Breaking the walls of a campus summer course for high school students with two MOOCs

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Abstract. This paper presents a case study of integrating two external MOOCs in a face-to-face (f2f) summer course for high school students. The aim of the study is to explore the design challenges emerged from this blended learning approach, the students' learning outcomes and satisfaction with the course content as well as investigating the students' behavior with the MOOCs once the f2f course ended. Results indicate that students learned through the course and were satisfied with the learning design. Moreover, some of them took advantage of the MOOCs once the campus course finished.

Keywords: MOOCs · Blended Learning · bMOOCs · Blended MOOCs

1   Introduction

Integrating MOOCs in a campus course allow students accessing to high quality material from top tutors all over the world as well as the opportunity to participate in a collaborative global environment [1]. The integration can range from a teacher who use her own MOOC in her f2f classes, to more complex forms of hybridization in which the teacher has not produced her own MOOC and the required course materials are drawn from multiple external MOOCs [2]. Different approaches of using MOOCs in a f2f course [4][5] have been reported but there is still a need of sharing these type of experiences as well as their associated challenges using different hybrid learning designs and in different educational contexts [5][6]. This research presents a case study that describes the integration of two external MOOCs in a one-week summer course for high school students. These types of scenarios employing resources from more than one MOOC and with young learners have been particularly underexplored. This research has two purposes: first, studying the challenges emerged from implementing a blended learning design using two different external MOOCs; and second, evaluating the resulting learning design – taking into account students' learning outcomes, students' satisfaction with the course content as well as their use of the MOOCs once the f2f course has finished. Regarding these two purposes, the study aims to answer three research questions: (RQ1) What are the main challenges that emerged from implementing a BL design using two external MOOCs? (RQ2) What are the students' learning outcomes and satisfaction resulting of this learning design? (RQ3)Once the f2f course finished, do students continue learning trough the MOOCs?

2   Methodology

Participants were 30 high school students (14-16 years old, six girls) enrolling in the summer course "Design and program your own video game!" within the Campus Junior (CJ) program at Universitat Pompeu Fabra (UPF). The educational objective of the extracurricular course was to explore the basic principles of programming as well as understanding and implementing the process of designing and developing computer games. The course workload was of 20 hours and took place between 11th and 15th July 2016 – four hours per day. The course used a LMS (Moodle) to articulate the course content with 19 videos from two MOOCs from two different universities (both from Coursera MOOC platform). Six videos were from the MOOC "*Videojuegos: de qué hablamos*" from the Universitat Autònoma de Barcelona (UAB). Whereas 13 videos were from the MOOC *"¡A programar! Una introducción a la programación*" from the universities of Universidad ORT Uruguay and The University of Edinburgh. Both MOOCs were running in parallel to the CJ course and finishing several weeks later.

At the beginning of the f2f course, teachers invited students to register to the two MOOCs. Each concept of the course was explained showing the video (usually an extract of it) in class to all the students (downloaded from Coursera, hosted in a private Youtube channel and embedded in the LMS). In some cases, students were asked to solve some small exercises between the explanations of two concepts. After explaining all the videogame and programming concepts, students were practicing programming with some guides about how to program small videogames. Finally, they designed and programed their own videogames in small workgroups and the last day of the course they presented them to all class.

The current study used five questionnaires to gather data. Once the course started, three questionnaires with the same ten questions (regarding specific content about programming) were used in three different moments of the week: the pre-test questionnaire was delivered the first day (and hour) of the course – before students received the first lecture – to know the initial knowledge of the students. The on-time questionnaire was given to the students during the two first days of the course. But instead of delivering all questions together, students were invited to answer each question just after the concept of the question had been explained by the facilitators trough the MOOC videos. The last day of the course, the post-test questionnaire was presented to students with the aim of knowing which concepts explained during the course they could remember. A fourth questionnaire was delivered to the students to collect their opinion about the use of MOOCs in the f2f classrooms the last day of the course. Moreover, a last questionnaire was sent half year after the course ended in order to know whether they had accessed the two MOOCs used during the CJ.

3   Results and discussion

During the preparation of the course we faced three types of challenges. First, the pedagogical hurdle of showing 19 short videos in class in only two days (with the video length mean of 6 min.). Even though we were playing part of the videos, there was the

concern of tiring the audience with so many videos concentrated in such a short time. To deal with this we delivered a multiple choice question after each video-concept (the on-time test) with the aim of softening the process of visualizing the videos at the same time that we were evaluating their learning, becoming a learning game process. The second challenge was related to legal aspects: the limitations of using Coursera courses for not private use. We were planning to project the videos directly from Coursera but we had to change this strategy in order not to violate legal terms. Finally, we asked for permission to the universities owners of the MOOCs to use the videos. We downloaded the selected MOOC videos and uploaded in a Youtube private channel in order to embed them in the LMS of the course. We cited the authors and the origin of all the content without exception. The third difficulty was managing three different platforms – Scratch webpage (students were programming with Scratch[1]), Coursera and the LMS – and at the same time offer them to the students in the most comfortable way. In addition to the MOOCs' videos LMS-embedding, the solution was to setting the links of optional content from Coursera in the LMS as well as the link to the Scratch webpage. In order for the links to Coursera videos to work, it was necessary for the students to have an open window of a browser with their Coursera session started. This links were set in order to engage students continue learning through the MOOCs.

The results from the pre-test, on-time test and post-test, indicate that students have performed better results in the post-test. The mean of correct answers per student in the post-test was 80.7%. Whereas in the on-time and pre-tests were 72.7% and 29.7% respectively. The mean of "do not know" answers per student in the pre-test was 50.7% while this number was reduced to the 2% in the post-test. The percentages of incorrect answers per student were similar in the pre and post-tests: 19.7% and 17.2% respectively. These results point to an increase of assimilated concepts during the course by students hence an improvement of their knowledge. Regarding their satisfaction, students scored the Scratch and videogame videos with a 7.9 and 7.7 out of 10 respectively. Furthermore, 50% of students like and 30% extremely like the use of videos in class whereas 46.7% agree and 33.3% extremely agree with the sentence: videos had been useful to understand the concepts of the course.

In the fourth delivered questionnaire, 10% of students stated that they will continue the Scratch MOOC with the intention of finishing it (13.3% for the videogames MOOC). However 30% of them expressed the intention of continuing it but without knowing if they will finish it (20% in the videogames case). Moreover, half of them (50% Scratch and 56.7% Videogames) indicated that they will just access to the MOOC to check some specific resources. Only 10 % of the students were affirming that they will not follow these MOOCs anymore. Finally, we found that out of those completing the fifth questionnaire (half year later, n=10) at least two students were accessing the MOOCs after the CJ course (one of them for consulting some materials and the other one finished the two MOOCs).

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[1] Scratch website https://scratch.mit.edu/

4   Conclusions

The type of challenges faced during the learning design process were essentially of pedagogical, technological and legal nature, as other studies have been reported [2][6][7]. The blended learning design used had positive results in terms of students' learning outcomes and satisfaction with the MOOC videos used. The intentionality expressed (of continuing learning through the MOOCs) was more optimistic than the results of what actually happened. Nevertheless, two students took advantage of the MOOCs after CJ. A further analysis considering the data from the MOOCs in Coursera could help to better understand whether students have interacted with the two MOOCs after the CJ course as well as crosschecking with their answers in the questionnaires. Moreover, it could be interesting exploring the results of applying the same design with other type of students (with teachers or graduate students).

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