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Flipped Classroom Implementation in Foundation of Educational Technology Course in Postgraduate Program of UNJ

Eveline Siregar*, Dedy Aswan
Universitas Negeri Jakarta
e-mail :

Since Covid-19 pandemic started, Flipped Classroom has been rapidly adopted and developed by teachers around the world as classroom activities are prohibited. In this research, Flipped Classroom was implemented using web-based LMS which contains various digital contents such as e-books, presentation slides, animation and videos along with engaging assignments in various formats (online forums, online quizzes, etc.). These asynchronous activities are then followed by online video conference to synchronously discuss the result deeply to create meaningful learning. This research aims to analyze Flipped Classroom implementation to facilitate students' study in college during Covid-19 pandemic. The research methods used are literature review and survey. The survey questions are created based on the indicators of ideal Flipped Classroom implementation. The respondents of the survey are postgraduate students taking Foundation of Educational Technology course. The result of this research shows that majority of the students responded positively to the Flipped Classroom model. The usage of various media in LMS, encouraged the students to learn independently. While the activities such as discussion, work in group, debate or speech presentation and article review, stimulated critical thinking and active involvement in learning. A teacher's interaction with students can be more personalized and pedagogic, and students are actively involved in knowledge acquisition and construction. The result also shows that most students preferred pre-recorded contents prepared by teachers as video developers. The outcomes of Flipped Classroom implementation are determined by effective student learning that facilitates critical thinking and improves student engagement, both in asynchronous and synchronous learning activities

Keywords : *Flipped Classroom, synchronous, asynchronous, LMS , Covid-19*

Introduction

The Covid-19 pandemic has brought many new habits both at work and study. Before the Covid-19 pandemic broke out, face-to-face meetings were one of the most frequently used. However, since the Covid -19 pandemic appeared, face-to-face is prohibited to break the chain of spreading covid-19. This makes us realize how important it is to implement other learning strategies that are as effective as face-to-face, including optimizing other learning spaces besides face to face. These other learning spaces include virtual synchronous, collaborative asynchronous and independent asynchronous spaces that must be designed well (Chaeruman, 2020). The integration of technology in learning, which has not been designed properly, must be used to overcome the physical obstacles that occur due to the Covid-19 pandemic. A lecturer must think about new habits that are built so that they can continue to do online learning, and do it massively in educational institutions (Zhang, Wang, & Yang, 2020). Distance learning or online learning has become an alternative learning strategy in the current Covid-19 pandemic era.

According to Roblyer (Roblyer, 2016) there are three blended learning models commonly used in learning and training, namely, 1) traditional classes with online activities: online activities are used to enrich learning activities in the classroom. 2) Online classes with face-to-face activities: learning activities are carried out online, but face-to-face activities are carried out. For example, students are asked to attend for exams, visits to learning resources to review learning materials, face-to-face classes between facilitators and students to discuss certain topics, this activity is intended as an effort to involve students in learning. 3) Flipped classroom model: a learning model in which the lecturer assigns students to actively study the material presented through digital media in the form of videos or e-books. At the same time, students are also given assignments or practice questions, which will later become material for discussion in class or at face-to-face meetings.

Flipped Classroom is actually a learning strategy as well as a kind of blended learning that focuses on active student involvement. The Flipped Classroom model is the opposite of the traditional learner-centered learning model where the lecturer conveys information in the classroom followed by questions and answers, and followed by homework. Flipped Classroom is learner-centered learning, where students are introduced to a new topic outside the classroom using various media which is then followed by in-depth discussions with lecturers in class. The learning model applied to the Educational Technology Foundation Course in the UNJ Educational Technology Master Program is Flipped Learning, however face-to-face meetings which are currently prohibited are replaced by virtual face-to-face (virtual synchronous) through the zoom application. The use of video conferencing and LMS to assist learning simultaneously is believed to improve student learning outcomes (Lawson & Comber, 2014). Learning materials have been designed before lectures begin, have gone through expert reviews in terms of design, media and content with excellent results and are suitable for use (Siregar & Aswan, 2019). The learning materials are then given to students to study (independent asynchronous and collaborative asynchronous), before lectures or discussions (virtual synchronous) take place via zoom.

The successful use of technology in implementing the Flipped Classroom is influenced by several factors including external factors, namely usability, ease of use, attitude in using, good use, and the system used. These factors greatly influence the successful use of a technology. The Association for Educational Communications and Technology (AECT) published a book Instructional Design Standards for Distance Learning, which discusses several conditions for implementing distance learning or online (Piña, 2017). The instructional design standards from AECT are intended to provide information and guidance during and after holding online courses and hybrid-learning such as the Flipped Classroom (Piña, 2018).

To find out whether the application of Flipped Classroom in the Educational Technology Foundation Courses of the UNJ Educational Technology Masters Program during the Covid-19 pandemic was good enough or not, research that refers to the Instructional Design Standards for Distance Learning is needed.

A summary of the standards for online master courses or Flipped Classroom is as follows.

Standard 1: Purpose. Effective course design begins with a clearly articulated purpose. This is the standard to which all other standards must align. Purpose may be thought of as two-dimensional: institution or instructor and student. The design should include both the purpose of the course as envisioned by the institution or instructor and the purpose as viewed by the student. As the purpose is articulated through goals and objectives, collaboration between instructor and student will set a firmer foundation than can be achieved through a one- dimensional purpose statement. **Standard 2: Assumptions**. Course design must take into account assumptions that shape the purpose and subsequent course development. Most assumptions are based on students' prior knowledge and established understandings and skills. Articulating these content assumptions provides a starting point for new learning. Assumptions in the case of online learning also encompass students' ability to use delivery technology. Standard. **Standard 3: Sequence**. Learning opportunities must be sequenced in a manner that promotes efficient knowledge acquisition consistent with the prior-knowledge assumptions. Various models of sequencing—linear, spiral, scaffold, etc.—should be considered, and the course design should incorporate those strategies best suited to the content within the constraints of online delivery **4: Activities**. Learning is achieved through activities both passive (reading, listening, viewing) and active (experimenting, rehearsing, trying). Activities should be chosen that best suit the content, students' levels of knowledge, experience, and ability, and online delivery constraints, particularly accommodating

synchronous, asynchronous, and mixed course participation. Student self-selected or self-developed learning activities should be incorporated along with instructor-selected and instructor-developed activities, consistent with a two-dimensional purpose. **Standard 5: Resources**. A range of resources should be articulated to foster deep learning and extend course-centered experiences and activities. Resources should be multimodal to accommodate students' interests, understandings, and capacities, consistent with course content and technological accessibility. Resources should allow students to go beyond the constraints of the formal course structure to engage in self-directed, extended learning. **Standard 6: Application**. Consistent with providing for active learning, students should have integral opportunities within the course design to apply new learning. Effective course design incorporates opportunities to practice newly acquired understandings and skills, both independently and collaboratively. Online collaborative application opportunities should be developed using social media, and offline collegial groups also should be structured whenever physical proximity of students affords this opportunity. Standard **7: Assessment**. Regardless of the model of sequencing learning opportunities, the sequence should include points of assessment for purposes of feedback and review, with instances of re-teaching as necessary for students to acquire full understanding. Formative assessment, whether formal, informal, or incidental, allows teachers and students to give feedback to one another and to review the operationalized design in order to revise the course design based on students' input with regard to knowledge acquisition and effective use of new understandings and skills. **Standard 8: Reflection**. Effective course design must include opportunities for reflection as an extension of the Feedback/Review/Reteach standard. Reflection involves both instructor self-reflection and student self- reflection related to achievement of the purposes that have been articulated as the basis for the course. Such reflection is intended to deepen the learning experience and may serve

as reiteration of purpose at key points during the course. **Standard 9: Independent learning**. Effective course design incorporates opportunities for independent learning, both instructor- and self-directed. Online course development, particularly in the asynchronous mode, should epitomize independent learning, which should include opportunities for feedback, review, and reflection—all of which should resonate with the purpose. **Standard 10: Evaluation**, Course evaluation must be purpose-driven. Alignment with the purpose should be threefold: a) based on acquisition of new knowledge, understandings, and skills; b) based on instructor self- evaluation; and c) based on student self-evaluation. Multidimensional evaluation offers a fully articulated basis for judging the success of the course and the students as well as providing information that can help shape future iterations of the course.

Methods

The method used in this research is literature study and survey method. Descriptive survey method is a research method that takes a sample from a population and uses a questionnaire as a data collection tool. Descriptive method is a method used to describe or analyze a research result but is not used to make broader conclusions (Sugiono, 2011). The sample in this study were 16 students of the Educational Technology Master Program at UNJ who were taking the Educational Technology Foundation course, with a total of 16 people with various educational backgrounds. The questionnaire was developed from the Instructional Design Standards for Distance Learning issued by AECT which has ten standards, namely: Purpose, Assumptions, Sequence, Activities, Resources, Application, Assessment, Reflection, Independent learning, Evaluation (Piña, 2017).

These Ten Standards from Instructional Design Standards for Distance Learning are the basis for producing a questionnaire with 46 questions. The questionnaire was given to students who had taken the Education Technology Foundation course last semester.

Result and Discussion

The questionnaire that has been developed is then distributed to students who have completed the Educational Technology Foundation course which is implemented using the Flipped Classroom approach. The results are as follows

Tebel 1. Hasil Survey implementasi *Flipped Classroom*

Standards	Result
Purpose	3.06
Assumptions	3.11
Sequence	3.20
Activities	3.00
Resources	3.29
Application	3.68
Assessment	3.02
Reflection	3.01
Independent Learning	3.12
Evaluation	3.12
Average	**3.16**

The result on the Purpose standard is worth 3.06 which means good, while students feel that the lecturer is sufficient to provide an explanation of the learning objectives in the educational

technology foundation course. Explanation of learning objectives is needed by students in order to be focused and directed in learning. Delivering learning objectives (informing learner of the objectives) is done by notifying the abilities that students must master after completing the lesson (Gagne, Wager, Golas, & Keller John M., 2004).

The results on the standard Assumptions are worth 3.11 which means good, while students feel there is no difficulty in accessing the material or feeling familiar with all the technology used in learning. This means good because technical things will not interfere with learning.

The result of the Standard Sequence is worth 3.20 which means good, students feel the techniques used in learning flipped learning in the Educational Technology Foundation course are very good and suitable to facilitate them in the learning process during the Covid-19 pandemic.

The standard result of activities is 3.00 which means good, students feel the learning process using zoom is very helpful for replacing face-to-face meetings during the pandemic, and the activities prepared in the Learning Management System (LMS) are quite helpful in the learning process such as reading e -books, watching videos and other tasks.

The result of Standard Resources is worth 3.29 which means very good, students find it very helpful with the study materials available at the LMS. Various learning materials make students very facilitated in learning. Learning materials such as videos are very effective in improving learning outcomes in flipped learning (Nouri, 2016). The addition of more lecture videos from lecturers in the LMS will certainly greatly assist students in learning.

The result of the Application Standard is worth 3.68 which means very good, students feel very facilitated, one of which is the group presentation which gives students the opportunity to apply their knowledge after studying in the LMS. Assigning them to demonstrate or make presentations through zoom is a way of encouraging the learning process to be more active (Gagne et al., 2004)

The result of the Standard Assessment is worth 3.02 which means good, students assess and the feedback given by the lecturer is proportional. Implementing personalized feedback has a relevant impact on students, which makes it valued for making the learning process easier, richer, and more important (Martínez-Argüelles, Plana, Hintzmann, Batalla-Busquets, & Badia, 2015). Giving feedback on flipped learning of this Educational Technology Foundation subject has paid attention to these things, although there are still some who feel they are lacking due to time constraints.

The standard result of Reflection 3.01 which means very good, students feel that the lecturer has facilitated them in learning both in giving assignments, feedback, and answers to the questions they ask during the discussion through zoom.

The standard results of Independent Learning 3.12 which means good, students feel flexible to study anytime and anywhere thanks to the facilitation by LMS. LMS makes students more independent in learning, not just waiting for face-to-face meetings or video conferences during a pandemic.

The standard result of Evaluation is 3.12, students feel that the evaluation is very good and fair in its application. Like an online test, the results can be seen immediately, so that students immediately know the value without waiting anymore.

Conclusion

The call to reform the learning process in higher education, which still relies heavily on face-to-face meetings, seems to get an answer with the covid-19 pandemic, which makes lecturers have to innovate in the learning process. The use of technology can no longer be avoided, but it must still refer to predetermined learning standards. The application of Flipped Classroom during a pandemic is one of the strategies that can be chosen to carry out the learning process. In the Flipped

Classroom, there are usually face-to-face meetings, but for reasons of the Covid-19 pandemic, face-to-face is replaced by virtual face-to-face using video conferences.

Several studies have shown that Flipped Classroom as a teaching method can increase student engagement and a more active approach to learning in higher education. The findings from this study confirm the results of this study and highlight the additional advantages associated with the Flipped Classaroom model.

The students in the research sample were found to generally like the application of the Flipped Classroom. The most common reasons for this are that students like the learning method using video materials, e-books and discussions as well as the opportunity to learn at their own pace, flexibility and mobility. Video lectures that can be accessed in the LMS, make learning much easier and more effective. However, the students felt that the videos needed to be reproduced, such as the previous discussion videos via zoom so that they could also be uploaded to the LMS.

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