Development of Moodle-Based Interactive Multimedia to Implement Hybrid Learning Strategies in Civic Education Learning

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ABSTRACT

The purpose of this research is to develop learning media and produce interactive multimedia products and to be able to apply hybrid learning strategies in Civics learning. While in the long term the media developed is expected to be patented to be a learning medium not only in Civics learning but also to be used for learning other subjects in universities and even schools. The product produced in this study is an interactive multimedia developed from the Moodle Application by providing features that support the process of implementing the learning activities of students in the Citizenship Education study program. This research method uses research methods (R&D) or Development Research. The results found are the development of interactive multimedia based on the Moodle LMS is for the needs of lecturers and students of the Citizenship Education Department in increasing learning innovation in the 21st century and the results of developing the Moodle LMS are declared "feasible" to support the learning process in lectures. Students respond positively, which can increase their motivation to learn.

Keywords: Development, Moodle, Interactive Multimedia

1. INTRODUCTION

21st century education raises various innovations and high creativity in the field of teaching and learning. Teachers or prospective teachers must prepare themselves to face the 21st century and be more professional in carrying out their teaching duties. 21st century teachers not only master teaching content but also must be able to integrate technology in their teaching [1]. Furthermore, the skills needed by the 21st century generation are learning and innovation skills, technology, media and information skills as well as life and career skills, which are expected outcomes [2]. So, this requires creativity and learning innovation. To accommodate 21st century learning, teachers must be able to facilitate and inspire students' learning and creativity, be able to design and develop learning experiences and assessments, be able to be a model for how to learn and work, be able to encourage and be a model of responsibility and digital society and be able to participate in professional development and leadership. Coupled with the existence of a new 21st century paradigm of the classroom environment that is shifting from a teacher-centered learning environment to student-centered learning [3].

McCrindle divides into several generations based on technological developments, namely Generation Z born in 1995-2010 and Generation Alpha born in 2010-2030 [4]. Therefore, prospective teacher students are now categorized as Generation Z. Where the characteristics are different between Generation Z and Alpha. Generation Z is characterized as a generation that feels comfortable in the world of technology, is always online on any technical device without stopping, likes practicality, is more agile, likes to lead, is impatient, likes to look for challenges and is not afraid of change because they feel that the internet world has a lot of information [5]. Furthermore, the characteristics of the alpha generation are they are most technologically savvy and do not know the social world, like to shop online and have less direct contact with humans, are more independent and better educated and are ready to face big challenges [6]. Therefore, the way of teaching and learning strategies used by prospective teachers (generation Z) will be different in their application to students of the alpha generation.

The results of observations on undergraduate students of the civic education (PKn) study program at the Faculty

of Social Sciences, Manado State University, it was found that in preparation to become teachers, they as prospective teachers only focused on studying content/material, discussing material, and presenting the material provided by the teacher. based on the division of discussion chapters/sub-chapters. While 21st century learning requires teachers to consider the advantages of multimedia-based learning materials [7]. Furthermore, in the practice of teaching peers (peer teaching) to groups of students, generally they only use conventional methods through whiteboard presentations or using power point media only. Then in PPL (field learning practice) in schools for a period of 3 months, students in teaching activities were observed to be very lacking in creativity and innovation using technology-based learning media, even though students (students) needed a touch of teacher teaching with interactive multimedia-based technology devices.

To support the findings of the facts above, the researcher also conducted interviews with students of the Civics study program. The results of the interviews showed that students preferred learning by using computers/laptops that displayed pictures, interesting animations and displayed videos related to learning. The use of computer-based learning media in learning activities is very interesting and effective to do, as stated by Sadiman, et al that there are 4 benefits of interactive teaching media, namely (1) to clarify the presentation of messages so that they are not too verbalistic; (2) overcoming the limitations of space, time, and senses; (3) can overcome the passive nature of students; (4) can help and facilitate teachers in delivering subject matter [8]. In addition, using multimedia in the classroom can increase creativity, innovation, problem solving and improve communication between students, and using technology allows educators to improve teaching methods [9].

From field findings and expert opinions, it can be concluded that interactive multimedia can be used as an attractive and effective learning medium for students, as well as assisting lecturers in delivering learning materials. The media developed by the researcher is an interactive media based on Moodle in Civics learning.

2. RESEARCH METHOD

The research method used in this research is the development research method (R and D). The development model uses the Lee and Owens development model. This model is procedural in nature, the sequence of steps is systematically arranged with very clear development steps and this model is a model that is devoted to developing learning multimedia. The stages of the development procedure include: (1) Assessment/Analysis which consists of two parts, namely Need assessment and Front-end Analysis; (2) Design (Design); (3) Development (Development); (4) Implementation (Implementation); (5) Evaluation

(Evaluation). The process of this development model can be seen in the image below [10]:

1. Assessment/Analyst

1. *At the assessment/analysis stage, Lee and Owens' development model separates the learning design analysis stage into two main parts, namely needs assessment and front-end analysis.*

2. *Need Assessment, needs analysis departs from preliminary studies, namely observations and interviews in the field, preliminary interviews conducted with lecturers and students with the aim of knowing the real conditions and desired conditions. This activity is a stage to collect the information needed in the development that is adapted to the multimedia that will be developed.*

2. Front-End Analyst

This stage is part of the needs analysis that aims to obtain the actual data. There are nine analyses that can be done, namely 1) Learner/student analysis; 2) Technology analysis; 3) Situation analysis; 4) Task analysis; 5) Critical-incident analysis; 6) Analysis of objectives; 7) Media analysis; 8) Analysis of existing data; 9) Cost analysis.

3. Design

The design stage is the planning stage of the interactive multimedia project that will be developed. After the Assessment/Analysis stage is complete, information is obtained which is used as the basis for designing interactive multimedia learning products.

4. Development

This stage is the process of realizing the product that has been produced from the design stage into a physical form or application.

5. Implementation

Implementation is a step taken to implement the developed product. The purpose of this implementation is to obtain input and suggestions for the product being developed. After obtaining the results of the implementation in the form of input and suggestions, the product is revised again until the product is said to be feasible or valid and the next stage is an evaluation to assess the effectiveness of the developed product.

6. Evaluation

After carrying out the implementation stage, the next stage carried out by the developer is an evaluation of the developed media. This stage aims to collect data as a basis for determining whether this interactive multimedia is feasible and effective to overcome the problems that exist in the learning process, so as to help achieve the predetermined goals. The evaluation stages in Lee and

Owens' development model consist of 4 levels, namely reaction, knowledge, performance and impact.

7. Product Validation and Trial

Product trials are conducted to collect data that can be used as a basis for determining the feasibility of interactive multimedia. The product trials in this study are as follows: Expert Validation is carried out with the aim of assessing whether a valid interactive multimedia product design can be used in Civics learning. Product validation in this study involves material experts and media experts.

There are two data analysis techniques used by researchers in this development research, namely qualitative descriptive analysis techniques and quantitative analysis techniques.

1. Qualitative Descriptive Analysis Qualitative descriptive analysis was used to process data from the review of material experts, media experts, student responses, teachers, and observers.

2. Quantitative Descriptive Analysis Quantitative descriptive analysis was used to present the data from the questionnaire so that the conclusions of the study were reached. The data described in the form of scores obtained from the validation questionnaire of material experts and media experts, observations, teacher response questionnaires, and student response questionnaires.

3. RESULT AND DISCUSSION

A. Result

1. Interactive Multimedia Product Development

a. Analyse learners

This step is to identify the characteristics of students who will carry out learning activities. The research subjects are students of Semester III and V. Citizenship Education Department. What will be analysed is related to the ability of students to use computer devices, the internet, and android applications as well as the initial ability of the Citizenship Ethics course.

b. State objectives

This step is to set learning objectives based on the results of the analysis of student characteristics. The Learning Objectives are Learning Outcomes (CP) and Assessment indicators listed in the Citizenship Ethics Course RPS which are then designed for Learning Activities based on a hybrid learning strategy

c. Select method, media, and materials

This step determines the methods, media, and teaching materials that will later be used in online learning. The determination of the three is based on the characteristics of students and learning objectives. The method to be used is Project Based Learning (PBL), the Media uses LMS Moodle, and the material is based on the Citizenship Ethics course curriculum.

d. Utilize method, media and materials

This step is to use Methods, Media and Materials in learning activities. however, before being used, expert validation was carried out first to see the quality and feasibility of the media, teaching materials and learning designs through the RPS that had been made. After being validated by media experts and content experts, the next step is individual testing (5 students), small group testing (10 people) and field testing (30 students).

e. Require learner participation

This step involves students in learning that has been designed. Students must be actively involved in learning so that learning is effective and learning objectives based on RPS can be achieved. Where the teaching method that will be used in this learning is Hybrid Learning.

f. Evaluated and revise

The next step is to evaluate and revise. This evaluation was conducted to collect data related to the strengths and weaknesses of the learning program. Learning programs that will be evaluated include the products produced in this study, namely interactive multimedia based on the Moodle LMS, as well as other learning tools such as semester learning plans (RPS), student worksheets (LKM), lecturer activity sheets, and student response sheets. The results of the evaluation process can be used as input or input to improve the learning program.

2. Product Development Evaluation Results

a. Results of Product Evaluation of Learning Aspects by Experts

The results of the learning evaluation include the accuracy of the formulation of objectives, the suitability of the learning method, the suitability of the media and teaching materials, the determination of the hybrid learning sequence with the PBL (Problem Based Learning) method, the ease of learning activities for students, the clarity of the tasks given, and the clarity of the assessments and questions used. The results of the assessment obtained an average of 5.00 so that the category obtained is very good.

b. Results of Evaluation of Media Aspect Products by Experts

The results of the evaluation of the media aspect of the product include the suitability of the media with learning, the ease of use of the media, the completeness of the media, and the functioning of the media in facilitating the delivery of material. The results of the assessment obtained an average of 4.09 so that the category obtained is good.

c. Evaluation Results of Teaching Material Aspects by Experts

The results of the evaluation of the product aspects of teaching materials include conformity with Learning Objectives or CP (Learning Outcomes) for the Citizenship Ethics course, conformity with student ability levels, completeness of materials, ease of learning, ease of access to the Internet via Android devices via Smartphones, and completeness of application display forms. Moodle LMS. The results of the assessment obtained an average rating of 4.46 so that the category obtained was very good.

Table 1. Validator Evaluation Results

Expert	Average Score	Interpretation
Media Expert	4,09	Good
Design Expert	5,00	Very Good
Content Expert	4,46	Very Good

d. Product Trial Results

The results of product trials include individual tests, small group tests and field tests. The results obtained are shown in Table 2 below.

Table 2. Product Trial

Product Test	Average Score	Interpretation
Individual Test (5 people)	4,64	Very Good
Small Group Test (10 people)	4,58	Very Good
Field Test (30 people)	4,41	Very Good

B. Discussion

The Moodle LMS-based teaching material developed by the researcher has several characteristics. The features contained in the Moodle LMS-based teaching materials are closely related to learning activities. This Moodle LMS-based teaching aid contains material that is also equipped with sample questions and animated displays that are tailored to each document. The use of Moodle LMS-based teaching materials in this study was carried out by combining face-to-face and online learning.

Online learning is a system that can help students learn more broadly and more diversely [11].

Professional support for Moodle-based learning materials includes the quality of material visualization and ease of use of Moodle-based LMS materials. The validation of the Moodle LMS-based educational materials was carried out by 2 experts. Based on the results of the validation of the two experts who proposed the Moodle LMS-based learning method, it is possible to conduct small-scale tests to achieve better multimedia quality. This can be seen from the average value obtained on the Learning Materials Assessment Sheet of 4.6 (rated very well). For some expert contributions, it is recommended to make pictures and materials more interesting and beautiful so that students are more enthusiastic about self-study.

Civics Learning Materials based on the Moodle LMS was developed as a learning website that can be accessed by students. Munir stated that LMS manages interactions during technology-based learning via the web. The software that supports the LMS model used is LMS Moodle. The teaching aids developed with the material are also equipped with sample questions and an appropriate animation display for each document. Based on the results of a preliminary study in the form of surveys and interviews conducted with a number of Civics teachers, it shows that Moodle-based teaching materials need to be developed when they are not yet available, especially in Civics FIS UNIMA [11].

The use of learning media based on the Moodle LMS that was developed was achieved through a combination of face-to-face learning and online learning. Online learning is a system that allows students to learn in a broader, more diverse, and more diverse way. Online learning supports more face-to-face activities. Arifin, Y & Sidin, USA explained that e-learning has an impact on the process of transforming the traditional education system into digital form in terms of content and system. This research has developed a Moodle-based learning media, namely a learning website. There are materials, teaching materials and assessments that are presented in digital form, which changes the learning system [12]. According to Surjono & Gafur, the purpose of learning technology is to support, trigger and stimulate the student learning process, as well as provide learning facilities. The use of e-learning brings new nuances to the world of education, making educators the core of the process [13].

In Civics class, students need to understand many abstract concepts. Therefore, there is a need for learning media as a tool for students to understand abstract concepts. One of the learning media used is Moodle LMS-based learning media. This Moodle LMS-based learning media consists of videos, images and animations, so that students can immediately understand and understand concepts related to the material. This study shows the effect of e-learning based on Moodle

LMS on students' conceptual understanding. Through e-learning based on Moodle LMS for civics learning, the level of mastery of concepts continues to be improved, which means that learning with e-learning support provided on the website has many benefits.

Computers in teaching can also improve students' understanding of concepts and the ability of individuals to obtain information in society. Through e-learning learning materials can be accessed anytime and from anywhere, besides that material can be enriched with various learning resources including multimedia quickly. The use of e-learning Moodle in learning can be applied to subjects other than Civics. Increasing mastery of concepts through Civics learning using e-learning based on Moodle is an implication of learning using e-learning assistance which is presented through the website with several advantages in accordance with the features provided.

Computers in the classroom can also improve students' understanding of concepts and personal access to social information. Through e-learning, learning materials can be accessed anytime and anywhere, and various learning resources including multimedia can be enriched quickly. The use of Moodle LMS in learning can be applied to subjects other than Civics. By using LMS Moodle-based e-learning to learn Civics, an increasing understanding of concepts is the meaning of learning through e-learning support provided on the website, and many benefits are in accordance with the functions provided.

Moodle LMS-based learning can improve students' conceptual understanding. The results obtained are in line with the opinion of Husni, A., Juanda, E.A. & Hamidah, I. argues that Moodle-based learning media is effective in helping students improve their understanding of concepts. The results of interviews with students with the lowest and highest scores show that students get more information from the internet, and this kind of learning is more practical and efficient, because when students are poor in class, students can ask online teachers to understand the situation [14].

LMS Moodle-based learning facilities include material in the form of text, images, simulations, interactive animations, assignments, chats, and quizzes. Students can take advantage of online learning opportunities to increase knowledge or insight in the form of assignments, chats and quizzes. Based on the use of Moodle LMS to implement Civics Learning from research results and findings, strengths and weaknesses can be shown. The advantages of using the Moodle LMS are: 1) learner-centered learning; 2) LMS module can be stored in the laptop, and students can carry, and open on campus or at home; 3) students can take the test anytime, anywhere, as long as they are connected via the Internet.

In addition to the advantages, Moodle LMS also has disadvantages. Rosenberg suggests that the identified weaknesses are; 1). lack of interaction between educators and students, even between students; 2). students tend to ignore academic or social issues and encourage the development of business/commercial issues; 3). the teaching and learning process tends to be training rather than training; 4). Changes in the role of educators who previously used traditional learning technology now also have to understand learning technology that uses computer devices. 5). Students with low learning enthusiasm are prone to failure [15].

4. CONCLUSION

The development of Interactive Multimedia Based on the Moodle LMS is for the needs of Lecturers and Students of the Citizenship Education Department in increasing learning innovation in the 21st century and the results of developing the Moodle LMS are declared "feasible" to support the learning process in lectures. Students respond positively, which can increase their motivation to learn. The products developed also have the advantage of improving the quality of learning that is more interesting and controlled. Lecturers and students automatically get a better teaching and learning experience in processing information technology. And also, the development of this model aims to improve the professional abilities of lecturers and students as prospective Citizenship Education teachers in integrating technology in learning civic ethics, as well as applying creative pedagogics through a combination of synchronous and asynchronous learning.

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