Flipped learning model for Management Class

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Abstract. To increase the outcome of higher education, flipped learning is considered as emerging education technology. Even though some instruction models and successful practices have been introduced, flipped learning is new and challengeable to university people. In this paper, we describe our experiences and lessons from designing the flipped class of Project Management course.

Keywords: Flipped learning, Project Management Course, trello

1 Introduction

21C has 3 big changes: (1) Smart device is very popular, (2) collaboration and cooperation are required, (3) Data analysis can make economic value. These changes challenges the education. Smart learning requires to University to transit new education paradigm where student-driven learning is more important so that students have creative problem solving capability. Before then, professor-centered spoon-feeding education was main method.

Yu analyzed the learning process of Korean University students. According to the research, students are very passive, interaction between professor and students are insufficient, extracurricular activity during the course is not enough, and capability of self-awareness and people skill cannot be improved [1].

Flipped learning can be the solution for these problems. The most important reasons why professors have tried to adopt the flipped learning into his/her courses are to improve critical thinking capability, creative problem solving, and expertise skill. Additionally, professor expected for students to participate in learning actively and to increase teamwork [2].

In this paper, we describe the class design based on flipped learning methodology. Actually, we applied flipped learning into project management class of 3rd grade students. In this paper, we present our class design concept and process model. In section 2, we describe the concepts and basic process of flipped learning which are the main educational technology of our class design. In section 3, we explain the
course design and teaching method. In section 4, we discussed our lessons and learns and future experimental research plans.

2 Flipped learning

2.1 Flipped learning in Higher Education

Flipped learning called as Flipped classroom or Inverted classroom, means that the activities of students for learning are inverted [3]. In traditional learning, students learn from the teacher at class and do homework at home. But in flipped learning, student teach at class and students try to understand the content at home. Flipped learning can be adopted from elementary school to University, higher educational organization tried to apply it into their learning environment more actively. Specially, we can find many practices in engineering college/department. “Software Engineering” course of Miami University, “Introduction to Information Technology” course of Bentley University, “genetics” and “general biology” course in University of Missouri are adopted with flipped learning. Also, many Universities in Korea already made many flipped-based courses and reported its benefits and best practices. UNIST, KAIST are leading University. These University support flipped learning strongly by administration officers but there are trials by individual professors.

Kim [4] said that there are common characteristics in flipped classroom even though there class activities are variety. First, students are changed: they were very passive learner but now are very active participants. Seconds, teachers are changed: their main role was to give knowledge directly and control the classroom but their role in flipped is facilitator or coordinator for helping the students to understand the contents. Third, learning is increased by online video or ICT-based contents. Forth, learning process is changed: homework first, class learning is next. Fifth, student’s interpretation can be deeper at classroom and student-tailored learning process can be available.

2.2 Class Design based on Flipped Learning

For designing the flipped learning, we should consider 4 requirements [5]: (1) flexible environment, (2) shift in learning culture, (3) intentional content, and (4) professional educators. 3 phases process model are basic for flipped learning: (1) pre-class, (2) in-class, and (3) after-class.

In pre-class phase, teaching and learning principle should be defined. Materials student are developed or searched and classified for student to study at home. For evaluating the understanding, short quiz should be prepared at this phase. Also student’s learning report template should be given for recording the time log. Students should studied the material before getting in the classroom and make activity records. It is very important feature to differentiate flipped learning from traditional learning. At the beginning of in-class phase, teacher assess the student’s understanding of course materials and get the information how much efforts students put pre-class
activities. And then, summarize the content and the level of detail can be different from how much students already understand. After then, teacher provide group/individual learning guidelines to students. Students can receive supports as needed. Teacher introduce several strategies for students to accelerate the students learning activities at class. Before ending the in-class phase, teacher should give the feedbacks and summarize the contents.

At the after-class phase, refer to the learning objectives that teacher outlined at pre-class phase. Teacher should consider how students continue to practice and extend period of time for learning.

3 Flipped learning Design for Project Management Course

There are 3 reasons to adopt flipped learning into project management course: (1) this subject is very difficult for undergraduate students since they have not enough experiences, (2) this subject requires the teamwork and self-directive capabilities, (3) more interactive and more practical experiences are required.

For designing this subject as flipped learning process was adopted like in Table 1.

Table 1. Flipped Classroom Design for Project Management

<table>
<thead>
<tr>
<th>Phase</th>
<th>Input</th>
<th>Process</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-class</td>
<td>On-line video</td>
<td>Each students watched video</td>
<td>Summary note</td>
</tr>
<tr>
<td></td>
<td></td>
<td>make a summary note</td>
<td>Personal study log</td>
</tr>
<tr>
<td>In-class</td>
<td>Personal study note</td>
<td>Team discussion about the topics</td>
<td>Cards on Trello</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make team subject note</td>
<td>Site</td>
</tr>
<tr>
<td></td>
<td>Teaching material</td>
<td>Professor give short explanations about the subjects and wrap up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>from professor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We just designed 2 phases: (1) Pre-class, (2) In-class since wrap-up session and announcement of next class are included in in-class. During pre-class phase, students should learn the topic with on-line video which was developed by expertise group and is commercial e-learning contents. The most important reason to select commercial e-learning contents is to provide professional and verified contents. Actually there are many video contents in youtube.com and web site but their contents are not well-organized so that they might lead the students into misconception.

Also, students should keep the track their study activities in personal study log sheet. We used Trello (www.trello.com) which is collaboration tool for recording the team discussion work products. A Trello board is a list of lists, filled with cards so professor make a list for each team and students can make a card for making study notes. Trello is available tool on web and mobile app so that students can make a card anywhere and anytime.

During in-class phase, 50 minutes for team discussion based on individual summary notes. We suggested the learning process of team discussion for in-class phase: (1) selection of topic to discuss, (2) discuss about the topics based on individual note, (3) If there are something not to fix or to understand after discussion, make a question list. (4) After finishing the discussion, make a card for discussion note and questions on Trello. Trello is very powerful collaboration tool so that team
member can share their discussion. During these discussions, professor can access Trello and review the card and make comments as facilitators. After 50 minutes discussion, professor answers to the questions which are on the card of Trello site. Also, professor gives short lecture to explain about the topics as facilitators for complete and correct understanding. Finally, professor gives the introductory information about next class.

4 Discussions and Conclusions

From the personal study log, we found the spending time for pre-class is 3 and half hours. According the questionnaires before beginning the flipped classroom, students of this class didn’t spend any time for preparation. But after adopting the flipped, students put much more times for preparation. It helps for students to understand the subjects and to increase the gaining of confidence and satisfaction. Trello system was very useful for collaboration learning and immediate feedback to student’s activities. Students worked more on pre-class and in a more much more timely fashion than observed in the past. The one-on-one interactions helped better deal with issues in problem-solving by Trello, including the issue of how students approached problems. In addition, the professor interactions to enhance team-based project by Trello make to increase the quality of learning and individual performance.

This paper describes the first experimental approach of flipped learning of project management course. Our flipped learning was a success in student improvement on understanding the topics and more active discussion. Also, useful technology is helpful for increasing the interaction and motivating the student’s activities.

References