The University of Edinburgh
Principal's Teaching Award Scheme

PTAS Project Report   (for REGULAR PROJECT GRANTS)

Project Title: Exploring flexible modes of online education

Project type (delete as appropriate) :
A Research Project (research focus on particular dimension of teaching, learning, assessment)

Principal Investigator : Dr Areti Manataki
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Project teams must submit a report within 4 months of the conclusion of their project.
Copies of dissemination material (eg journals/newsletter articles, conference papers, posters should be listed and attached (separate to the word count). The brief report will be published on the IAD web pages.

Report (maximum 1500 words)

What did you do?
This project aimed at gaining insights from Massive Open Online Courses (MOOCs) that adopted a novel auto-cohort course organization, before deploying such an innovative approach to UG/PG online teaching. Building on our learning analytics expertise, we investigated student engagement in auto-cohort MOOCs and how this particular mode of course delivery relates to students' learning outcomes. In particular, we 1) examined differences in engagement patterns and social dynamics between session-based and auto-cohort MOOCs, 2) observed the behaviour of returning MOOC students, 3) compared the engagement patterns of MOOC returners to students taking the course for the first time, and 4) investigated reasons for students to return/not return to the next course iteration.

What did you find out?
We focussed our analysis on two language-based variants of a University of Edinburgh MOOC in introductory computer science: Code Yourself (in English) and A Programar (in Spanish). We

found that Code Yourself and A Programar learners had similar engagement patterns, with A Programar learners remaining more active, regardless of the modality (session based or auto-cohort). Linguistic analysis of learners' generated content showed that across both modalities, Code Yourself learners tended to use more informal words (cognitive engagement). On the other hand, whereas A Programar learners used more positive and negative emotions words in the session based modality, it was rather opposite case in the auto-cohort version of the course (affective engagement).

When investigating the phenomenon of MOOC returners, we found that a large number of students returned several times to both Code Yourself and A Programar courses. Their engagement varied drastically over the different weeks, with student engagement dropping exponentially across course weeks.

By employing unsupervised clustering methods, we were able to examine students' patterns of engagement in their first and subsequent course enrolments. Overall, our findings reveal that a large number of students enrol to the courses several times, with very little engagement with the course resources.

Finally, we carried out surveys to investigate reasons to return/not return to the next course iteration for different student groups. A total number of 223 Code Yourself and 514 A Programar students participated in the survey, with the proportion of returners being 33% and 56%, respectively. The top two reasons for not switching to a new course session were "Lack of time" (38% for CY and 34% for AP learners) and "The first course session covered my learning needs" (29% for CY and 37% for AP learners). The top three reasons for switching to a new course session were "I wanted to complete the course", "I wanted to keep working on the course materials" and "Lack of time during the first session".

How did you disseminate your findings?

Part of the research findings were presented in the eLearning@Ed 2017 conference, which took place in June 2017. We are currently preparing two publications describing this work: the first paper will be submitted to the 41st annual conference of the Higher Education Research and Development Society of Australasia, and the second will be submitted to the British Journal of Educational Technology.

Our findings have been informally disseminated to our networks within the University (including the Schools of Informatics, Education and Information Services), as well as outside the University (including the University of South Australia, the Arizona State University, the Data Lab and others).

What have been the benefits to student learning?

Our findings related to student behaviour in session-based and auto-cohort MOOCs can inform the design of MOOCs in the corresponding modality, as well as the development of interventions for encouraging engagement with the course materials. One idea, for instance, would be to support MOOC returners in setting realistic goals for the new course iteration that they switch to, while reminding them about their original reasons for switching sessions.

How could these benefits be extended to other parts of the university?

The findings from this study can be useful when designing large-scale online UG/PG programmes in the University that adopt an auto-cohort course organization. Given the fact that a large number of MOOC learners enrol to a course several times while engaging very little with the course materials, our recommendation would be to limit the number of times a student can switch to a new session while at the same time supporting the switch to have clear and realistic goals. Ideally this support would be provided within the course platform rather than as external or third-party service.

Financial statement (please delete as appropriate):

This project has utilised the funding awarded to it by the PTAS adjudication committee and the Principal Investigator or School Administrator appropriate can provide financial statements showing the funding usage as and when required by the UoE Development Trusts who may require it for auditing purposes.

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