teachers, interactive tutorial videos media need to be developed. Interactive tutorial videos can be used as independent learning resources to enhance the professional competence of teachers on learning. Tutorial videos is designed to be very interesting, communicative, interactive and easy to operate and used as a source of self-study to improve the competence of teachers in the use of information and communication technology in learning.

Based on the background of the problem then formulate the problem in this study, namely (1) How interactive tutorials video characteristics product of Efront LMS as a source of self-learning high school physics teacher? (2) What was the response to the expert validator on interactive tutorial videos Efront LMS as a source of self-learning high school physics teacher? (3) What was the response of teachers of physics on video interactive tutorial eFront LMS as a source of self-learning high school physics teacher?

The purpose of this study were (1) Produce the product of interactive video tutorials eFront LMS as a source of self-learning high school physics teacher. (2) To describe the expert feedback on the feasibility of interactive tutorial videos eFront LMS as a source of self-learning high school physics teacher. (3) To describe the responses of physics teachers on the level of the feasibility interactive video tutorials eFront LMS as a source of self-learning high school physics teacher.

METHOD

This type of research is the research and development. This research aims to develop the interactive tutorial videos Efront LMS as a source of self-learning high school physics teacher. Research and development procedure used was adapted from Sugiyono (2010). There are ten steps in the research, namely (1) the potential and problems, (2) data collection, (3) the design of the product, (4) design validation, (5) a revision of design, (6) test the products of small-scale, (7) product revision, (8) a large scale trial, (9) the revision of the product, and (10) the mass production.

Subject trials in the development of tutorial videos eFront LMS is a team of experts and high school physics teachers. Conditions that must be fulfilled in subject selection trials are (1) A professor or expert, the professor of Physics Study Program with expertise Computational Physics and Instrumentation lecturer is teaching Physics Learning Media or Elearning in Learning Physics ICT in Science Learning, or other relevant subjects educational with an educational background S3 (PhD). (2) The physics teacher, namely on high school teacher who taught physics with S2 educational background (Master). (3) The teacher respondents, namely the teachers who are studying physics at S2 (Master), Physics Education Program Post-Graduate Program Semarang State University Academic Year 2015.

There are two types of data in research and development, namely quantitative and qualitative data. The qualitative data obtained from the lecturers and experts, physics teacher and teacher respondents, in the form of input, comments, criticisms and suggestions. While quantitative data obtained also from the lecturers and experst, physics teachers and teacher respondents in the form of a questionnaire respondents using a rating scale consisting of numbers 4, 3, 2 and 1. The figures are

then analyzed in order to obtain conclusions about the feasibility of eFront LMS video tutorials that are being developed.

The instrument used in this study a questionnaire, which is a list of statements that should be taken by the respondent to choose alternative answers that already exist. In the assessment sheet lecturers, the experts, physics teacher and teacher respondents use a rating scale consisting of the numbers 1 to 4, with the provisions of "Very Good" rated 4 "Good" rated 3, "Not Good" was given a value of 2, and "It's Not Good" rated 1.

This development study using two techniques of data analysis. The analysis technique is qualitative descriptive statistical techniques and quantitative descriptive statistical techniques. Qualitative descriptive statistical analysis is done by classifying the information of qualitative data, such as input, comments, criticisms, suggestions, improvements contained in the questionnaire or questionnaires. Results of this analysis were then used to revise the product developed. Quantitative descriptive statistical analysis is used to process the data obtained through questionnaires in the form of descriptive percentages.

RESULT AND EXPLANATION

The final results of product development interactive video tutorials eFront LMS is packaged in a CD/DVD with Single File Executable format. Interactive tutorial videos packaged in the form of websites and also uploaded to the Youtube page. This development aims to product tutorial videos can be viewed and distributed by the general public. Users can access the product via the url address <http://sinauonline.web.id>. Playlist and channel video tutorials found on youtube page can be accessed at the address www.youtube.com/playlist?list=PLIMigSRQOjT5rIpYiFhIaMHwkNwRAa7L3 and www.youtube.com/channel/UChqUaBtReJvTfl8KgKIDH-g/videos.

Efront LMS interactive tutorial videos contains 7 main menu shown in Figure 1, the expected competencies, instructions for use, material eFront LMS, learning physics materials, the developer profile, bibliography and browse the CD / DVD. Competencies expected menu contains information brief description of the competencies expected after using interactive tutorial video product eFront LMS. Menu User Guide contains information on technical guidelines for using interactive tutorial video products. Efront LMS Content menu contains a list of materials related to eFront LMS. Learning Materials Physics menu presents three subject matter physics in the form of video tutorials, the Carnot cycle, Otto cycle and Diesel cycle. Developer Profile menu serves to explain the identity of the product developers developer containing a photo, name, address, email address, and social networking media. The identity aims to facilitate communication with product developers. Browse CD/DVD menu contains files that

are used during the manufacture of interactive tutorials video eFront LMS

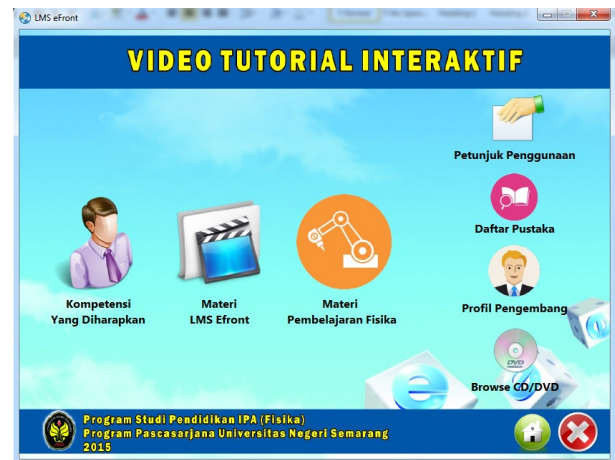


Figure 1. Main Menu Page Views

The product design is validated by two lecturers from the Physics Department Post-Graduate Program, Semarang State University. The aspects of assessment tutorial videos product contains the aspects of content and material, the learning aspects, the display aspects and the programming aspects. Validator experts assessment results are presented in Figure 2

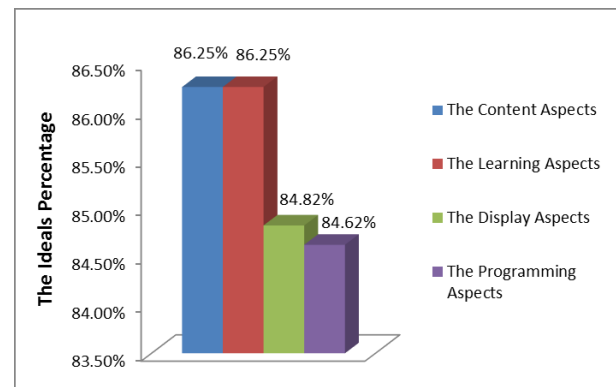


Figure 2. Achievement Aspect Quality Products by Expert Assessment / Expert

Efront LMS interactive video tutorials are included in the category of "very good". Scores ideal percentage of all aspects of was 85.37%. This score indicates that the interactive video tutorials developed by researchers classified as a valid qualification so that used for field trials.

Efront LMS interactive video tutorials are also assessed by three teachers of physics with the educational background Master of Physics Education (S2). Assessment aspects of video tutorials contains aspects of contents/materials, aspects of learning, aspects of display and the aspect of programming. Validator physics teacher assessment results are presented in Figure 3.

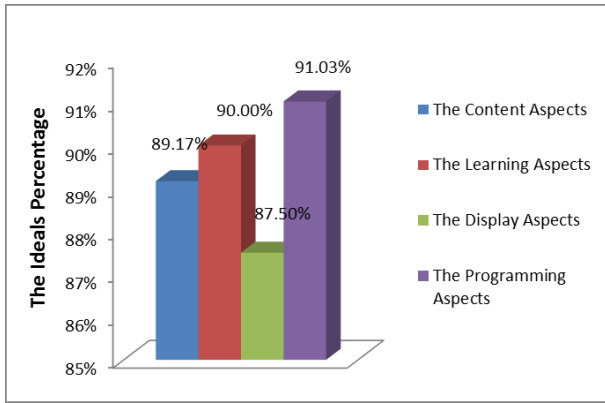


Figure 3. Achievement Aspect Quality Products by High School Physics Teacher Assessment

Interactive tutorial of Efront LMS videos products including the excellent category. Percentage ideals of all aspects is 89.36%. This indicates that the interactive video tutorials products are validated and classified as valid qualification so that used for field trials.

Large-scale trial conducted to determine the response, advice and input from high school physics teacher. Large-scale trials were represented by 40 teachers at the same status as a student of Physics Education Post-Graduate Program, Semarang State University. The instrument used was questionnaire responses on the feasibility of interactive tutorial video products. Results responses of physics teachers to the development interactive tutorial Efront LMS videos presented in Figure 4.

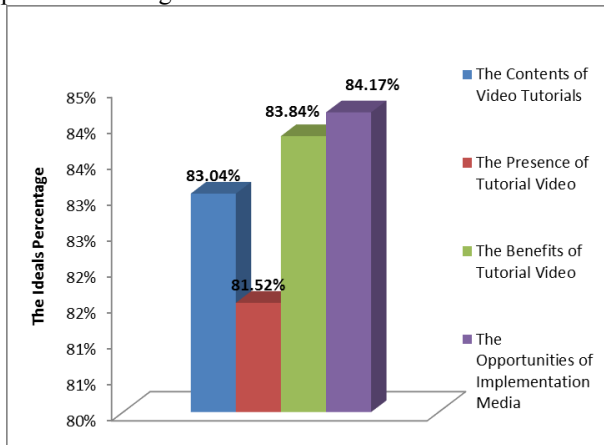


Figure 4. Response Teacher At Large Scale Testing

Results of questionnaire responses on the feasibility of the interactive tutorial eFront LMS video products shows that the average score of all aspects of 3.32 from ideal score 4. The response of physics teacher categorized as strongly agree to the interactive tutorial eFront LMS video product as a source of independent learning for high school physics teacher. Scores ideal percentage of all aspects of was 83.10%. This indicates that the interactive tutorial video products classified as

very viable so it can be accepted as a source of self-learning high school physics teachers

Development of interactive tutorial videos of Efront LMS using AutoPlay Media Studio Free Version Software. This software has a lot of convenience for the user who do not have programming skills to develop a multimedia application. LMS chosen by the researchers in the development of tutorial videos was Efront LMS. Camtasia Studio software was used to record all screen monitor activity. The advantages of this software is as well as a video editor that facilitates the editing process. Changing the type of video format that can be read by a mobile devices/smartphone was used by Format Factory software. The development of tutorial videos in a web page using Joomla CMS Software. This software has a lot of advantages, that is very responsive and compatible mobile device/smartphone users (Masruri, 2013). Joomla also has a very user friendly, capable of displaying multimedia files without having to create your own script, as well as having the largest developer communities in the world.

This study aims to produce interactive tutorial videos of Efront LMS as a source of self-learning high school physics teachers. Based on the results of the experts validation test and high school physics teacher validation test showed that the interactive tutorial videos products of Efront LMS is feasible to be used as a source of self-learning teachers. In the aspect of the contents/materials and aspects of learning have a higher percentage scores of other aspects. The maximum score on the item statement about the organizational structure and sequence of content material presented in a video tutorial. While on the learning aspect, the maximum score obtained in point statement of explanation from the instructions for use of tutorial videos and accuracy in the explanation of the conceptual material presented in the tutorial videos. In the aspect of programming obtain lower scores than the other aspects. Some point statement obtained a score less than the maximum. Grains such statements include: the ease of selecting the program menu on the tutorial videos, easy to understand navigation structure on the tutorial videos, speed of function keys (navigation performance) to tutorial videos, as well as operating system compatibility.

The results of product assessment by a high school physics teacher validator indicates that the Efront LMS interactive tutorial video products are also eligible to be used as a source of self-learning teachers. The average score of the achievements of all aspects of the ideal percentage is 85.37%. Use of media, especially interactive tutorial videos are very effective compared to conventional media (Pramundito, 2013). There are several advantages possessed by the video tutorials are: (1) a video display that is attractive as well as additional music can make users more motivated to learn, (2) the user can easily repeat the material that has not been clear so that users can learn independently and over and over reset, and (3) video tutorials are also very easy to use

(user friendly) because the user does not need a special application to be able to use it.

Development of tutorial videos are also carried out by Ekawanti (2012). From the test results it can be concluded that the physics learning video content "Beep" has been successfully developed, including in both criteria as a medium that can be used in self-learning students. This is shown from the results of expert assessment of materials, media experts, and students gave an average of 84.25% and the results assessment of the questionnaire filling independent learning gives students scoring average 82.84%. In the presentation, tutorial videos are packed in the website offline. Packaging in this form of a offline website can make students to learn in a more interactive because students can choose their own material to be studied in accordance with the wishes and needs. In a tutorial videos, there are explanations in audio visual material to facilitate students learn physics independently without accompanied by teachers.

Supurwoko (2011) also conducted research on development tutorial video media. Learning media developed using the software Cyberlink Power Director, which consists of six titles of teaching materials, in the form of video tutorials are packed in a VCD. Learning media is quite good, the results of the assessment of the experts have an average score of 80.33%, while the percentage of students obtained a score questionnaire based on average percentage of 80.32%. It states that the pieces of VCD product has a good criteria. Development of instructional media in the form of pieces of VCD easily in the making, practical, and efficient designed to help the learning process of Physics.

The use of interactive tutorial video on physics learning will greatly help students understand the concepts that are abstract. VCD/DVD as the audio-visual media can show more concretely about the natural phenomena contained in the physics sciences. Visualization is more real strongly support students' understanding by using the media in the learning process. In addition, the media get a variation in the learning process. Imagination will grow so that eventually is expected to encourage the emergence of new creativity. Physics is no longer expected to be difficult and boring subjects, physics is a lesson that is easy and fun (Siahaan, 2012).

Physics requires a media that can describe the concept in real life (Primavera, 2014). One of the media that can be used is the video. Video is an audio-visual media that can reveal objects and events such as the real state. By using video, students are able to understand the message intact and bermaksa learning so that the information conveyed by the video can be fully understood. The use of video can facilitate teachers deliver the material simply because it gives a real picture which is common in life and the environment in everyday life. The video display is also the appeal so as to maintain students' attention during the video played.

The appearance of video can be repeated at any time as needed, making the user motivated to observe and analyze the phenomena in everyday life (Primavera, 2014). Although often repeated, users do not experience boredom. However, users become more familiar with the repetition of certain parts of the video in the footage. Questionnaire user of the product that shows the average percentage score of aspects tutorial video content is 83.04%, the average percentage score of offerings in the video tutorial is 81.52%, the average score of the benefits of video tutorials learning is 83.84 % and an average score percentage of implementation of media opportunities is 84.17%. This indicates that the products look attractive video tutorials so not boring and can be used as a source of self-learning high school physics teachers

CONCLUSION

The conclusions of this study were (1) interactive tutorial video of LMS E-Front as a source of self-learning high school physics teacher has been successfully developed. tutorial video characteristics as follows: (a) an interactive tutorial videos containing Efront LMS material and physics learning materials; (b) interactive tutorial videos consists of a combination of text, images, animation, audio, and video (c) interactive tutorial videos is also made in the form of web pages with url address <http://sinauonline.web.id> that can be accessed by smartphone, mobile devices and personal computers; (d) interactive tutorial videos can also be accessed on youtube page with url address www.youtube.com/channel/UCHqUaBtReJvTfL8KgKID H-g/videos. (2) The quality of interactive tutorial LMS E-Front videos as a source of self-learning high school physics teachers overall is good. Based on expert judgment and high school physics teacher included in the very good criteria with an average score 85.37% and high school physics teacher ratings 89.36%. interactive tutorial Efront LMS videos is fit for use as a source of self-learning high school physics teachers. (3) The high school physics teachers response to the interactive tutorial eFront LMS video as a source of self-learning high school physics teacher in small-scale field trials included in Agree criteria with the average percentage score 80.26% and on large-scale field trials included in the Strongly Agree criteria with the average percentage score 83.10%. This indicates that the interactive video tutorials LMS E-Front is acceptable and can be used as a source of self-learning high school physics teacher.

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