Learning Online - Reflection, Engagement and Motivation (LOREM): Enhancing learner engagement in the MOOC environment

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Early conversations between the Library’s Research and Learning staff and lead discipline academics in the development of Monash University’s inaugural MOOCs centred around the characteristics of successful online learners, and whether participants would bring these capabilities to the course. Pedagogical considerations of how to bridge these gaps, especially given the high attrition rates in the MOOC environment, led us to create an online skills self-assessment survey tool and skills development resources for the MOOC participants. Our hypothesis is that learners who critically reflect on their capability and readiness for study in the MOOC environment, and are provided with resources and strategies to develop these skills, are more likely to stay engaged and satisfied, thus reducing attrition. Skills may then transfer to further study and more broadly to a strong academic self-concept that is vital for employability and lifelong learning. (Poce, 2014; Otten and Ohana, 2009)

As they enrolled into the MOOC, learners were invited to reflect on their readiness for study in this environment across a set of recognised skills that learners would need in order to complete the course successfully. (Andrews and Tynan, 2014; Stoter et al., 2014; Hart, 2012) The questions posed in the survey established a reflection-in-action (Schön, 1983, 1987) frame for learners across such skills as placing a value on interactive and
collaborative learning, interpersonal and communication skills, and self-direction and management. Resources and strategies were made available for learners to develop their capabilities in key areas to support their progress through the course, providing learners with opportunities to return to skills development materials as needs arose. At the close of the MOOC, learners were invited to complete a post-course survey, returning to and re-evaluating their skills development experience (Boud et al., 1985), enabling reflection-on-action (Schön, 1983, 1987). Our paper explores a model for a reflective approach to skills development for successful study in the MOOC environment that can be applied by other universities to their own online courses.

**Keywords:** skills development, learner engagement, reflective practice

1. **Introduction**

In 2014 Monash University offered its inaugural Massive Open Online Courses (MOOCs). The success of these MOOCs has been underpinned by the partnership between lead discipline academics in the Faculties of Information Technology and Art, Design and Architecture, the Faculty of Pharmacy and Pharmaceutical Sciences, Office of the Vice Provost Learning and Teaching, Library staff including Subject Librarians, Learning Skills Advisers and Copyright Advisers, and the platform provider FutureLearn. The collaboration draws upon existing expertise in relation to curriculum, pedagogy, skill development, generation of learning outcomes, copyright, resources and content. Early conversations centred around the characteristics of successful online learners, and whether participants would bring these capabilities to the course. Pedagogical considerations as to how to bridge these gaps led the Library Research and Learning staff to devise a tool inviting participants to reflect on their capability for learning online, and providing them with strategies for skill development where required. Drawing on their professional expertise working with diverse student cohorts, the development team designed a comprehensive resource for online learners to critically reflect on their readiness for study in the MOOC environment, providing feedback, e-resources and strategies to develop these skills. This self-reflective tool was implemented in the Monash University Science of Medicine MOOC with the intention to re-run in the next course of the same MOOC. The development team will then review the preliminary research data, the pre and post-course questionnaires and revise to incorporate further longitudinal research.

This paper reports on the experience of designing, developing, implementing and evaluating the Learning Online: Reflection, Engagement and Motivation (LOREM) tool in the Science of Medicines MOOC where the tool was delivered in its entirety. LOREM incorporates a pre-course skills self-reflective questionnaire that generates personalised feedback and referral to appropriate skills development resources for MOOC participants, to enhance their engagement with the course and their motivation to complete. Participants are also invited to undertake a post-course questionnaire to reflect on their skill development. The pre-course skills self-reflective questionnaire was designed to prompt students to ‘reflect-in-action’, or ‘think on their feet’, as they considered their confidence across the key skills required for successful study in the MOOC (Schön, 1983, 1987). Similarly, the questions in the post-course skills questionnaire were designed to challenge students to ‘reflect-on-action’, or ‘step back’ and explore and engage with their learning process in the MOOC (Schön, 1983, 1987).
We sought feedback from participants on their experience of the LOREM tool and resources. We triangulate our observations with a review of scholarly literature on the characteristics of successful online learning, and draw on qualitative and quantitative data from the first iteration of LOREM.

Our early data from this innovative practice reveals that there are two broad areas of capability for successful online learning: 1) motivation and self-management and 2) willingness to interact with other participants in the online learning space. This is supported by recent research into the characteristics of learners in a variety of contemporary online learning environments (Andrews and Tynan, 2014; Dabbagh, 2007; Stoter et al., 2014; Hart, 2012). Key to reinforcing these effective study skills is the capacity for students to critically reflect on their skill level, and add to their repertoire of skills for future experiences, thus bolstering life-long learning capability (Schön, 1983; Boud, Lawson and Thompson, 2013). Our early analysis of LOREM data suggests that the participants valued the opportunity to reflect on their readiness to study in the MOOC and access resources to develop the necessary skills to engage in the online learning environment. The qualitative feedback collected from the pre and post self-reflective questionnaires indicate that weaknesses in two key areas of motivation/self-management and interaction/participation made it difficult for participants to maintain engagement. A third key characteristic of successful online learners emerged from the qualitative data: persistence. We will target skill development in this area in future iterations of LOREM.

This paper concludes with a discussion on the challenges and limitations of the first iteration of LOREM and recommendations for future development of the tool. It is recognised that the research data from this activity is preliminary only. More conclusive data on the implications of explicit skill development for learner retention in the MOOC environment, and the transferability of these capabilities to lifelong learning, will be drawn from proposed longitudinal studies in this area as our MOOC provider intends to include LOREM across all future courses.

2. The successful online learner

Online learning tends to attract non-traditional learners facing a range of life circumstances. These learners often have competing demands on their time and “undergo many sacrifices to get an education…Motivation is a driving factor that influences their performance” (Bui & Sankaran, 2001). Online students are more likely to drop out of an online course than students in traditional courses (Diaz, 2002). Factors affecting learner engagement include time constraints, work and family commitments, a lack of familiarity with digital technologies, a lack of experience with self-directed study, and low motivation. Strong intrinsic motivation is required within the MOOC setting where there is often little extrinsic motivation such as a formal certificate or degree (except in courses in which participants have the option of earning a formal certificate of completion for a fee).

Successful online learners possess a strong locus of control which is vital for self-management (Kemp, 2002). Autonomous and self-directed learners are capable of monitoring and regulating their own learning, crucial in the MOOC environment where there are limited opportunities for guidance and feedback from the teacher (Diaz and Cartnel, 1999; Diaz, 2002; Dabbagh, 2007). While Diaz (2002) argues, “a significant trait of the successful online student [is] a strong independent learning style”, feedback from the Science of Medicines
MOOC indicates that those participants whose preference was for learning independently did not necessarily value participating in online activities with their peers. This participatory approach to learning is emerging as a feature of the contemporary online learner.

As well as possessing a high degree of motivation and a strong independent learning style, successful online learners are persistent (Kemp, 2002). Persistent learners have strategies to cope with challenges and can recover from inevitable setbacks in the learning process, particularly those faced in an online environment where some prior disciplinary knowledge is assumed. Persistence has been shown to be a key predictor of success in the online environment. As Ridley and Sammour (1996, cited in Diaz, 2002) argue, “online students who persisted in the courses expressed satisfaction with their educational experience and were more likely to enrol in subsequent online courses.” Persistence, motivation and independence determine how long a learner will persevere when faced with challenges online, how much effort they are willing to expend, and how resilient they will be when faced with setbacks (Kemp, 2002).

The traditional notion of the online learner as mature, independent and place-based is challenged by the growing access to online education and the changing demographic of the online learner (Andrews and Tynan, 2014). While the characteristics of the classic online learner are mostly relevant in today’s MOOC environment, such as motivation, self-direction, persistence and academic self-concept, the notion of the ‘digital learner’ is emerging to include digital literacy as an important characteristic for online learners (Stoter et al., 2014). Online learning activities increasingly require interpersonal and communication skills for the effective use of collaborative technologies where learners must share their work, interact with groups and collaborate on projects online (Dabbagh, 2007).

3. Methodology

As members of the Monash University MOOC development team, the Library Research and Learning staff recognised an opportunity to develop a sustainable self-reflective tool to scaffold skill development to becoming a successful online learner. An initial scan of various MOOC platforms, in conjunction with a literature search surrounding skill development in the online learning space, established that the development of LOREM and its utilisation in a MOOC environment is unique. FutureLearn welcomed the contribution of the Library’s expertise in skill development for student engagement, and agreed to implement LOREM as part of Monash University’s Science of Medicines MOOC in 2014 (https://www.futurelearn.com/courses/the-science-of-medicines). A low-risk human ethics clearance was obtained from the Monash Human Ethics Committee. The Library team designed a mixed methods questionnaire in two parts, the first, LOREM PRE, to be implemented prior to the course; the second, LOREM POST, following the course. The web-based Qualtrics instrument was selected for its analytics capacity. All data was collected anonymously. Table 1 outlines the components of LOREM.

<table>
<thead>
<tr>
<th>LOREM PRE</th>
<th>Questionnaire</th>
<th>Pre-course skills self-reflective questionnaire</th>
<th>Invitation to participate and link in FutureLearn ‘month to go’ and ‘week to go’ emails</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback</td>
<td>Participants’ responses to the questionnaire generates</td>
<td>Available immediately upon completion of question</td>
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Table 1: LOREM components
FutureLearn sends a ‘month to go’ and ‘week to go’ welcome email to all enrolled registrants in a MOOC from the lead educator. The email outlines expectations and suggested resources for the course. FutureLearn agreed that LOREM PRE provided a valuable resource to encourage engagement amongst participants, and that it was optimum to provide the resources in the month prior to allow time to reflect and practise before course commencement. LOREM POST encourages participants to reflect on how their experience in the course affected their confidence in their capabilities for successful online learning.

The intention of the LOREM PRE questions (listed in Table 2) is to encourage self-reflection by participants of their skills and raise awareness of any gaps they might have for readiness to study in a MOOC. The LOREM pre-course questionnaire is designed to gather data and generate tailored feedback to participants according to their responses. This feedback provides suggested strategies for skill development and links to recommended resources to enhance reflection, engagement and motivation. The resources are carefully selected and reviewed for their currency, quality and relevancy. For example, the following response appears for Question 3 (see Table 1):

You may be used to a traditional teacher centred approach to learning. The role of the teacher in the MOOC is limited. As a learner in a MOOC you will have the opportunity to become much more self-directed and independent. This means you can make the most out of the learning experience by going through the learning steps at your own pace and finding opportunities to share your thoughts and ideas with other learners in the discussions. This way you’ll be able to get the most out of the MOOC.

Online resources are linked to each question in LOREM PRE. Respondents may click on the link to view learning material or download it to their devices. Learners are able to access the resources before the MOOC commences, and also during the course.

For each of the following items respondents are asked to indicate if they agree, disagree or are unsure of the following statements (see Table 2).

<table>
<thead>
<tr>
<th></th>
<th>I am able to stay self-motivated and focussed on my study.</th>
</tr>
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<tbody>
<tr>
<td>2</td>
<td>I can manage my time and follow a study plan.</td>
</tr>
<tr>
<td>3</td>
<td>I work best with close guidance, feedback and direction from a teacher.</td>
</tr>
<tr>
<td>4</td>
<td>I enjoy looking “below the surface” and exploring the deeper reasons behind things.</td>
</tr>
<tr>
<td>5</td>
<td>I am confident that I will be able to interact with my fellow learners online.</td>
</tr>
<tr>
<td>6</td>
<td>I believe that participating with others in learning activities improves my learning.</td>
</tr>
</tbody>
</table>
The LOREM POST questions are listed in Table 3. LOREM POST questions 1-7 align to the LOREM PRE questions, asking participants to reflect on the change in their confidence across the capabilities as a result of undertaking the MOOC. Questions 8-10 are targeted at those participants who had completed LOREM PRE to gather feedback on the value of LOREM PRE resources. Questions 11-12 were created to collect qualitative responses on participants’ online learning experience.

Table 3: LOREM POST skills self-reflective questionnaire questions

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My ability to stay self-motivated and focused on my study has improved with this MOOC.</td>
</tr>
<tr>
<td>2</td>
<td>Having participated in this MOOC, I am now better at managing my time and creating and following a study plan.</td>
</tr>
<tr>
<td>3</td>
<td>Having participated in this MOOC, I now feel more confident working independently without close guidance, feedback and direction from a teacher.</td>
</tr>
<tr>
<td>4</td>
<td>I now feel more confident looking below the surface and exploring the deeper reasons behind things.</td>
</tr>
<tr>
<td>5</td>
<td>I am now more confident interacting with other learners online as a result of having participated in this MOOC.</td>
</tr>
<tr>
<td>6</td>
<td>I believe that engaging with other learners in this course benefited my own learning.</td>
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<tr>
<td>7</td>
<td>Participation in this MOOC has made me more confident of my English language skills.</td>
</tr>
<tr>
<td>8</td>
<td>Completing the Pre-Course Skills Self-Assessment raised my awareness of the importance of study skills for effective learning online.</td>
</tr>
<tr>
<td>9</td>
<td>Did you access any of the recommended materials provided with the Pre-Course Skills Self-Assessment? If so, please indicate which ones by marking the list below.</td>
</tr>
<tr>
<td>10</td>
<td>Did you find these resources useful? Please comment briefly.</td>
</tr>
<tr>
<td>11</td>
<td>What was the most significant change in your study skills or approach to study as a result of taking this MOOC?</td>
</tr>
<tr>
<td>12</td>
<td>Are there other skills or strategies that are important to participating in a MOOC which have not been mentioned?</td>
</tr>
</tbody>
</table>

4. Findings

The Science of Medicines MOOC attracted 10,900 initial enrolments of which 4,800 commenced the course. 2000 participants completed week 1, a baseline measure of engaged and motivated participants (Trumbore, 2014). Of those 2000 participants, 920 completed the six-week MOOC. This represents 46% of our baseline measure, a higher than usual retention rate.

1100 participants completed the FutureLearn demographics survey in week one. Around 75% were recruited from English speaking countries. 70% held at least a Bachelor degree, 55%
reported having studied in an online course before, and 41% had studied in a FutureLearn MOOC before. These figures are reflected in comments made by participants in the LOREM POST questionnaire where they offered the following insights:

“I am well used to this mode of learning having completed my first degree and my post grad in this manner.”
“I’m a regular to MOOC.”
“I have already done several MOOCs and obtained my first degree and masters degree from the Open University.”

4.1 LOREM PRE results

In total 565 participants attempted LOREM PRE, 512 of whom completed all seven questions. Interestingly, only 6% gave “optimal” responses to all seven questions, in terms of readiness to undertake online study. 61% of respondents did not respond negatively to any of the questions. 28% gave one negative response, and 11% gave between two and four negative responses. None of the respondents indicated a lack of confidence across all seven questions.

As illustrated in Figure 1, in four of the seven questions, a majority of the respondents indicated confidence in their skills: motivation and focus on study (Question 1); time management (Question 2); deep learning (Question 4); and English language skills (Question 7). Responses to the other three questions were more varied. Question 3, on independent study, produced the greatest spread of responses, with 25% of the respondents indicating
confidence in working independently, 25% indicating a lack of confidence, and the remaining 50% offering a neutral response.

A cross-tabulation of Questions 1 and 2 revealed that a large majority of participants were confident in the areas of time-management and self-motivation, with 73% of learners giving positive answers to both questions. Only 5% of learners gave a negative answer on time-management. 4% gave a negative answer on self-motivation, and 2% gave negative answers to both questions. Question 5 and 6 cross tabulations revealed a pattern in the responses on confidence to interact with other learners online, and the perceived benefit of engaging in social learning. 36% of learners gave positive responses to both questions. However, 28% gave unsure or negative responses to both questions. These figures support the suggestion that online learners are often strong independent learners who enjoy learning alone.

4.2 LOREM POST results

LOREM POST was attempted by 147 participants, 139 of whom answered the seven questions on skills development. Figure 2, below, illustrates the responses. Due to the anonymity of the pre- and post-course questionnaires, we cannot match student responses across the two. A high risk human ethics application may be required in the future, to gather identifiable data that can be used for comparison. Nevertheless, general trends can be observed.
80% of respondents indicated their confidence in one or more of the seven skills had improved as a result of their experience in the MOOC, and 27% of respondents reported increased confidence in at least five of the seven skills.

The most divisive question in LOREM POST was the impact of the course experience on participant’s confidence with English. 16% of participants reported that the course increased their confidence, with two participants reporting language development was the most significant skills outcome of the course: “I feel more confident when talking in English”, and “I would say making my English skills much better”. However 29% reported that the experience undermined their confidence, by far the highest number of negative responses. While no participants explained this feedback, it is likely that the scientific and discipline specific nature of the course may have proved particularly challenging to participants from a non-English speaking background.

Negative responses regarding the impact of the MOOC experience on confidence levels, excluding the English language question, were given by 27 (18%) learners. 20 of these participants gave a negative response to a single question, while just five participants were responsible for 23 of the 57 negative responses received. Only one of these five participants gave an explanation for their negative experience, and that was to criticise the level of the Chemistry in the course, and the lack of links to supplementary learning materials.

Focusing on the three questions of most concern to participants in LOREM PRE, 46% of learners indicated increased confidence in independent study (Question 3), compared to only 4% who indicated less confidence.

Increased confidence levels in interacting with other participants (Question 5) were reported by 50% of learners, compared to just 8% who indicated less confidence. Social learning in the course had benefited participants’ individual learning (Question 6), with 58% of learners reporting that positively, compared to just 3% responding negatively. 43% of learners responded positively to a cross-tabulation of both questions (compared to just 2% who answered negatively to both). Indeed, when asked about the most significant change to their approach to study as a result of their MOOC experience, several participants commented on the benefits of taking part in the course discussions:

"Being able to learn from other users’ comments online, which allowed me to explore other topics I had not considered before."
“Reading the comments of others and participating in online discussion.”
“Partaking in the feedback with other students as I found their discussions enlightening and reinforcing my own thoughts in many instances.”
“I decided that on my next course I would participate by posting up comments.”
“Appreciating the benefits of actively taking part in discussions and debates”.

LOREM POST asked learners to what extent completing LOREM PRE raised their awareness of the importance of study skills for effective learning online. 112 learners answered this question, of whom 51% responded positively, 36% gave a neutral response, and just 13% responded negatively. Learners were asked to indicate whether they had accessed any of the ten resources recommended in LOREM PRE. Overall, 45 participants reported accessing at least one of the resources, and 27 participants reported accessing at least
three of the resources. The resource accessed most frequently (n = 31) was the generalist article *Online Study: Skills for Success*, published by SeekLearning.com.

The final question in LOREM POST asked participants about other skills or strategies that are important to participating in a MOOC that were not covered in LOREM PRE. The most common theme arising was the need for participants to have confidence in attempting a course in a discipline new to them, and the ability to persevere with the course when the content was challenging. For example:

“Never taking the view that anything is too difficult”
“Patience. The course started with some very new and somewhat difficult chemistry, but I didn’t panic. I went over it several times and then went on.”
“It’s OK to step out of my personal ‘comfort zone’ to study another topic.”
“Tackling something that is a bit more challenging and outside my normal area of study.”

The importance of online communication skills, or “netiquette”, was also raised, making clear the distinction between participants having the willingness to interact online, and the skill to do so in an appropriate manner:

“Knowing how to communicate online, which is different from face-to-face”
“Tolerance of other people’s comments - there appear to be some people who could be very negative”
“One strategy is the ability to accept other learners and not denigrate them in the comments if they are having some difficulties. A MOOC contains all levels of learners and that should be accepted. If you cannot help someone practically, say nothing.”

As a result of this feedback, two additional questions and resources will be added to the next iteration of the LOREM PRE, addressing persistence in the face of challenge, and confidence using new technologies.

5. Discussion, limitations, challenges

Three key themes emerged from the results of LOREM. The first was that learners entered the MOOC overwhelmingly confident of their time-management skills and motivation to study in the MOOC. Responses to the LOREM POST question “What was the most significant change in your study skills or approach to study as a result of taking this MOOC?” included comments such as “Learning to set aside time for self-directed study”, and “Assigning time to my learning rather than it occurring in spare moment”. Many responses to the question “Did you find these resources useful?” indicated that this cohort, with its high proportion of prior learners, possessed a strong intrinsic motivation to study for enjoyment and lifelong learning. However, the attrition rate suggests that these key capabilities remain a perennial issue for many in terms of maintaining engagement with the course.

The second theme to emerge from this study is that a significant number of participants reported that they were not confident to interact with their fellow learners online, nor did they value engagement with peers in the course to enhance their own learning. Comments ranged from “I love learning alone”, to “I dislike interacting as it keeps me from getting on with my studies.” However these areas represented significant growth in confidence through the
experience of the MOOC as many participants recognised the rich learning that can occur via active participation on online activities and discussions with peers.

Several respondents to the survey raised the capability of persistence as a predictor for success, and completion of the MOOC. This is the third theme to emerge from our study. Hart (2012) argues that “persistence as a phenomena, characterizes the constellation of behaviours, attitudes, skills needed by the student to successfully complete an online course.” Kemp (2002) correlates persistence to indicators of resilience, but not to previous experience in an online course, external commitments or life events. While it is arguable that resilience is a capability that can be taught, Hart (2012) characterises successful online learners who persist in their studies as ones who exhibit good time management skills and have the ability to establish good relationships with other learners.

In terms of enabling an authentic ‘reflection-in-action’ engagement with skill development in the MOOC, we recognise that the timing of the pre-course reflective survey and provision of skills development resources is ideally situated throughout the course as particular skills needs are identified by individual students. These resources are currently situated prior to course commencement at the four-weeks-to-go and one-week-to-go point, rendering the reflection more a ‘reflection-for-action’ rather than ‘in-action’. We are liaising with lead academics for future MOOCs to locate opportunities for reflection throughout the MOOC. Lead academics might incorporate a reflective question at the end of each week related to a skill such as time management, or interaction with peers, and direct them to the resources in LOREM. This approach would also guide the reflective process more explicitly, aiding an analytical and critical response to the learner’s experience of the MOOC that could be extended to any online resource that they may use for their lifelong learning (Boud et al., 1985; Poce, 2014; Otten and Ohana, 2009).

A focus on the three themes that have emerged from our study will enable future iterations of LOREM to provide online learners with a scaffolded approach to the development of these capabilities through the experience of the MOOC. The key limitation of our data collection is that we cannot identify respondents to the LOREM questionnaires, given the low risk ethics clearance, which does not allow for identifiable personal data collection. Thus we cannot compare the pre and post questionnaires as ‘like’ surveys to measure the growth in skill development of the cohort. For the purposes of a longitudinal study, the questions will be refined.

Two changes to the next iteration of LOREM have been considered for implementation. Firstly, adding two questions to LOREM PRE based on the data gathered from the first offering of Science of Medicines MOOC, thereby expanding LOREM PRE to nine questions; and secondly, using exactly the same wording from the nine LOREM PRE questions in LOREM POST, to make direct comparisons of the data more valid. As we refine the resource for the second iteration, we will be looking to implement a longitudinal study with a focus on the themes emerging from the data, and compare with other MOOCs. A future longitudinal study will analyse the potential of explicit skill development to contribute to employability skills and lifelong learning.

6. Future development/Conclusions
Learning online is no longer considered non-traditional (Clapper, 2010). The distinction between traditional, distance and non-traditional learners is converging as research is pointing to the emergence of heterogeneous group of online learners with diverse needs (Stoter, 2012). While pedagogical challenges are being driven by the emergence of the digital learner, there is no agreement in the literature on a typical profile of the successful contemporary online learner. While online learners may be more self-directed they also require scaffolding to assist them through to the process of gradual transition to becoming fully self-directed (Clapper, 2010). This requires facilitator intervention. In a MOOC scenario, where the role of the facilitator may involve minimal or no interaction with the vast number of participants, the pedagogical approach to the design of the MOOC gains importance. Scaffolded and sustainable skill development is key to ensure student engagement, where the resources are relevant, current, high-quality and pedagogically sound. As we refine the tool, we will seek further opportunities for participants to engage with the reflective activities as they progress through the course, and maximise access to resources.

The development team recognise that the hypothesis, that learners who critically reflect on their readiness for study in the MOOC environment, and are provided with feedback, resources and strategies to develop these skills, are more likely to stay engaged and satisfied, thus reducing attrition, has not been realised at this phase of the research. Initial analysis of the data indicates that respondents to the survey recognised the significance of these skills for successful completion of the MOOC. The current research strategy for LOREM will be applied to the next Science of Medicines MOOC and the next iteration of LOREM will collect equivalent and comparable data using mixed methodologies across the suite of FutureLearn MOOCS courses.

Significantly, there are a number of themes that have emerged as a result of the implementation of LOREM PRE and LOREM POST in the Monash University Science of Medicines MOOC that will be valuable to the methods and the methodology of the research on skills development in the MOOC environment. Despite the diversity of needs of online learners this early study has found three key themes emerging from the LOREM data that provide a broad focus for capability-building in the online learning space: 1) time-management and self-motivation, 2) participation and peer-learning and 3) persistence. These three areas of capability will inform the pedagogy of the LOREM tool for the next iteration of the ‘Science of Medicines’ MOOC and refined further for future applications of the tool in the FutureLearn platform.

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