PHILOSOPHY OF SCIENCE AND RECONSTRUCTION OF CLAS VIRTUAL MODEL THEORY COMPUTER MATHEMATICS COURSE

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ABSTRACT

This study aims to determine the process of developing Virtual Class learning media. The material is presented as an interactive model using the Learning Center Area. V-Class is an alternative means in the web-based learning process in the form of supplements/additions from e-learning learning applications. The V-Class application that will be made is expected to be an alternative to additional learning media, in addition to books to facilitate the teaching and learning process, and even useful as a means of communication between students and lecturers and between students. This research uses a Research and Development (R&D) model with an Analysis, Design, Development, Implementation, and Evaluation model. The product developed is a virtual class learning model. The comparison results will show the advantages and disadvantages of the existing Learning Management System, making it easier for lecturers to choose a Learning Management System application that is considered appropriate for lecture needs.

Keywords: Online learning media; virtual class; mathematics course

1. INTRODUCTION

Nowadays, the development of technology is a very dynamic form of improvement. It can be seen that starting in 2020 until now, the use of online learning has begun to be introduced as a form of implementation of distance learning due to restrictions on the face-to-face learning process. The conditions experienced by students, especially students majoring in Informatics Engineering UIN Alauddin Makassar due to the pandemic, were helped by online learning.

The COVID-19 pandemic has made educational institutions suddenly organize distance learning, especially online. Online distance learning is where the delivery of teaching materials and their interaction is carried out with internet technology intermediaries. Therefore, the continuity of online learning cannot be separated from internet infrastructure as the main technology.

A survey conducted by the Indonesian Internet Service Entrepreneurs Association (APJII) and PUSKAKOM UI in 2014 (Goenawan, 2015) showed that 88.1 million Indonesians actively use internet services. The exciting thing about the release of this survey is that users aged 18-25 use internet services the most. Of the 7,000 respondents surveyed, 85%of access the internet through their mobile phones, outperforming internet usage on laptops, PCs, and tablets. The results of this study are in line with the observations made by Sudiana (2014), which show that 91% of students in the Mathematics education department of Sultan Ageng Tirtayasa University actively use the internet as a medium of communication.

E-learning does not require physical classrooms like conventional learning. The existence of this class can be in the form of a class in cyberspace known as a Virtual Class where learning in cyberspace is not limited by time and distance. Unlike conventional learning, such as face-to-face lectures in the classroom, which are limited by time. Virtual Classes do not necessarily replace conventional lectures because each has advantages and disadvantages. However, in this case, Virtual Class is expected to support the learning process in the classroom conventionally, what is not conveyed in conventional classes can be conveyed through Virtual Classes. Several universities have pioneered Virtual Classes in previous years, but their sustainability is constrained by inadequate internet access. Unlike today, the internet has become easier and cheaper because the internet has become more accessible via Smartphones. So that its users can do it simultaneously with other activities.

Virtual Class in E-learning is an online learning environment, in this case, the environment in question can be web-based, portal, or software-based. According to Hartley (2001), virtual classes in E-Learning are a type of teaching and learning that allows the delivery of teaching materials to the students using the Internet, Intranet, or other computer network media". The activities carried out by lecturers are learning through virtual classes, namely: 1) Opening classes, where lecturers give instructions to students to absenteeism; 2) Class closure; 3) Presentation with streaming video; 4) Upload and downloading lecture materials to be given; 5) Making exam questions, the question

model is completely handed over to the teaching lecturer; 6) Check the number of students who attend or take part in this virtual class; 7) Provide answers to questions asked by students using a microphone or via chat; 8) Provide tasks that support the material presented; 9) Discussion through forums (optional).

While the activities carried out by students are: 1) Online Absence using the web provided; 2) Evaluation in Online form; 3) Interact with lecturers audio-visually and or using chat facilities; 4) Discussion through forums (optional).

The current condition is undeniable that technology-based learning (E-learning) has recently received special attention from various educational institutions and education actors in Indonesia. (Zhou et al., 2020) e-learning or online-based learning is a learning model that encourages users (students/teachers/instructors) to utilize information and communication technology platforms in the teaching and learning. In line with what was stated by Arif & Wahyu (2014), E-learning is a teaching and learning method using a system as a teaching and learning medium connected to the network. Talebian et al., (2014) emphasize that to encourage online-based learning, teachers and students must take advantage of a learning platform that suits the needs and conditions of these users. Even Sulisworo et al., (2016) and Zhou et al., (2020) agree that technology-based learning brings many benefits and is by the current era, namely the era of technology 4.0.

The educational ecosystem must be built to adapt to virtual learning technology as a new habitus. It seems as if all educational units at all levels are 'forced' to transform to adapt quickly and measurably, one of which is by conducting distance learning by utilizing online media. Educators (lecturers), again, are encouraged to continue to ensure that learning activities continue, even though students are in their respective homes. The solution is that lecturers must design learning media as innovation and creativity, one of which is by utilizing online media.

To be precise, the progressive policy implemented by the government is an instruction to migrate learning which has been conventionally carried out by campuses to be diverted to homes to comply with the rules in the Covid-19 handling protocol, one of which is the ban on gatherings, so that the constructive solution is physical *distancing.* . Thus, during the pandemic, lecturers/educators, students, are required to adapt to Distance Learning (PJJ) or commonly known as distance learning.

Distance Learning (PJJ) is implemented like an online learning model which in the context of UIN Alauddin provider since the beginning has been built through the Learning Management System (LMS),

moving learning activities to the home. As much as possible, schools should anticipate that corona does not spread in their neighborhoods.

LENTERA (Learning Center Area) is a space or place for online student learning, commonly called e-learning. LENTERA was developed with a virtual class model to assist lecturers in teaching and facilitate students in the lecture process.

2. METHODS

This research is a Research and Development (RND). Research and Development is a research method used to produce a particular product and test its effectiveness of the product. The test subjects in this study were students of the Informatics Engineering Department of UIN Alauddin who were effective in the Computer Mathematics course. The instruments used are validation sheets, student response questionnaires, teacher response questionnaires, and learning outcomes tests. The analytical techniques used are validity, practicality, and effectiveness analysis techniques.

3) RESULTS AND DISCUSSION

The implementation of the Virtual Class Model takes an example of virtual class learning whose implementation form is like an online learning model which, in the context of UIN Alauddin provider, has been built through the Learning Management System (LMS) since the beginning, moving learning activities to the home.

The Computer Mathematics course is a course that existed before the existence of the independent campus learning program (MBKM) and is very relevant in line with the implementation of the independent campus learning program from the Ministry of Education and Culture, which is being widely implemented in almost every university today. The curriculum in the Informatics Engineering department of UIN Alauddin Makassar is in the first semester.

Based on the researcher's experience in mastering Computer Mathematics courses at the Informatics Engineering Study Program at UIN Alauddin Makassar, input was obtained from students in the CES (Course Evaluation System) assessment room of UIN Alauddin Makassar that learning so far is still dominated by lecturers, does not activate students, and in the future, it is necessary to design learning that can activate students. In addition, students feel a lack of study time in class,

considering the material of the Computer Mathematics course as a result of not achieving optimal learning outcomes.

The online lecture process (online) has been running for approximately eight months since the call for distance learning was implemented at UIN Alauddin Makassar. Regarding the application of online lectures, at least two LMS are used, namely Google Classroom and Lentera. The use of this LMS still uses video conferencing applications as reinforcement for the transfer of learning materials such as the Zoom Cloud Meeting application and Google Meet. Based on the survey results obtained, it turns out that Google Classroom still dominates as an online learning medium in collaboration with the Zoom Cloud Meeting application.
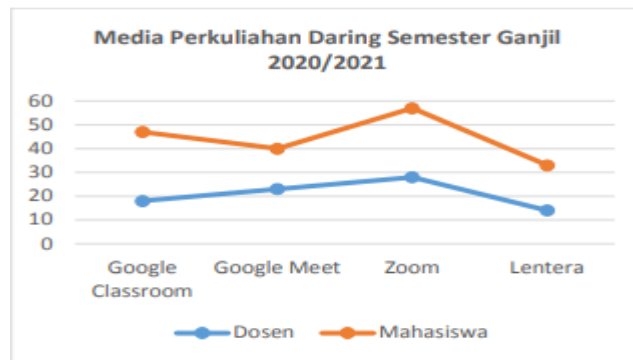

Figure 1. Use of online media by lecturers-students

Figure 1 shows that the Google Classroom application is an LMS widely used for two semesters. At the beginning of the pandemic, around 73.5% of lecturers used more than one application to implement learning to meet the needs of delivering lecture material optimally. However, 26.5% use social media applications to distribute lecture materials and provide coursework instructions. Entering the New Normal period, the Alauddin State Islamic University of Makassar began to socialize the Learning Center area (Lentera), an LMS application owned and developed internally. And it is recorded that around 42.9% of lecturers use the application Lentera as an online lecture medium.

LENTERA (Learning Center Area) is a space or place for online student learning, commonly called e-learning. LENTERA was developed with a virtual class model to assist lecturers in teaching and facilitate students in the lecture process (Pustipad, 2020).

Figure 2. LENTERA homepage
(Source: Pustipad, 2020)

The application of virtual classroom media in this implementation uses virtual media in the E-Learning Computer Mathematics Course. Features such as:

Figure 3. Virtual class implementation
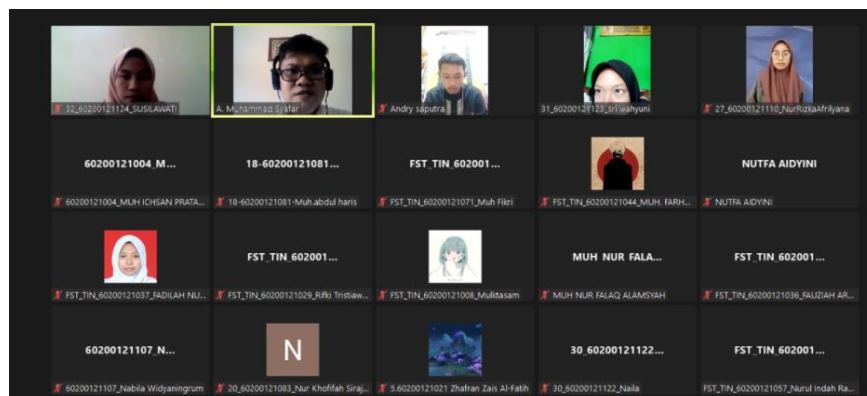

Figure 4. Computer Mathematics Courses

Figure 5. The meeting process takes place

CONCLUSION

According to educational philosophy experts, it is used as a basis for determining the direction of curriculum development and learning to produce theoretical reconstruction concepts. The Education Philosophy is used as a guide in implementing program development, selection of learning activities, curriculum objectives, planning and use of facilities and infrastructure and identifying important needs in vocational education. By studying various schools of philosophy, it is hoped that vocational education has a strong and certain basis to achieve a real dream.

Based on the reference to philosophical analysis, it is stated that the principles of vocational education that are worthy of application today are: a realist (referring to competence) and idealistic (humanistic) curriculum, followed by a process of pragmatic learning (problem-based learning) and reconstructionism to increase dignified productivity. The concept of philosophy and vocational education in the implementation of the Education paradigm with case studies at the Department of Informatics Engineering UIN Alauddin Makassar always innovates in the learning process so that students can always compete healthily with other universities in terms of developing competencies according to the field of informatics. In this paradigm, it is hoped that producing quality graduates or alumni can be realized if lecturers, institutions, and vocational higher education processes are carried out in a quality manner as well. Starting from the input of new student admissions, the process of learning, internships, etc. so that it will produce maximum output according to expectations, especially the expectations of the business world and industry.

R&D is a step to develop new products or improve existing products, be it products in physical form (hardware) or the form of software (software), and can be applied in research in various fields. The use of learning management systems in the world of education is one of the applications of information technology

in the world that is widely applied. The learning process that can be done repeatedly anytime and anywhere is expected to help increase learning motivation. Online Learning based on LMS is the demand of the current era in the era of industry 4.0 which is all technology demanding that the world of education must adjust when there is a pandemic or under normal conditions, the application of technology in the learning process is a necessity so that research towards online learning virtual class model.

The results of Theory Reconstruction and Theory Analysis give birth to 6 syntaxes whose final process leads to Dissemination, Process Analysis, Design, Development, Testing and Application is a life cycle where the stages will not stop but will continue to run until obtaining the desired results, the implementation of dissemination is carried out if the life cycle process is considered complete and ready to be disseminated.

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