DEVELOPMENT AND EVALUATION OF MASSIVE OPEN ONLINE COURSE (MOOC) AS A BLENDED LEARNING APPROACH IN HIGHER EDUCATION

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ABSTRACT – Massive Open Online Course (MOOC) is receiving a great deal of interests in recent years as a new paradigm of blended learning, flipped classroom, distance education and lifelong learning. Despite its popularity worldwide and well-recognized benefits, the major setback of MOOC as revealed by scholars is its high dropout rates. Hence, it is crucial for more studies to be done on MOOCs which are still lacking in the context of Malaysia and a blended learning approach. This research presents the process of developing MOOC as a blended learning tool in a higher education based on the ADDIE (Analysis, Design, Development, Implementation and Evaluation) model and its evaluation through a questionnaire adapted from Computer System Usability Questionnaire (CSUQ). Initially, past literatures were reviewed to identify successful MOOC criteria and a sample of 73 target users were also analysed to ensure that the MOOC to be developed can fulfil their needs and attract them to use. Findings showed that all 21 students who used the developed MOOC were satisfied with it showing high mean score for most of the questionnaire items. They expressed that the MOOC was a useful one stop centre for learning resources that capable in making their learning easier.

Keywords: MOOC; Development; Evaluation

1. INTRODUCTION

MOOCs refer to online courses that are opened to massive number of participants for free with no enrolment limit and it generally comprises notes, short video lectures, discussion forum, quizzes and progress report. When students complete a certain course, they will also be awarded with a certificate either for free or at minimum level of charge [1]. Since Ministry of Education in Malaysia anticipates transformation of common undergraduate courses into MOOCs to make learning more accessible and to practice blended learning [2], this technology can be

employed by educators to combine conventional education with online instruction. This can be an early practice before the MOOC is targeted completely online for larger crowd, distance learners and global audience which is in line with the vision of School of Professional and Continuing Education (UTMSPACE) towards becoming an international centre of excellence in lifelong learning. Since there are lack of studies in the context of

Malaysia and the use of MOOC as a blended learning tool, this research presents the process of developing and evaluating a MOOC as a blended learning approach in UTMSPACE Kuala Lumpur. As the development of this technology can be strenuous and costly, the findings of this research not only enrich existing literatures on MOOC, the results can also assist institutions and practitioners in developing MOOCs that can attract users to use.

2. MATERIALS AND METHODS

The main process for this research is as illustrated in Figure 1 which was adapted from the procedure used by prior literature based on the instructional design ADDIE model with some amendments to suit the context of this research [3].
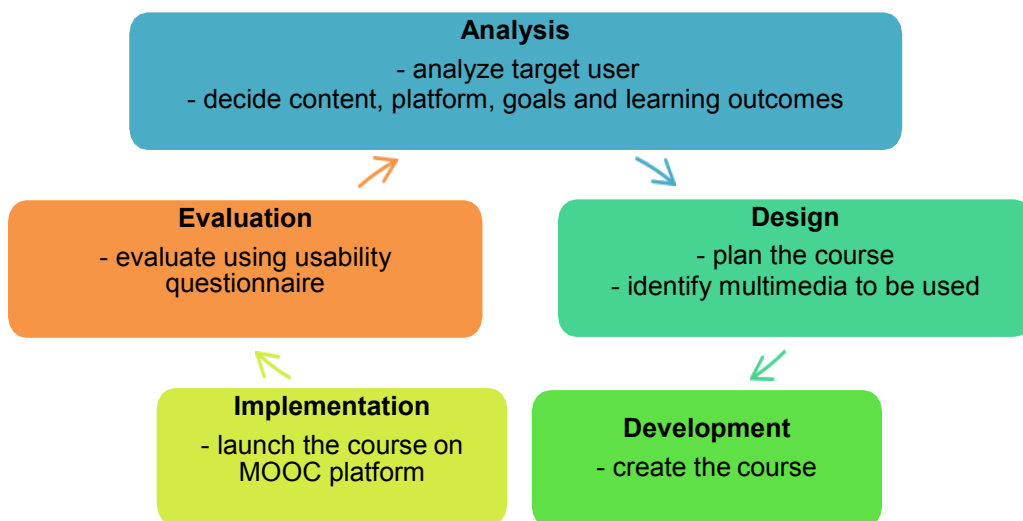
Figure 1.MOOC Development Process based on ADDIE model (Rodriguez-Ch et al., 2017)

Initially, Chemistry was decided as the subject of the MOOC as it was stated by past literature as one of the most difficult subject among students in a university [1]. Therefore, since the MOOC was targeted as a blended learning tool in UTMSPACE Kuala Lumpur, 73 diploma students who completed their Chemistry course in this university were analysed and some of the results were shown in Figure 2.
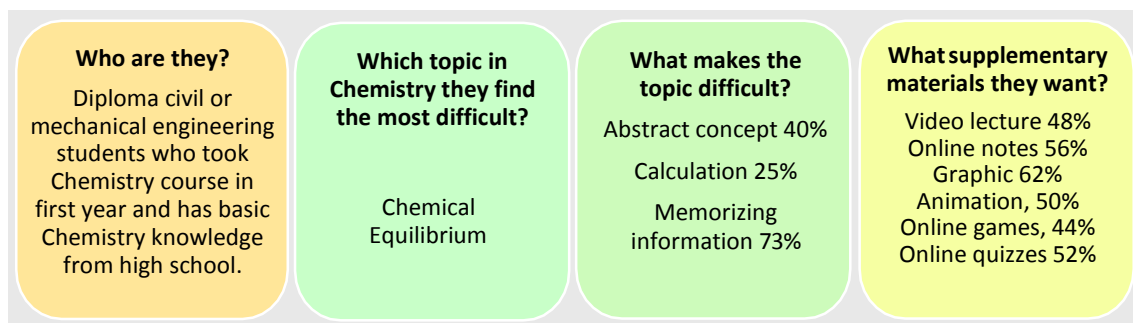

Figure 2. Some of the target user analysis findings obtained from 73 diploma students

The MOOC was then designed and developed according to the target users' needs as well as the learning outcomes specified by university. Apart from that, successful MOOC design criteria discussed by prior studies were also considered such as boosting students' motivation, encouraging peer supported learning, allowing social networking, understanding user's background and intention, offering instant feedback, engaging students as well as providing appropriate content, activities and assessment [2]. Some of the elements in the developed MOOC were displayed in Figure 3.
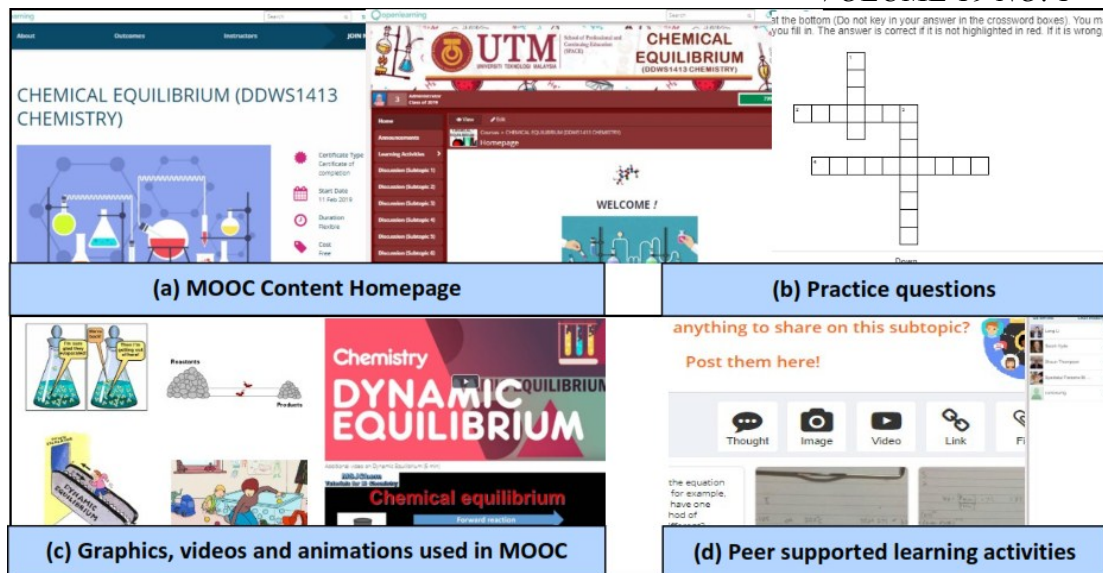
Figure 3. Some of the elements of the developed MOOC

Next, 21 first year diploma mechanical engineering students who currently took Chemistry course in UTMSPACE used the MOOC for 1 hour 30 minutes before they were asked to complete a questionnaire which consisted of respondent's demographic information, closed- ended questions and open-ended questions to gain insight on students' satisfaction towards the developed MOOC. The close-ended questions comprised 28 items modified from computer system usability questionnaire (CSUQ) [4] using a symmetric equidistant five-point Likert scale. The Cronbach's alpha value for all three categories namely MOOC usability, MOOC quality and MOOC interface exceeded the threshold value of 0.7 indicating that the items used for the questionnaire were reliable [5]. Descriptive analysis of the quantitative findings was done by using SPSS. 1.00 to 2.33 of mean was interpreted as low, 2.34 to 3.66 as medium and 3.67 to 5.00 as high [5].

3. RESULTS AND DISCUSSION

For MOOC usability category, 9 out of 11 items displayed high level of mean score including student's overall satisfaction with how easy and simple it is to use the MOOC in addition to their perception that the MOOC is able to make them learn the topic faster, make the topic fun to learn as well as allow them to share knowledge [6]. On the other hand, 4 items from MOOC quality category received

mode of 5 showing that students strongly approved the practice questions and the hints given to be useful for them apart from the MOOC gave them messages to correct mistake and let them recover easily and instantly. Among 14 items to measure MOOC quality, high level of mean was observed for 13 of them, with just one item gaining 3.62 mean. The item was about whether the students perceive the number of practice questions to be sufficient. Thus, based on this indicator, more questions should be added to the MOOC. For MOOC interface category, all three items received high level of mean and mode of 4 indicating that students liked the interface of the MOOC and found it to be pleasant and have all the functions that they expected. Figure 4 presents some of the findings from the open ended questions.
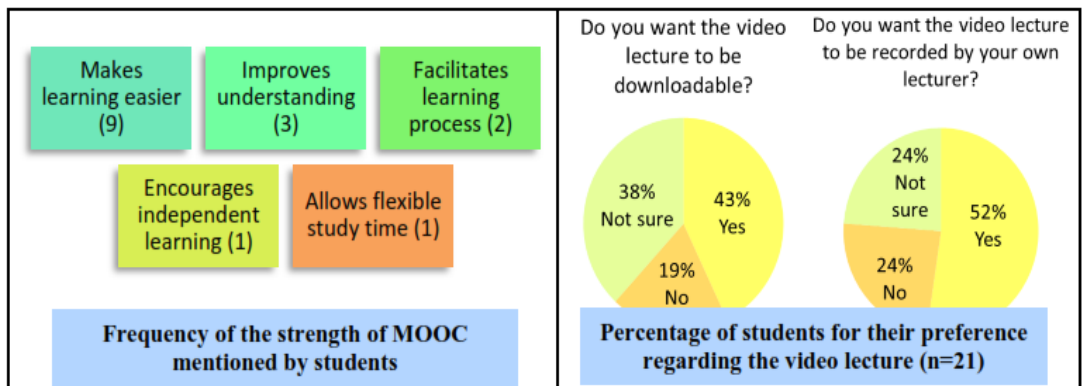

Figure 4. Some of the findings from the open ended questions

4. CONCLUSION

The objective of this research was to develop and evaluate a MOOC as a blended learning tool in a higher education. Findings showed that students were generally satisfied with the MOOC with positive results for most of the usability items. Next, the MOOC will be assessed by larger sample size for better generalization and credibility of the findings.

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