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Joelle ELMALEH

Singapore Management University, joellee@smu.edu.sg

Nachamma SOCKALINGAM

Singapore Management University, nachammas@smu.edu.sg

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Students' Perspectives on Flipped Classroom Implementation in Higher Education

Paper presented at Emerging Technologies for Online Learning 8th International Symposium, 22-24 April 2015, Dallas, TX

April 24, 2015 - 11:40am

Track: Effective Teaching and Learning Pedagogy

Major Emphasis of Presentation: Applied Use (technology or pedagogy) , Effective Practice

Institutional Level: Universities and Four Year Institutions

Audience Level: All

Session Type: Information Session

Location: San Antonio B

Session Duration: 50 Minutes

Session: Concurrent Session 10

This paper reports students' experiences with a Flipped Classroom pedagogy model in an undergraduate programming course and suggests ways to improve the Flipped Classroom implementation.

Brief

The Horizon Report 2014 [1] identifies Flipped Classroom (FC) to be an emerging technology-enhanced teaching method, likely to have a global impact in the next five years. While practitioners are exploring how to adopt FC pedagogy, there is still a lack of empirical evidence on implementing it effectively. In an attempt to fill this gap, this study presents the findings from a student survey on their learning experience with a FC pedagogy model adopted in an undergraduate programming curriculum. It also shares what worked well in the FC pedagogy and suggests ways to improve the next implementation of the model. Audience attending the presentation will learn strategies to implement the FC pedagogy model effectively.

Educational Context

This study was conducted in a programming course, Information Systems Software Foundations (ISSF), at the School of Information Systems (SIS) in Singapore Management University. This is a compulsory course for all first-year students in the BSc (IS Management) program. A key objective of the course is to equip students' with foundational programming skills.

Traditionally, this fifteen-week course has been taught face-to-face and in-campus. In this model, students attend a weekly 3-hour class, usually encompassing a 2-hour lecture and 1-hour programming practice. After class, students attempt more complex programming exercises called Labs (optional submission). With the objectives to encourage student engagement, active learning, interaction in class with peers and instructors, and to provide more opportunities for programming practices (a key success factor), and after a successful implementation of FC in a special programming class during the previous semester [2], the course's teaching team decided to adopt FC as a pedagogy model. This time, the entire cohort of ISSF course students (281 students in 7 classes) studying in academic year 2014, term 1, were taught using the FC model.

To adopt the FC model, the teaching team converted the content of all face-to-face lectures to multiple online videos. Each lesson was divided into 3-5 topics and recorded as topical videos of 10-20 minutes each. These videos were then shared with the students on a weekly basis through the school's Learning Management System (LMS).

In the FC model, students view the online videos ahead of the class to prepare for it and attempt a formative quiz in the LMS, designed especially to match content of the videos, to verify their understanding of the concepts taught. During the class, instructors would typically review the quiz results and clarify students' common areas of misconceptions. Students will then be given in-class exercises ranging from simple to complex programming activities to practice while being facilitated by 2 instructors and 2 teaching assistants.

Questions

This study aimed to (1) assess if the objectives of adopting FC model were achieved, (2) understand students' perspective of their learning experiences with the FC model, and (3) identify areas of improvement in the FC model for future implementation.

Method

To this end, an anonymous online survey was conducted at the end of the course with five classes. A total of 135 students (N= 200) completed the survey on a voluntary basis.

The survey of 20 questions consisted of a quantitative and qualitative sections. The quantitative section queried on (1) students' prior experience with FC, (2) current experience of FC (online materials and in-class sessions, time spent in self-study), (3) catalysts and inhibitors in using FC (flexibility, efficiency, technology), and (4) outcomes (comparison with traditional teaching, interest in FC). The qualitative section asked on the positive experiences with FC, areas to improve on and additional support needed.

Results

A summary of the results are presented here as positive experiences and areas of improvement in the FC model

Positive experiences

- 91% of students found the FC model to be more engaging than the traditional model
- 85% of students appreciated the flexibility offered by the FC model in learning anywhere, anytime, at their own pace and with more ownership of learning
- 84% of students found the online materials (videos, Power point and self-check quizzes) to be relevant and useful in preparing for the in-class activities
- 80% of respondents agreed that the classroom lessons provided more practice, student-instructor interaction and opportunities to clarify doubts
- 70% found accessibility to online materials easy
- 53% students reported that they spent more than 2 hours in self-study
- Finally, 87% of students were favourable in using the FC model for their next advanced programming course

Areas of improvement and suggestions

- 45% of the qualitative comments (100 comments) were on videos. Suggestions for improvements were that videos could :
 - be shorter
 - include interactive elements (activities)
 - have more consistency in production (level of details and sound)
 - have a short feedback questionnaire at the end
- 15% of comments revealed that students found self-directed studying to be challenging
- A few students noticed that some quiz questions were not covered in the videos.
- A few students suggested online-chats to clarify their doubts on videos and quizzes and to discuss additional practice questions with their peers
- 20% of the qualitative responses specified ‘nothing’ for areas to improve, suggesting satisfaction with the FC model

Conclusion

Overall, the FC model in the ISSF course seems to have met its objectives; students' responded that they were more engaged and active, and had more opportunities to practice programming and interact with instructors. Students suggested areas for improvements, especially in material preparation (videos and quizzes).

Given that this is a first year course, where most students have no prior IT background, and have not been exposed to FC pedagogy before (72%), the positive learning experience reported with the FC model is highly encouraging. Nevertheless, this can be improved further by guiding the students, who found the FC model challenging, to be better self-directed learners.

The presentation of the abstract will provide additional tips and strategies on implementing the FC model effectively.

References

- [1] Johnson, L., Adams Becker, S., Estrada, V., Freeman, A. (2014). NMC Horizon Report: 2014 Higher Education Edition. Austin, Texas: The New Media Consortium.
- [2] Mok, H. N. (2014). Teaching tip: The flipped classroom. *Journal of Information Systems Education*, 25 (1), 7-11.

Presenter

Nachamma is a Senior Manager at the Centre for Teaching Excellence, Singapore Management University, where she oversees the university-wide Blended Learning Programme and Emergency Preparedness Programme for Teaching and learning. She is a passionate educator, with extensive experience in teaching, faculty development, curriculum development, quality assurance, and educational research. She has worked in a broad range of learner-centered pedagogies such as problem-based, project-based and blended learning. She has also been an international consultant with organizations like UNESCO (Bangkok). Her research interest is in learner-centered, technology enhanced teaching and learning. She holds a Ph. D in Educational Psychology from Erasmus University, Netherlands.