Implementing flipped learning in microeconomics course

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Abstract. E-Learning is one of the breakthroughs in education that utilizes information technology. Various online learning models began to be developed. For example blended learning, distance learning and flipped learning. Online learning basically is trying to innovate and change the paradigm in learning. One of the online learning models which is currently quite a lot of studies in educational research is flipped learning. Flipped learning is learning that combines classroom meetings with online learning. In flipped learning things that are usually done in the classroom such as explaining the material, giving assignments, exercises and homework are transferred to online learning. In the classroom, learning is really more student centered because the students will have more time to complete case studies, conduct problem-based learning, practice and discuss. This research was conducted with a two-year development research design. The results of the first year research are the learning design and lesson plan for the implementation of flipped learning in introduction to microeconomics course.

1. Introduction

The development of information technology runs so fast and penetrates various aspects of life. This development makes the world seem to be without limits. This technology is known as internet. Various information, news, social media facilities, online commerce facilities, and online learning or e-learning, are provided through internet.

There are two related movements that are combined to change the face of education [1]. One of these is the movement that enables the amplification and duplication of information at extremely low cost. So, this idea provides an important message that the progress of education can be achieved; one of the ways, and the most important one, is through technological development. The use of technology, especially information technology, can facilitate the spread of information widely and eliminate boundaries and difficulties that happen when the learning relies solely on face-to-face classes.

E-Learning is one of the breakthroughs in education that utilizes information technology. Various online learning models have begun to be developed, for example blended learning, distance learning and flipped learning [2]. These online learning models basically try to innovate and change the paradigm in the learning. In traditional classes, the lecturer stands in front of the class and explains the lecture material one by one. Meanwhile, the students sit down and take notes of the lecturer’s explanation calmly. At the end of the lecture, they are given the assignments as homework that requires them to re-read the literature and answer the questions one by one given by the lecturer. That is how the lectures run week after week on the predetermined schedules. Additionally, what is realized mostly by the lecturer is that there are a lot of learning materials that must be completed in every meeting until the semester ends.
The routine in traditional classes of this kind can be further developed and streamlined by utilizing online learning or e-learning. Through e-learning, students have the opportunity to study anywhere and anytime as long as they have access to the internet network. It is indeed impossible for the students to bring books everywhere. However, it is very possible for them to bring their cell phone or smartphone everywhere and use it to study anytime.

One of the online learning models which is currently becoming a topic in quite a lot of studies in educational field is flipped learning. The pioneers of flipped learning are the Chemistry teachers from Colorado in 2007. The students in their Chemistry classes often cannot attend the classes because they have to take part in competitions, matches and other similar events. To anticipate this, the two teachers developed a video of the learning, demonstration, and presentation slides displayed. This video recording is then uploaded on YouTube, so the students can download it anytime and anywhere. Later, in 2012, a non-profit organization called Flipped Learning Network (FLN) was established which aims to equip educators with knowledge, skills and learning materials for the sake of the implementation of flipped learning [2].

Flipped learning is the learning that combines classroom meeting with online learning. According to Herreid [3] in flipped learning the activities usually done in the classroom such as explaining the material, giving assignments, exercises and homework are shifted into online learning. Instead of having the students listen to the lecturer's explanation about the demand and supply, the fields of microeconomics and so forth, it is better that all are recorded on a video or other relevant online learning material and then students are asked to watch the video before the lecture takes place. In the classroom, the learning is really more student-centered because the students will have more time to complete case studies, conduct problem-based learning, practice and discuss. The principle in flipped learning is that things that are usually home assignments (such as exercises, case studies, problem solving and so on) are better done in class. Meanwhile, listening to the lecturer's explanation becomes a home assignment in the form of videos. Therefore, this learning is called flipped learning [3].

Studies on flipped learning are still developing. From the studies that have been conducted, it can be concluded that: students’ perceptions of the implementation of flipped learning are positive; the students who are given the materials in the form of videos have better mastery than those who are told to read textbooks; the students find it difficult to complete the assignment of reading the materials; and the students prefer short videos rather than too long ones (Bishop [1], DeGrazia et al. [4], Nguyen et al. [5], Zappe [6]). A study by Moravec et al. [7] on biology lecture was conducted through the provision of Power Point narrative videos before the lecture took place. This succeeded in increasing student learning outcomes by 21% in mastering the concepts contained in the videos. Meanwhile, a study conducted in microeconomics lecture found that flipped learning yielded positive response from students and the learning design (lesson plan) was useful for the students [8]. The result of this study illustrated that flipped learning provided positive renewal for the learning development.

Universitas Negeri Padang (UNP) as a university that has a vision to become a leading and outstanding university in South East Asia. The university also continues to improve its quality of learning. Since the registration is done online, this university also facilitates the implementation of information technology-based learning. Initially the lecturers are given an academic portal that facilitates them to upload lecture materials, provide assignments and so on. Later, UNP continues to develop e-learning facilities with increasingly complete features. Additionally, the networks of both wired and wireless internet are available widely. This makes it possible for all academics to be able to take advantage of the internet facilities. Therefore the use of all these facilities needs to be continuously optimized especially in improving the quality of teaching and e-learning. One of them is through flipped learning design that we are currently developing in this research.

The development of flipped learning is carried out at the Faculty of Economics, UNP. Flipped learning is carried out in the Introduction to Microeconomics course. This course is chosen due to several
considerations. First, this course is a basic course and prerequisite so that students’ mastery is very important to be able to attend further lecture such as Microeconomics Theory and so on. Meanwhile, during teaching this course, we find that the students’ failure rate is still quite high. Second, the lecture material is also quite intense. If the content of material is reduced, the learning outcome cannot be achieved. However, if the credits are added it is also not in line with the demand of the total credits according to the curriculum. This is always a dilemma. The exercises are mostly done at home by the students. Many face-to-face meetings are spent on lectures and questions and answers. The material arranged every week is very limiting the lecturer to be able to discuss a lot of exercises in class. What is more, when there is no explanation from lecturer, the students often misunderstand and have difficulty understanding the contents of the textbook. This may also be related to their ability and willingness to read well, which is still relatively limited.

With all these constraints, the implementation of flipped learning could be one of the solutions to improve the quality of learning at the Faculty of Economics, UNP especially in Introduction to Microeconomics course. This study is planned to be carried out for 2 years. The first year was used to design Introduction to Microeconomics course with flipped learning. Meanwhile, the second year will be used to carry out expert validation through Focus Group Discussion in line with try-out through a quasi-experimental approach. This article will discuss the results we have obtained in the first year of the study.

2. Methods
This study used Research and Development (R&D) approach. Research and Development is a research method used to produce a certain product and test the effectiveness of the product [9]. This study is carried out following the procedures. The procedures includes planning, exploration, initial product development, validation and final revision. The first stage is planning which includes the preparation of research steps for the development of flipped learning for Introduction to Microeconomics course. The second stage is exploration. The exploration phase includes literature review, document studies and field studies for the completeness of flipped learning preparation materials. The third stage is the initial product development: the revision of the syllabus in accordance with flipped learning, the preparation of learning material in the forms of e-books, power point files, videos and so on, and the preparation of group assignments, individual assignments, case studies, project assignments, midterm questions, final semester exam questions and assessment rubrics. In the fourth stage, product validation and revision are carried out. The validation phase includes expert judgement and try-out. The first validation activity is theoretical validation done by experts or panelists who assess the learning programs that have been developed. This step is carried out by using Focus Group Discussion (FGD) with the lecturer of the course, the lecturer of Economics Learning Strategy and the lecturer of Evaluation of Education. The learning programs that have passed theoretical validation by the expert will continue to the try-out process to obtain empirical validation. The try-out is conducted through a quasi-experimental research model. Expert validation and try-out are carried out in a continuous and simultaneous manner in order to continually improve flipped learning model developed and this is done in the second year of the study and not yet presented in this article.

3. Results and Discussion
The process of Research and Development (R&D) on implementing flipped learning in Introduction to Microeconomics course is carried out by following the stages below:

a. Planning stage. At this stage, research schedule, research procedure, and the assignments for each research team are made.

b. Exploration stage. At this stage, the existing syllabus of Introduction to Microeconomics course has been collected and analyzed. The last evaluation and test that has been employed, supporting books and other related references are collected. The available learning media are also identified.
Various learning videos and others videos that are relevant to lecture material on Introduction to Microeconomics are identified.

c. Initial product development. At this stage, several activities are carried out: 1) revising the syllabus for the explanation of learning process and experience, lecture material, lecture method and evaluation procedure in accordance with flipped learning. Student learning outcomes for this course are analyzing demand, supply, market equilibrium and its applications, analyzing the household behavior, analyzing the profit maximizing behavior of firms, analyzing short-run and long-run costs and also output decisions and analyzing the general equilibrium and efficiency or perfect competition market, monopoly, oligopoly and monopolistic. This syllabus includes lectures for 16 meetings: 14 lectures, 1 midterm test and 1 semester final examination. 2) Preparing teaching materials in the forms of e-books, power point files, videos, journals and data links to Badan Pusat Statistik (Central Statistical Agency) which are then uploaded to the UNP e-learning system for each of the 14 planned lectures. 3) Preparing exercises, group assignments, project assignments and case studies for each meeting which are also then uploaded to the UNP e-learning system. 4) Preparing the exercises assessment rubric and also compiling the midterm and final tests along with the assessment guidelines/rubrics.

After the development phase is complete, in the second year of study, expert validation and try-out will be carried out. In flipped learning design, all lecture materials and assignments will be firstly uploaded to e-learning before face-to-face lectures begin (in the July-December odd semester). The upload process starts at the beginning of the semester for 14 planned meetings, so the learning in one semester has good and organized planning. The e-learning system has an on and off mode for every meeting and lecture. The lecturer will turn on mode one by one every week, so students can access lectures at the meeting in the e-learning system.

Every week students will access the e-learning and study independently both individually and cooperatively outside the classroom before the material is discussed in the classroom. When face-to-face lecture is held, the students already know a lot of things about the material to be discussed including trying to do assignments, case studies and projects. Discussion done in the classroom will be more to confirm the students’ understanding of the material and to discuss assignments, case studies and projects they are working on. With this model, it is expected that it can minimize the chalk and talk process, and the learning enables the students to be active and the students have more time to assess their own learning progress.

Flipped learning is one form of learning that utilizes information technology. According to McKnight [2], in the flipped learning model, teachers shift direct learning out of the large group learning space and move it into the learning space, with the help of one of several technologies. Teachers record narrate screencasts of work they do on their computer desktops, create videos of themselves teaching, or curate video lesson from internet sites such as TED-Ed and Khan Academy and enabling student to come to class better prepared.

From the definition above-mentioned, the flipped learning is a learning model that combines online learning with face-to-face learning. Online learning is intended to provide material and explanation and provide assignments which are then done in face-to-face classes. In face-to-face learning, discussion of tasks, case studies or problem solving is carried out which essentially enables the students to be active and provides broad learning experience. This learning is also more effective because lecture material can be accessed by the students anytime and anywhere through internet facilities.

This is different from distance learning which makes face-to-face meetings conducted through teleconference media. Basically the learning remains face to face but lecturer and students are in different places. Flipped learning is also different from blended learning which combines face-to-face learning method with online learning. The learning method can be in the form of face to face everyday
then there are several components of e-learning that are inserted, or vice versa, mostly it is e-learning 
first then face-to-face method is inserted.

There are several advantages of using flipped learning [3]. These advantages are: 1) students can 
develop according to their respective speed, 2) doing exercises that usually become homework in the 
classroom provides a better picture for educators about learning styles as well as student learning 
difficulties, 3) face-to-face time allocation can be used more effectively and creatively, 4) lecturer can 
more easily assess student achievement, interest and commitment to the learning, 5) the use of 
technology makes learning more flexible and suitable for learning in the 21st century. Another 
advantages of using flipped learning are: 1) increasing interaction between lecturers and students, 2) 
increasing student engagement in lecture material and 3) development of life-long learners [10].

Learning program developed for flipped learning is very flexible. For example, in the terms of 
learning model. The learning models that can be used can be very diverse and enable students to be 
active such as using problem-based learning, guided exercises and discussion. McKnight [10] stated 
that the use of flipped learning allows the use of various learning models. Educators can design the 
learning that allows group work, independent study, research and so on. In addition, students can also 
choose when and where they want to study.

In addition, flipped learning will provide very broad and active learning opportunities for students. In 
traditional learning the lecturer becomes a central player in the learning and the main source of 
information. The teacher is termed "sage on the stage". This is known as teacher-centered learning. 
Nevertheless, in flipped learning the learning is very student-centered. Students change from being 
learning objects to learning subjects who are actively involved in extracting knowledge. Face-to-face 
learning can be used effectively by the lecturer to ensure that the students understand the material 
being learned and solve students learning difficulties.

4. Conclusion
The first year of this study developed lesson plans and material for flipped learning in introduction of 
microeconomics courses in planning, exploration stage and initial product development. The results of 
this development will then be tried-out in the second year of research.

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