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Professional Learning in Massive Open Online Courses (PI-MOOC)

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Littlejohn, Allison and Milligan, Colin (2014). Professional Learning in Massive Open Online Courses (PI-MOOC). Bill & Melinda Gates Foundation.

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MOOC Research Initiative Final Report

Project Title: Professional Learning through Massive Open Online Courses

Project Details

Project Lead: Allison Littlejohn

Project End Date: March 31 2014

Project Budget: \$24702

Research Questions

The project sought to address three research questions:

- *RQ1 How are MOOCs currently designed to support self-regulated learning?*
- *RQ2 What self-regulated learning strategies and behaviours do professionals adopt?*
- *RQ3 How can MOOCs be designed to encourage professionals to self-regulate their learning?*

Findings

The study commenced with a **review of the literature on self-regulated learning (SRL) in online contexts**. In MOOCs, the learner is required to take greater responsibility for managing and self-regulating their learning. Our review highlights a number of studies that provide insight into the design of online experiences that promote or support SRL, many of which would be applicable in MOOC design. A draft of the SRL Literature review will shortly be available on the project web site. The findings of the literature review were used to inform the development of the **Design Team Questions Tool**, an audit instrument to explore the design decisions underlying MOOC environment and learning design. The audit tool was used to collect data for the current study, and the current version of the instrument is available online (see below) for others to use and refine. The main data collection phase of the study involved the use of a **quantitative instrument followed by a set of semi-structured interviews**. The quantitative instrument (413 respondents) was used to identify high and low SRL learners for the interview phase. It was also used to collect views on motivations, expectations, and interaction within the MOOC. A range of motivations and expectations were observed. Data analysis for this segment is ongoing, although initial results suggest that high SRL learners were able to articulate more specific motivations and expectations than low SRL learners irrespective of motivation/expectations. Descriptive data summaries for the quantitative data set are available from <http://tinyurl.com/PL-MOOC-DataSummary> (PDF). 35 interviews exploring learning behavior in the MOOC were conducted. The interviews highlight a mismatch between expectations and motivations - which are largely focused on professional needs, and goals articulated -which centre on participation and completion. We interpret this finding as evidence of mismatch of course design to learner needs, with the course design and format causing the learners to adopt a more passive approach to learning. A preliminary analysis of the interview data has been submitted to IRRODL (copy available on request). Other data analysis is in preparation for publication in a high quality research journal (open access if possible). Further outcomes will be shared via social media and the project web page.

Conclusions

RQ1 *How are MOOCs currently designed to support self-regulated learning?*

While MOOC designs take a variety of shapes and forms, the Fundamentals of Clinical Trials MOOC represents a course design typical of the key MOOC providers (e.g. edX, Coursera, FutureLearn), therefore we can build some generalizable conclusions. From our observations, the highly structured MOOC design focuses on content provision, which the participants are very positive about. However the structure does not encourage participants to act in a self-regulatory manner. If anything, participants, even those with high self-regulated learning ability, tend to limit their activity to reading/ interacting with course content, overlooking opportunities to integrate theory with practice. For example, there is no or limited provision for learners to choose their own goals, to personalize their learning experience or to integrate course content with their own experience within the course structure. Although the course discussion forum is intended as a space for communication and interaction, usability issues, coupled with learners' perception of the discussion forum as being outside the core of course participation together mean that the level of interaction within the course is poor for most participants. MOOC design should enable and encourage learners to actively initiate self-regulatory behaviours. However, there are cultural issues around formal learning and motivational factors for the learner (e.g. the learner may be motivated to gain credit or to have a general overview of the concepts, rather than to develop expertise) that influence learning behaviours and strategies.

RQ2 *What self-regulated learning strategies and behaviours do professionals adopt?*

The participants in our study demonstrated a range of SRL ability based on their completion of the SRLMQ profile instrument. From analysis of quantitative data we saw evidence of high-SRL learners presenting more precise goals and expectations, whatever their motivation for taking the course, than low SRL learners. From qualitative data, we observed that Professional learners tend to conform to passive behaviours in a highly structured MOOC design. Learners focused on activities such as watching videos and taking tests, with little evidence of learners relating new knowledge into practice, or of connecting to their peers through the discussion board. Learners should take specific actions to develop theoretical and practical expertise by integrating scientific knowledge developed through formal learning with practical knowledge learned through on-the-job learning. Learners should develop relational and self-regulatory expertise through interactions with the diverse range of participants in the MOOC.

RQ3 *How can MOOCs be designed to encourage professionals to self-regulate their learning?*

MOOC providers and designers should recognize that to be effective, professional learning should provide opportunities to integrate theoretical and practical knowledge. There must be a cultural shift around conceptions of learning and teaching and of learner and teacher roles to capitalize on the experience and expertise that professionals bring to their learning (see related work by this group: Littlejohn, Falconer and McGill (2014) 'Open life-wide learning: a vision' In Littlejohn, A. and Pegler, C. (Eds) *Reusing Open Resources*, Routledge, NY). The three main sources of data (the findings from the SRL literature review, the Design Team Questions tool, and the qualitative and quantitative data sets) were used to develop a set of recommendations for design of MOOCs to support professional learning. The first three recommendations focus on improving the link between theory and practice in line with principles of integrative pedagogy (Tynjälä & Kallio, 2009). The second three recommendations focus on capitalizing on diversity and encouraging the development of regulatory expertise (also in line with the principles of integrative pedagogy). These **recommendations** are summarized below, with further detail at: <http://tinyurl.com/PL-MOOC-recommendations> (PDF).

The design of MOOCs that seek to support professional learning should (where possible):

1. Enable professional learners to link theory learned in the MOOC with their work practice by setting personal goals, or personalizing course goals. The integration of expertise developed through the MOOC with expertise through professional practice could lead to improved learning.
2. Help professional learners to reflect on the knowledge gained from the course and how it may be embedded into their work practice before the end of the course.
3. Support professional learners to continually monitor their learning to determine its ultimate value beyond their immediate learning experience.
4. Capitalize on the diversity of motivation, expectation, and prior knowledge and experience that is inherent within all MOOC cohorts.
5. Encourage professional learners to discuss ideas from the course with co-workers in their external professional network as well as with other learners on the course.
6. Utilize the existing knowledge and experience that professional learners bring to the learning context.

Limitations: the key limitation of the present study is that it explored just one MOOC (we made a conscious decision to focus on understanding one MOOC in detail) and therefore it is difficult to generalize from the findings. We are currently preparing to undertake parallel studies which will address this limitation

Dissemination

Papers submitted for publication

Milligan, C., & Littlejohn, A. (submitted). Supporting Professional Learning in a Massive Open Online Course. Paper submitted to *IRRODL* for special issue (*submission available on request*).

Planned submissions

At least one further paper is planned detailing the quantitative data collected by the project and focusing more closely on SRL behaviours. Other data collected by the study will be reviewed in the coming weeks and either submitted to OA journals or shared via the project web site.

Presentations of project ideas and findings.

1. Public Lecture (AL): Technology-enhanced Professional Learning, Oxford Learning Institute, University of Oxford, UK 28th November 2013
2. Professional Learning in Massive Open Online Courses, Bill & Melinda Gates MOOC Research Initiative Conference, Arlington, Texas, USA, 5th December 2013. <http://tinyurl.com/PL-MOOC-MRI> (PPTX).
3. Milligan, C., Littlejohn, A., & Ukadike, O. (2014). Professional Learning in Massive Open Online Courses. in S. Bayne, C. Jones, M. de Laat, T. Ryberg, and C. Sinclair (Eds) Proceedings of the Ninth Networked Learning Conference, Edinburgh, UK, 7-9 April, 2014 p368-371. Available from: <http://www.networkedlearningconference.org.uk/abstracts/pdf/milligan>
4. Keynote (AL) : Learning Through Technology, Scottish Government, Edinburgh, UK 30 April 2014

Instruments

The 3 key instruments developed during the project are available for others to use (via figshare):

- **SRLMQ**: an SRL profile tool adapted from existing validated instruments and tailored to assess SRL behavior in MOOCs. <http://tinyurl.com/PL-MOOC-SRLMQ> (PDF)
- **Design Team Questions**: an instrument to audit MOOC designs based on SRL sub-processes described by Zimmerman. <http://tinyurl.com/PL-MOOC-DTQ> (PDF)
- **Semi-structured Interview Script** exploring learner behavior in MOOCs again based on the SRL sub-processes described by Zimmerman. <http://tinyurl.com/PL-MOOC-Interview> (PDF)

The project web site (<http://www.gcu.ac.uk/academy/pl-mooc/>) contains links to instruments and further outputs of the study – to be uploaded to and updated during early April 2014.

Future Work

The PL-MOOC study has collected valuable data but as outlined above, the study was limited in scope. Future work could adopt three complementary routes forward:

- A key challenge is to conduct a parallel study to explore whether similar patterns of behavior and conclusions can be observed in different MOOCs. This is currently being organized.
- Encourage others to take and respond to recommendations. We will disseminate the recommendations and engage with the MOOC design community to gain feedback and revise the initial version of the recommendations.
- The recommendations formulated from this study represent a significant departure to the design of most existing MOOCs, It would be exciting to seek funding to work with a MOOC provider (or alternatively a large organization, or professional body to gain access to specialist professional communities) to design a MOOC that implements the recommendations and the wider principles of integrative pedagogy to support professional learning.