

THE EFFECTIVENESS AND CHALLENGES OF MOOC FOR LEARNING

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Abstract

The capacity of new web technologies in the twenty-first century has prompted the advent of online education on a massive scale, capable of reaching large numbers of learners in an apparently effortless manner. Such massive open online courses (MOOCs) are basically extensions from the activities of distance education. Wawasan Open University (WOU) as an open and distance learning University attempted its first MOOC by offering an online action research course. In order to assess the effectiveness of the action research MOOC (arMOOC) as an online distance learning offering, this research examined the participants' perceptions regarding their learning experiences throughout the course. The research examined how the MOOC infrastructure, content and facilitation considerations aided in optimizing learner activities for learning. 368 participants from 10 countries registered for the course which comprised 4 modules offered for learning over a period of 3 months. Data was obtained from an online questionnaire. Overall, 18.2% of course participants rated the MOOC experience of this course as 'excellent', and 69.7% rated it as 'good'. The main challenge of this arMOOC was the sustainability of course participants for the whole duration of the course period and their completion rates. There was slow take up from initial launch. In addition, participations rate fell markedly as the course progressed. It was also found that learners registered more for downloading content rather than for participation.

Keywords: Action Research, Distance Learning, MOOC, On-line Courses, Course Design

1. Introduction

The unprecedented development of new web technologies in the twenty-first century has created the capacity for online education on a massive scale, capable of reaching large numbers of learners in an apparently effortless manner. Such massive open online courses (MOOCs) are basically extensions from the activities of distance education. The concepts of e-learning, on-line learning, distance learning and open learning were precursors to the development of MOOC. Their attributes were exponentially increased and expanded to handle unlimited participation and open access via the web. Wawasan Open University (WOU) is an open and distance learning University located in Penang Malaysia. It has from its very inception employed open and flexible learning on e-learning and on-line platforms to deliver and manage its higher education programs. With the advent of MOOC, it was a natural progression to extend its offering to a greater and more varied reach of learners globally. WOU attempted its first home-grown MOOC by offering an online action research course.

2. Research Objective and Research Questions

The objective of this study is to report on the experiences and challenges encountered in the process of implementing the MOOC in WOU. The research questions are as follows:

1. How was the action research MOOC effective for learning?
2. How did the challenges affect participation in the action research MOOC?

3. Review of Related Literature

3.1 Massive Open Online Course (MOOC)

The massive open online course (MOOC) was first introduced in 2008 and rapidly became an online learning trend in 2012 because of its great potential to reach learners. The MOOC can cater to limitless participation and open access on the web. It has the added advantages over traditional course materials such as filmed lectures, readings, and problem sets, through the interactive user forums to support community interactions among students, professors, and teaching assistants (McAuley et al., 2010). The MOOC, in this research, is regarded as a pedagogical approach to achieve students' effective learning. In order to assess the effectiveness of action research MOOC (arMOOC) as an online distance learning offering, this research examines the participants' perceptions regarding their learning experiences and their online activities throughout the event.

3.2 Theoretical Considerations in Creating a MOOC

The WOU MOOC Plan

The action research massive open online course (MOOC) is created by Wawasan Open University (WOU), with a grant awarded by the Commonwealth of Learning (COL), Canada. The intention is unlimited online participation and open access via the web. WOU also understands the need to equip the teachers with the skills to inquire into a particular pedagogical issue of current concern, with the aim of implementing a change in a specific situation, thus, enabling them to reflect on their own classroom practice and improve it.

The WOU MOOC Plan describes the attributes and aspirations that have been determined as desirable for the e-learning course to be effective. The plan was based on considerations of features and characteristics of the widely accepted theories and models of distance education and online learning (Zhang et al., 2011; Kong & Song, 2013; Drake, O'Hara & Seeman, 2015). Careful attention was given to the considerations of user-friendly infrastructure, facilitation and user-appropriate content of the MOOC as it would have a significant impact on deep and meaningful learning and thus improve student understanding, retention and completion rates (Garrison & Cleveland-Innes, 2005).

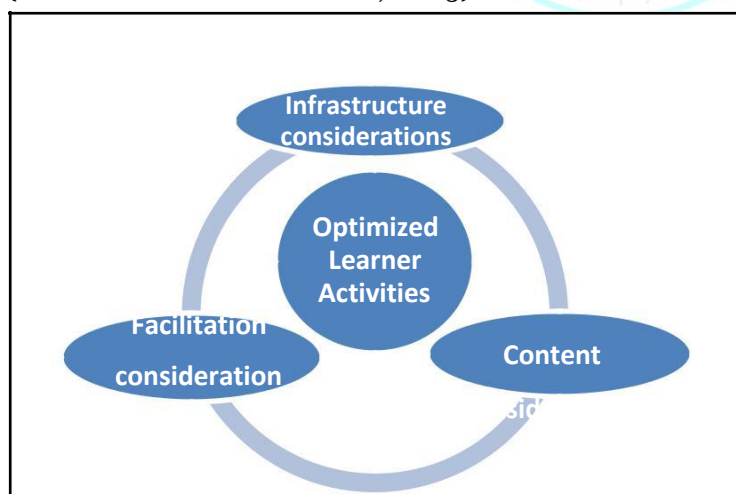


Figure 1: Theoretical Considerations in Creating a MOOC for Wawasan Open University

The central focus of the WOU MOOC Plan is optimizing learner activities in an online learning environment. All the infrastructure, content and facilitation considerations would, therefore, take into account the nature of online learners in terms of competences, prior knowledge, motivations and expectations and therefore, create a non-formal, ubiquitous and flexible community that support and encourage active learner engagement for an optimal learning experience (Figure 1). According to Sun et al. (2008), flexibility is viewed as an important factor in elearning satisfaction. The advantage of online education to learners is its flexibility in choosing the most suitable learning methods to accommodate their needs.

The interplay of the three important considerations for course design - infrastructure, content and facilitation - combine to create an interactive learning environment that shapes the learner's learning experience. These considerations, as well as the technical affordances of the course platform, are initially deliberated on by the course creators. These design choices reflect the assumptions of designers about the ways in which people learn. The main intention is to enable and enhance learner experiences in a way that best serves the needs of individual learners. For example, the content is presented in chunks, which presupposes more effective acquisition of knowledge in comprehensible inputs. Learners decide how they interact with the three elements to form an experience to suit their needs. This is manifested most clearly in the suite of interactive activities like reading course materials, doing learning activities, doing quizzes and assignments, checking suggested answers, and on-line participation. Within this interactive environment, learners control their relationship with other learners and the MOOC facilitators through their interactions with them. These choices about interaction and assessment are also driven by the learner's background and intentions.

4. Infrastructure considerations

The MOOC design was informed by an important characteristic of the Technology Acceptance Model (TAM) in voluntary technology adoption, which is ease-of-use (Davis, 1989). The assumption is that if learners find the technology infrastructure comprising the MOOC platform user-friendly and the content useful, then the possibility of learner retention is high.

WOU uses Moodle as platform to deliver the arMOOC. Within the capabilities of this platform, efforts have been made to make the learning environment intuitive, requiring only a short familiarization period. This includes the statements of course learning outcomes, introductory and welcome messages by course team, organization of the course contents, notes to familiarize with the learning environment, organization of the course site, the 2+1 weeks duration per module, visual design and layout of website, interactive course content, and award of badge for each module completion.

5. Course design considerations

In a research investigating critical factors influencing learner satisfaction, Sun et al. (2008) listed course quality as the most important concern in an elearning environment. Course content design and presentation appears to play an important role in students' perceived usefulness and ease of use of a course and will have an impact on students' satisfaction. Therefore, every effort was taken to incorporate the important principles of content design in this arMOOC to produce authentic activities to engage learners in realistic and meaningful tasks relevant to their interests and goals. The action research course incorporated Drake, O'Hara and Seeman (2015) five principles as a foundation to inform the MOOC course designers and course managers, in designing and developing the new course, namely - meaningful, engaging, measurable, accessible, and scalable.

This Action Research course consisted of four modules: Understanding Action Research, Starting Action Research, Planning the Action, and Writing an Action Research Proposal and Report. The course content was written in a friendly and simple language, intended for the bite-sized appetite of the online audience. Each module focused on the practices and applications in carrying out the action research. Chunks of information offered were followed by discussion activities applying the principle of applying what is learned.

5.1 Facilitation practice considerations

Facilitation is an important element in sustaining MOOC participation and engagement. This arMOOC has taken note of the essential facilitator features, like positive attitude, pedagogical content knowledge, interactive style and perceived availability (Hiltz, 1993), since the facilitator's behavior convey cues that motivates and shape students' experience (Mathieu, Martineau & Tannenbaum, 1993). The facilitator's role as instructor is important for effective learning in a technology-intensive learning environment (Webster & Hackley, 1997). On the other hand, Khalil and Ebner (2013) reported differing feedback about the satisfaction and importance of interaction between students and instructors, where students expressed negatively to the availability of many criteria of interaction whereas instructors who perceived certain interactivity criteria as unimportant and therefore, did not exhibit them.

5.2 Challenges of Participation in MOOC

The many challenges of online learning – for students, instructors, and administrators – have been researched and widely discussed (Shelton & Saltsman, 2005; Crawford-Ferre & Wiest, 2012). One main concern of the arMOOC implementers was the sustainability of course participants for the whole duration of the course period and their completion rates. This is a common concern. Onah, Sinclair and Boyatt (2014) compiled information on the University of Edinburgh's six MOOCs on the Coursera platform in January 2013. It attracted a total initial enrolment of 309,628 learners, 123,816 (about 40%) accessed the course sites during the first week ('active learners'), of whom 90,120 (about 29%) engaged with the course content. About 34,850 people (roughly 11% of those who enrolled) indicated completion. Although the percentage may be small, the actual number was still quite substantial. Hamtini (2008) observed that there is a high dropout rate because certain individuals lack the motivation and will-power to succeed in a self-study program, or interruptions from colleagues and the telephone may be a problem in the office. Others responded that there was lack of time.

6. Methodology

This research employed a retrospective measurement to assess learning effectiveness. Measurement of the course effectiveness is done after the intervention (arMOOC) is fully implemented, through the collection of post-intervention data at the point at which the intervention is sufficiently mature that it can be retrospectively measured. One on-line questionnaire was designed to evaluate learners' perceptions about the course infrastructure, course content and course facilitation. The questionnaire items were developed based on reading around the relevant literature (Welsh et al., 2003; Sun et al., 2008; McAuley et al., 2010; Khalil & Ebner, 2013; Klobas, 2014; Shearer et al., 2014). The effectiveness of the MOOC was measured through the fulfillment of learner expectations based on the learning outcomes made known at the beginning of the course. This provided indications about the effectiveness of the content. The user-friendliness of the infrastructures and the perceived presence of facilitation would be assessed by respondents to elicit indications of its effectiveness for learning. Finally, the learners' perceptions of the effectiveness of their online activities would provide an indication of what worked for them.

The questionnaire was launched online on the Qualtrics Survey Hosting platform. The respondents were sourced from all 368 participants initially enrolled in the arMOOC. An email blast was sent to all registered participants requesting their cooperation in completing the online questionnaire survey. The questionnaire survey link provided. Reminders were sent out twice within a two week period urging participants to respond. The initial and follow-up mailing generated 75 usable responses, making it about 20% response rate. The respondents' data were captured automatically in the Qualtrics Survey Hosting platform. It was then downloaded as raw data and presented in SPSS. Descriptive data analysis were conducted using the data analysis in SPSS

7. Results and Findings of the Study

Demographic Details

Altogether, 76 responses were collected from the online questionnaire survey, out of which the majority were students (N=34) and educators (N=29) (Table 1). Most of the participants were from Malaysia (N=58) with a small number from Trinidad and Tobago, Ireland, Zambia, India, Namibia, and Nigeria . 30 (39.5%) out of the 76 respondents were male, the rest (N=46, 60.5%) were female respondents. Most of the respondents (N=38, 50%) aged between 20 to 29 years old were students, 9 respondents (11.8%) were in the 30 to 39 years age group, 14 (18.4%) were between 40 to 49 years old, and 15 respondents (19.7%) were 50 years old and above. The older respondents were mainly educators and administrators.

Table 1: Crosstabulation of respondents' age by employment

		What is your current employment?				Total
		student	educator	administrator	other	
What is your age?	20 to 29 years old	33	4	1	0	38
	30 to 39 years old	1	5	2	1	9
	40 to 49 years old	0	10	2	2	14
	50 years old and above	0	10	5	0	15
Total		34	29	10	3	76

8. Effectiveness of MOOC for Learning

In answering the research question “How was the MOOC AR effective for learning?” this section will discuss how the MOOC met the course expectations, and how the infrastructure, facilitation and online engagement affected the MOOC learning. Data collected (Table 2) indicated that out of the 76 respondents, 43 of them did not participate in the modules and on-line activities. 33 respondents either participated in all the 4 modules (N=7), or participated in some of the modules (N=26). Data analysis was based on obtained from the 33 respondents who had participated in all or some of the modules

Table 2: Participation in the Action Research modules

Participation in the Action Research modules	Frequency	Percent
I participated in all the 4 modules	7	9.2
I participated in some of the modules	26	34.2
I did not participate at all	43	56.6
Total	76	100.0

9. Meeting the course expectations

Respondents were requested to assess the effectiveness of the action research course content in meeting their expectations. The MOOC Action Research course intended to facilitate and guide participants through the action research process. It was expected that upon completion of the course, participants would be able to achieve the learning outcomes laid out at the beginning of the course.

Table 3: Effectiveness of the action research course content

The effectiveness of arMOOC content for the learner	N	Mean	Std. Deviation
Able to explain the concept of action research	32	4.06	.948
Learn the ways to write an action research report	32	4.00	.842
Add to your knowledge about action research	30	4.00	.910
Able to plan an action research for improving practice	31	3.97	.706
Learn about reflection in action research	32	3.97	.822
Prepare an action research proposal	32	3.91	.856
Learn about data collection and data analysis	32	3.63	.976
Valid N (listwise)	29		

1 = very ineffective, 2 = ineffective, 3 = moderate, 4 = effective and 5 = very effective

Table 3 indicates that the arMOOC was generally quite effective in meeting learners' expectations, except for learning about data collection and data analysis. It is no surprise that learning and understanding about the concept of action research ranked highest in terms of mean score from the respondent (mean = 4.06). Module 1 of the arMOOC recorded the highest engagement of participants in terms of views and active participation, for example the activity report for sub-topic "The basic elements of action research" (Table 4) indicated the higher volume of traffic in terms of views and engagement among the participants. This would account for better learning when compared to the subtopic on "Data collection and data analysis" (Table 5)

Table 4: Activity report for sub-topic "The basic elements of action research"

Activity	Views and participation
What is action research?	639
The history of action research	337
Learning Activity 1.1	531

Table 5: Activity report for sub-topic "Data collection and Data analysis"

Activity	Views and participation
Introduction	16
Data Collection Methods	19
Activity 3.3	34
Ways of Analysing Qualitative Data	17
Activity 3.7	16

In addition, website analytics indicated that in the "self-introduction" forum at the start of the course, almost all of the 67 posts indicated the desire to learn more about action research to implement intervention to improve their classroom teaching. One of the course participants, RTR (pseudonym) wrote, "This course is important to me because I will gain insightful knowledge that would help me better understand how to use Action Research in education."

10. Infrastructure User-friendliness

Respondents were asked how the arMOOC infrastructures helped them to learn. The notes to familiarize with the learning environment appeared most effective in helping participants to learn (Table 6). The notes were placed at the beginning of Module 1 as a pre-course orientation for the participants. It was intended as a guide in order for participants to get the most out of this course, by explaining how the course and modules are being organized and how they may maximize on the benefits. The notes explained how participants may navigate around the Learning Activities, Assessment, Assignment, Discussion Forums, Suggested answers, Course Participants' Q & A, and also include handling communication Protocols and technical query / question /comments about the course material.

Table 6: Effectiveness of the structure and presentation of the MOOC action research course

Effectiveness of the infrastructure of the MOOC action research course	N	Mean	Std. Dev.
Notes to familiarize with the learning environment	33	4.15	.939
Introductory and welcome messages by course team	33	4.09	.980
Organization of the course contents	33	4.09	.843
Statements of course learning outcomes	33	4.06	1.144
Organization of the course site	33	3.82	.882
The 2+1 weeks duration per module	32	3.69	1.061
Visual design and layout of website	33	3.67	1.021
Interactive course content	32	3.66	1.066
Award of badge for each module completion	31	3.65	.877
Valid N (listwise)	31		

1 = very ineffective, 2 = ineffective, 3 = average, 4 = effective and 5 = very effective

Other features of the MOOC presentation that were useful were the introductory and welcome messages by course team (mean =4.09), the organization of the course contents (mean = 4.09) and the statements of course learning outcomes (mean = 4.06).

11. Facilitation presence in the course

Respondents were required to rate from "strongly disagree" to "strongly agree" about the effectiveness of facilitator services provided in this course (Table 7). Respondents acknowledged that the knowledgeableability of facilitators contributed to their learning. The responsiveness and contributions of facilitators to knowledge building also helped with participants' learning.

Table 7: Effectiveness of facilitator presence for MOOC learning

Effectiveness of facilitators for MOOC learning	N	Mean	Std. Deviation
the facilitators were knowledgeable	33	4.39	.827
the facilitators were responsive	33	4.24	.867
the facilitators were able to contribute to your knowledge building	32	4.22	.659
the facilitators were friendly	33	4.18	.882
the facilitators were approachable	33	4.15	.939
the facilitators' regular postings encouraged communication	33	4.09	.843
the facilitators were able to handle your issues	33	4.09	.947
the facilitators enabled individual interactions through emails	33	4.06	.998
the facilitators were able to moderate the discussions	33	3.91	.947

the facilitators were able to initiate direction for on-line discussion	33	3.88	.820
Valid N (listwise)	32		

1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree, and 5=strongly agree.

The facilitators have to be perceived to be constantly "on duty" (Hiltz, 1993) because learners may feel isolated and may, therefore, more often seek contact with the facilitator. Furthermore, because of the global reach of MOOC, learners' access occurs virtually 24 hours a day. They tend to perceive the class to be "in session" whenever they connect to it. The demands on the facilitators' time and energy in this virtual learning environment are thus, very taxing. But, their perceived availability can have an important influence on students' own reactions to the learning environment.

12. Promoting Active Engagement in online learning

Respondents were requested to answer how engagement in the MOOC action research course content helped them learn. Data indicated that sharing thoughts and ideas with other participants, reading comments of other participants and online engagement with facilitators were rated the most effective activities in enabling learning (Table 8). These activities involved interactivity and communication with other learners. The remaining activities which were moderately effective were more individualistic in nature. Research (Mcauley et al., 2010; Waard, 2011; Levy & Schrire, 2012) has stressed the importance of interaction and participation in helping students to construct their own knowledge, to develop their own ideas, and express themselves. Mak, Williams and Mackness (2010) suggested that interaction in MOOCs assist students establish a presence.

Table 8: Effectiveness of online activities for learning

	N	Mean	Std. Deviation
Sharing thoughts and ideas with other participants	32	4.00	.916
Reading comments posted by other participants	32	3.94	1.045
On-line engagement with facilitators	32	3.84	1.139
Reading responses posted by facilitators	32	3.84	.954
Reading the suggested answers provided	32	3.81	.998
Accessing the learning resources provided	32	3.78	.906
Completing the module assignments	31	3.77	.956
Reading the course learning materials	32	3.75	.916
Doing the quizzes self-assessment activities	32	3.72	.958
Doing the learning activities	32	3.69	.821
Valid N (listwise)	31		

1 = very ineffective, 2 =ineffective, 3 =average, 4 =effective and 5= very effective

Data obtained from 33 participants who completed all 5 modules regarding the overall experience of the course (Table 9) indicated that the arMOOC was generally a good experience (69.7%). A smaller percentage (18.2%) rated it as an excellent experience.

Table 9: Overall experience of this course

Overall experience of this course					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	6	7.9	18.2	18.2
	Good	23	30.3	69.7	87.9
Fair		4	5.3	12.1	100.0
Total		33	43.4	100.0	

One positive outcome of the course were two *memorably active participants* (de Waard et al., 2011), the first one who completed the course and progressed further on his own. He wrote back and reported that “*Due to my research proposal presented to the headmaster, now the (Education District Officer) ask me to give a sharing regarding to the research action. I think I want to take information from your module at the online course. Can I take it? And can (you) give an advice on what should I share with teachers. For your information, most of them do not know about research action.*” (Participant IMF). Another participant (female, teacher trainer) wrote an excellent piece of proposal that was a pleasure to read.

Completion in the arMOOC was pre-defined as having submitted all four assignments for the four modules which made up the whole course. Completion of each assignment will earn the learner a badge. When the learner has accumulated all four badges for the four modules, he or she will be awarded with a certificate of course completion. Welsh et al. (2003) reported that incentive for learners to complete the training, advancement towards a development goal, payment of overtime, or the use of a tracking system, were able to influence completion rates. In contrast, it seems that if courses are perceived to be optional or have little impact on the learner, lower completion rates will likely occur. The poor completion rate of the arMOOC indicates that the practice of issuing badges and certificates was not enough incentive for learner retention. Where there was no powerful rationale for completing a course, completion rates for technology-delivered training were lower than those for instructor-led classes (Welsh et al., 2003).

13. Challenges of arMOOC for Learning

Poor participation rate

This section addresses the research question “How did the challenges affect participation in the action research MOOC?” Although there were a total of 368 registrants, only 165 were observed to be active during the Module 1 offering, and the participant rate decreased to 43 for Module 2, 32 for Module 3 and 21 for Module 4 (Table 10). This indicated a slow take up from initial launch, and participation rate fell markedly as course progressed.

Table 10: Participant access to the Action Research modules

Modules	Module 1	Module 2	Module 3	Module 4
No. of participants registered	368	368	368	368
No. Of Participants who accessed the site	165	43	32	21

As mentioned earlier, Table 2 indicated that out of the 76 respondents, 33 respondents either participated in all the 4 modules (N=7), or participated in some of the modules (N=26). This appears to be a common challenge to MOOC courses in general. To borrow Onah, Sinclair and Boyatt’s (2014) succinct comment: “*many enrol; fewer start out; a small minority complete*”. In the end, 3 (1 male 29 years old, 1 female, both from Malaysia, and 1 male 46 years, Trinidad &

Tobago), completed the whole course. The reduced number of access in later modules affected the learners fulfilling their course expectations.

14. Reasons for poor participation rate

Numerous research on MOOC and online learning (Welsh et al., 2003; Hamtini, 2008; Sun et al., 2008; Khalil & Ebner, 2013; Klobas, 2014; Drake, O'Hara & Seeman, 2015) has observed the attrition in learner participation as the key challenge in sustaining the implementation of a MOOC. Clow (2013) suggested that the goals of students may not be aligned with MOOC goals. Grover et al. (2013) observed that the factors that limit MOOC participation included the lack of accreditation, lack of accessibility, differences in cultural norms and language barriers, technological and time zone challenges, information overload, and insufficient facilitation skills.

Respondents in this research were asked "What stopped you from fully participating in the course?" They were instructed to select all stated reasons that applied. The top 5 reasons for not completing the course were lack of time, poor internet connections to access the site, loss of momentum as the course progressed, difficulty in following the course in English Language, and inability to access the course materials (Table 11).

Table 11: Reasons for lack of participation in the MOOC AR

Reasons for lack of participation in the MOOC AR	N
I do not have enough time	43
I do not have good Internet connections to access the site	24
I lost momentum as the course progressed	20
I am not able to follow the course in English Language	19
I could not access the course materials	10
I am not interested	9
I was not really serious about the course - I was merely curious	8
I found the site not user friendly	5
There was not enough on-line support	5
I did not receive timely information about the course start date	5
I found the course content difficult to understand	4
I had personal issues due to unforeseen circumstances	4
I am not motivated	3
I found the course content irrelevant to me	2

Wang and Baker (2014) suggested that low retention may be due to a number of reasons. A learner may focus on learning a single specific skill and be uninterested in the rest of the course material. In this case, failure to complete may not be lack of student interest to complete, but disinterest in the course material. Onah, Sinclair and Boyatt (2014) suggested that the reasons for dropout could be due to no real intention to complete, lack of time, lack of digital skills or learning skills, unrealistic expectations and difficulty to catch up. Courses relying on peer grading may also have much lower completion rates. Welsh et al. (2003) observed that strong job-relevance and useful course content appears to be an adequate incentive for learners, who used the courses as quick job aids. That being the case, then learners may only complete a small portion of a course but find exactly what they need. This raised the question of whether learners use e-learning for training, performance support, or a combination of both.

Respondents were also directed to contribute their views about the course. In their comments, 22 respondents indicated that they registered with the intention of downloading content rather than for participation. These are the *lurking participants* (de Waard et al., 2011) who just follow the course, look at the available course resources and make use of them if they find them suited to their needs.

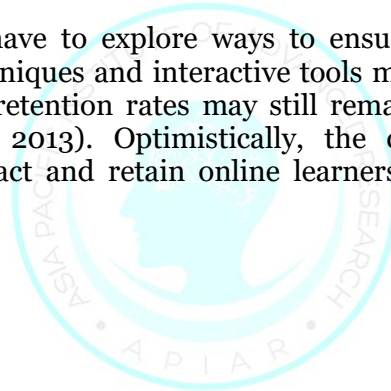
Conclusions

The WOU MOOC plan is based on the theoretical considerations of user-friendly infrastructure, facilitation and user-appropriate content to optimize learner activities in an online learning environment. It is hoped that such a plan would have a significant impact on deep and meaningful learning (Garrison & Cleveland-Innes, 2005) and thus, improve students' understanding, retention and completion rates.

Data indicated that the arMOOC was generally effective in meeting the learners' expectations except for the topic on data analysis. Sharing thoughts and ideas with other participants, reading comments of other participants and online engagement with facilitators were rated the most effective activities in enabling learning. These activities involved interactivity and communication with other learners. The notes to familiarize with the learning environment appeared most effective in helping participants to learn. Other features of the MOOC presentation that were useful were the introductory and welcome messages by course team, the organization of the course contents, and the statements of course learning outcomes.

There were challenges due to slow take up from initial launch, and participation rate fell markedly as the course progressed. It was noted that student registered more for downloading content rather than for participation. The practice of issuing badges and certificates was not enough incentive for learner retention.

Future MOOC offerings will have to explore ways to ensure student retention. Even if the employment of innovative techniques and interactive tools may have met with varying degrees of success (Kay et al., 2013), retention rates may still remain low and barely reach into the double digits (Adamopoulos, 2013). Optimistically, the continuous innovative efforts of education technologies to attract and retain online learners may soon hit upon an effective strategy.



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