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Teaching Design Utilizing a Flipped Classroom Model for Increasing Student's Learning Achievement

Vera Septi Andrini

STKIP PGRI Nganjuk, Jl. A.R Saleh No.21 Nganjuk, Indonesia.
vera@stkipnganjuk.ac.id

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Abstract: The purposes of this research are (1) to design learning by using flipped classroom model in colleges, (2) to describe the validity of the use of flipped classroom to improve the learning results. This study is a conceptual study in designing learning by using flipped classroom model. The empirical study used literature study which was based on the journals that was related to the problems in this article. The results of this study showed that, (1) the flipped classroom learning model could be designed by planning the steps including the meeting, students were asked to study independently at home about the material for the next meeting, by watching the learning video made by their own lecturer or the learning video which was uploaded by the other people, the learning step in classroom, the students were divided into several heterogeneous groups, the lecturer step when the learning process was on going, the lecturer was facilitating the on-going discussion by using cooperative learning model. Besides, the lecturer would also prepare some questions from the material, and the last step was the lecturer gave a quiz/test so the students are aware that the activity they had done was not just a game but also a learning process, and the lecturer was also a facilitator to help the students in learning process and solving the questions which was related to the material. (2) the validity proof of flipped classroom model showed a strength that this model could improve the learning result in any cognitive domain.

1 INTRODUCTION

Education system of school in twenty-first century is hopped to supply the students with the knowledge domain and skill domain which is needed to comply the changing requirement of society. The digital culture development in twenty-first century is the booster of the use of digital source and the communication tool in education of school. To get the advantages from the learning trend the students should be able to take, choose and compile the useful information from the huge digital source, and also be able to consider the information's reliability and suitability will be taken and to get whether they will process the selected information (Pardede, 2011; Thivilojana *et al.*, 2014).

The data shows that 60% of the learning process in STKIP PGRI Nganjuk in general still applies teacher-cantered learning. Conventional learning starts from the lecturer explaining the material and giving assignments to do at home. Then, assignments are presented in groups. The interview results show that this presentation model is also still dominated by lecturers. This is because students are not ready to present the material which is provided so the learning objectives are not achieved. According to (Snyder and Snyder, 2008), learning in general is still oriented to the process of memorizing and knowing, so it has not been able to trace life skills especially high-order thinking. Lecturers assume that teaching is a process of transferring knowledge to the students and the students are considered as a container of knowledge from the lecturers (Abdi, 2014). The lecturer's paradigm about the learning process must be changed so that the goals and the learning results are achieved well. Learning according to (Hamalik, 2004) is a combination of some elements like the teaching tool, teaching materials, the tool which can facilitate the teaching and learning process, the human recourse or it can be said as teacher, and the teaching procedures to cover the learning objectives.

Another factor which determines the success is the achievement of cognitive abilities. In learning, it is determined a purpose of learning. Learning objectives cover three aspects: affective, cognitive and psychomotor (Bloom, 1982). In general, the cognitive aspects include intellectual learning outcomes, and affective aspects which related to

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attitudes, while the psychomotor aspects relate to skills outcomes and ability to act. In the establishment and human resources, education in universities divides the competencies of students in one lecture. The results of the needs analysis showed that 70.23% of students still had difficulties in learning. From 30 students as the initial sample, 33.3% of the learning outcomes were in the poor category, 36.7% were in the sufficient category, 16.7% were in the good category, and 13.3% were in the very good category. This shows that the learning process is less than optimal.

In these conditions, lecturers often get a dilemma to take the best way to accommodate these different learners' abilities. But in fact, technological advances for the instructional needs of online teaching and learning enable lecturers to explore creative ways to resolve the diversity of learners' abilities. One of the trends in the field of education is the concept of "Flipped Classroom" which is actually one of trends that is still rarely applied in high school education to a higher level, especially for the scientific and linier lectures such as mathematics, scientific materials, as well as language teaching. The concept of "Flipped Classroom" has been being used by faculty in college, and by seeing the positive results of applying this concept makes more lecturers want to try to apply this concept in their classes. The result of (Herala *et al.*, 2015) states that the use of flipped classroom can improve the student learning outcomes because by using flipped classroom students can independently focus on reviewing the theory they need and the teacher can concentrate on helping students to solve the actual problems encountered by students. Besides, by repeating the videos, it also can save the learning time.

Looking at the facts and thoughts that have been described, the gaps in the learning process and learning results that occur is a crucial problem and need to be responded wisely. As an alternative solution to the problem, researchers used Flipped Classroom model to improve motivation and learning outcomes. Based on this study, the issues raised in this paper are (1) how to design the learning by using flipped classroom model in college, (2) how the validity of the use of flipped classroom model to improve the learning outcomes.

2 METHOD

This study is a conceptual study in designing learning using Flipped classroom model. Research data uses literature studies which source from journals related to the problems in this paper.

3 RESULTS AND DISCUSSION

3.1 Learning Design of Flipped Classroom Model

According to Johnson (2013), Flipped classroom is a learning model which can be applied by the lecturer in the classroom by pushing the direct instruction down while optimizing the students and lecturers interaction. This model uses technology that provides learning materials that support the learning materials for students which is accessible online. By applying this model, the timing to learn in the classroom is more effective. By using flipped classroom model, students get lessons not only in the classroom but also in the outside of the classroom, the students can also access or view the material given by the lecturers repeatedly with the help of the internet or learning video provided by the lecturer. Learning by using flipped classroom, firstly student learns the topic on their own, usually uses lessons with videos created by the instructor or along with other educators.

In Flipped Classroom learning process, the students watch home-learning videos to find themselves the concept of subject matter at their own unquickens. When students are in the class, they already have a concept of what will be learned so that they are more prepared to receive lessons. The learning material has been learned at home through video so that students have more time in the class to do tasks, exercises, projects, or discussions related to the material that has been submitted by lecturers through video at a previous time. According to (Avsec and Kocijancic, 2014) the use of written and electronic learning resources can help students in learning the material; in addition students are also motivated in enriching knowledge.

Flipped Classroom model is divided into several types; some of them are Traditional Flipped Classroom and Peer Instruction Flipped (Silva, 2008). Traditional Flipped learning model is often used by lecturers who have never used the Flipped Classroom model before. In the Traditional Flipped learning model students are required to watch the learning videos or other media at home on previous learning. Students prepare to follow the learning in the classroom by learning at home before. The next step is the students come to the class to do activities and do the tasks related to the material. In the classroom students apply their ability in doing project or other

simulation. Activities that take place in the classroom are guided using Modules. The related tasks are also given in the Module. The next activity is to measure students' understanding by giving a quiz at the end of the learning process.

Learning Model of Peer Instruction Flipped is implemented like peer tutor learning. Peer Instruction Flipped Student learning model students are required to watch the learning videos at home. While in class, the lecturer gives the first test individually. Students compete with each other regarding their answers and apply the learning to strengthen the concept. After finishing the first test then continue to the second test and so on until the learning time runs out. At the end of the learning process, lecturers measure the students' understanding through the quiz (Silva, 2008).

The learning steps of flipped classroom are as follows:

▪ Before the meeting, students are asked to study independently at home about the material for the next meeting by watching the lecturers' own learning videos or learning videos from the other up loaders.

▪ In classroom learning, students are divided into several heterogeneous groups.

▪ In this learning activity, the lecturers facilitate the on-going discussion using cooperative learning model. In addition, lecturers will also prepare some questions from the material.

▪ The lecturer gives a quiz / test so the students are aware that the activity they have just done is not just a game, but a learning process, as well as the lecturer acts as a facilitator in assisting students in learning and solving problems related to the material.

Flipped Classroom learning process is mainly applied by way of on-line digital source. In the development of flipped classroom, people's knowledge is also developed because of the use of online resource in learning.

In this model, it provides an overview and experience for lecturers and students who adopt the Flipped Classroom. Flipped Classroom is kind of blending learning model. First, Flipped Classroom is not only teaches the students on-line, but also blending learning model with the help of computer. Second is that in teaching on line in Flipped Classroom model is different from teaching using video, there are so many digital resources of the model like video web, online learning simulation, learning web page, etc. In other words everything which can help the students to learn, it also can be the material in flipped classroom application.

Furthermore, learning on this model is not only about giving questions and answering them but also it is about discussing the material and the difficulties in learning process with the lecturer. Then, the flipped classroom model is not just a static learning model because of the technology development; it also can follow the development by use the technology.

3.2 The Validity of Flipped Classroom Model to Improve Learning Outcomes

Learning outcomes is the result of a learning process which are stated in value of number and measured by using a test (Gagne.R and Briggs, 1979). As the additional theory, (Gagne and Driscoll, 1988)explains that learning outcomes are the students skill which are obtained from the learning process and then being measured by using their performance.

(Reigeluth, 1983) classifies the taxonomy of learning variables into three, they are condition variables, model variables, and result variables. Learning result is the effect of teaching and learning process which can be used as teaching indicator as the manual scoring in different condition (Degeng, 1989). (Gagne.R and Briggs, 1979) "There are five categories of learning outcomes capabilities, they are intellectual skills, cognitive strategies, verbal information, skills (motor skills), and attitudes."

Some results of empirical studies, conducted by (Wenning, 2005) showed that there were significant differences in student empowerment in experimental and control classes with Flipped Classroom learning model (Orlich, 2007) showed that there was a difference of student achievement between traditional class and Flipped Classroom class. (Basal, 2015) concludes that English lecturers have positive perceptions of Flipped Classroom, this is shown by four benefits of Flipped Classroom, i.e. students can learn independently, there is a preparation of the meeting, and it can resolve the limitations of class time and increase the students' participation in the classroom. (Kadry and El Hami, 2014) explain the application of the Flipped Classroom model as a positive experience, they also state that it make students perform better than using conventional learning. In addition, the Flipped Classroom model is well received by female students rather than males.

The different results indicated by Brooks (2015) in his study concluded that there is no differences found between the two groups in analysis of pre-test and post-test for Flipped Classroom model learning by conventional methods.

Based on the results of previous research that shows various research results, it can be concluded that it is interesting to conduct a study about Flipped Classroom learning model by testing students who have different levels of learning motivation.

(Abeysekera and Dawson, 2015) found the proof that Flipped Classroom improved students' motivation and cognition. (Halili and Zainuddin, 2015) concluded that the use of flipped classroom can motivate the students to be better in their performances in the classroom like in doing discussion of the classroom material that they have been prepared before. In applying flipped classroom the students are asked to prepare their knowledge about the becoming materials by watching the video so it provide a student-entered discussion rather than the lecturer-centered because the students can be more active in teaching learning process and the lecturer just facilitates the discussion. In another hand, lecturers are not able yet to apply it in their classroom because they do not prepare as well as possible. (Roehl, Reddy and Shannon, 2013) concluded that learning activities and learning models of flipped classroom use technology, students will develop their creative thinking skills higher. (Pierce and Fox, 2012) concluded that applying the flipped classroom model resulted the increasing of student's performance.

(Roehl, Reddy and Shannon, 2013) in their research concluded that in order to introduce some new strategies transferred from the teachers and students thinking, the teacher should conduct a research with an alternative strategies in class. As instructors who will use the new strategy, this is very important in education that is reflected in effective learning. Learning activeness and learning strategy of flipped classroom using technology motivate the students to develop their creative thinking ability higher.

(Pierce and Fox, 2012) in their concluded that applying a flipped classroom model increase the student performance and the student perception become good in instructional approach. Some factors which may have contributed to the students' grade improvement are: students are mediated contacts using lecture materials before coming to the class, the standard and formative assessments are provided during the use of the module, and classroom activity runs interactive.

(Lioe and Teo, 2012) in their research find that the implementation of the flipped classroom model can be used in further exploration. It also can be applied for the students in any levels of skill like for the students in low level, high, or in heterogeneous level of skill. The use of flipped classroom model is also appropriate for the students who want to learn the material at home or in the classroom because it can support the students to learn the material as well as possible during the learning process. The enhancement is differentiating the directing questions that are used in low activity under the Bloom's taxonomy for the students who learn the arterial at home. In the other hand, for the students who learn the material in the classroom uses higher order questions.

(Marlowe, 2012) in the research shows that by using flipped classroom model the students can manage their stress level. It is possible because the students can enjoy the teaching learning process which provided the material using video outside the classroom. That is why they get lower stress level. When they are in the classroom and following the learning direction from the teacher, they can be so stress because of the regulation as students at school. But when they are outside of class and getting the material from the video, they just focus to the material without thinking about the regulation and the teacher direction in the classroom. By learning the material outside the class, students can get benefits to choose their own task and explore the all the materials deeper.

Based on the literature studies, it can be concluded that the flipped classroom learning process focuses on providing material to the students by using video and website-based to be studied at home then continued with class presentations and discussions. This learning process has not facilitated in detail related to the student problems during the process of understanding the video at home. For example when students get difficulties in analysing the video, students cannot intensely ask questions or ask for the lecturer's help. The impact is (1) students do not have learning motivation because they feel that they have not mastered the material provided, (2) when they do learning process in class, the material presentation that has been given by the lecturer cannot run optimally, and (3) the lecturer inevitably has to play a role (student centre) in explaining the material. According to (Yildirim and Kiray, 2016) that flipped classroom learning cannot facilitate lecturers and students to do an active interaction outside the classroom so that it can affect their learning motivation.

In addressing the weaknesses of this flipped classroom model, it is necessary to have a medium to make the communication between lecturers and students can still run well anywhere and anytime. As an alternative solution which can be applied in

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teaching and learning process is the use of social media such as What Sapp, messenger telegram, line, and so on to support the lecturer and students activities. It is appropriate with (Pratama and Kartikawati, 2017; Andrini, 2018) that the use of social media like whatsapp messengers as mobile learning and module is able to facilitate the communication between lecturers and students whenever and wherever, establish the learning interaction between students and educators well, facilitate the educators provide long distance learning concept, conduct discussion forums between groups of students easily, build knowledge easily, and share my information's quickly. It is also supported (Amry, 2014) that whatsapp and social networks as mobile learning is effectively applied when combined with the learning process. Social networks help students communicate with fellow students and educators actively and build the knowledge without any time limits.

4 CONCLUSIONS

From the description above, it can be concluded that (1) the flipped classroom learning model could be designed by planning the steps including the meeting, students were asked to study independently at home about the material for the next meeting, by watching the learning video made by their own lecturer or the learning video which was uploaded by the other people, the learning step in classroom, the students were divided into several heterogeneous groups, the lecturer step when the learning process was on-going, the lecturer was facilitating the on-going discussion by using cooperative learning model. Besides, the lecturer would also prepare some questions from the material, and the last step was the lecturer gave a quiz/test so the students are aware that the activity they had done was not just a game but also a learning process, and the lecturer was also a facilitator to help the students in learning process and solving the questions which was related to the material. (2) The proof of the Flipped classroom model validity shows the strength that this model could improve learning outcomes in vario cognitive domains.

The novelty of this study is to answer the weaknesses of flipped classroom learning model as described by (Yildirim and Kiray, 2016) that if the lecturers are not able to interact actively with students in the process of giving projects outside the classroom then it can influence the students' learning motivation and it allows the emergence of new problems for students. The need of assistance and communication between lecturers and students during the learning process at home can reduce the risk of getting lack of students' motivation. So the solution offered is by using social media like what Sapp, messenger telegram, line, and others as media in mobile learning. With the use of social media, lecturers can interact with students anytime and anywhere. When students get difficulties related to the project given by the lecturers, they can directly ask for help from the lecturer through social media. In addition, lecturers can provide supporting materials like modules and books by uploading them on social media.

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