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# Design and Development of Experiencing Malaysian Architecture Module Through MOOCs

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## Abstract

*At present with the development of interactive social media has a great impact on learning environments. Research in open learning environments is only in its infancy. Researchers have shown more interest in studying massive open online courses (MOOCs) as a topic of interesting learning environments. This study discloses the results of the development of a module using Massive Open Online Course (MOOC) in the teaching and learning process in an architecture classroom. The development process was based on Kristof and Satran's (1995) view that information, interactive and presentation designs form the module development process of this massive learning module. The design model by Hannafin and Peck (1990) describes the evaluation and revision phases which were done concurrently. Two instructional technologists and three content experts participated in evaluating the effectiveness of this module and data were collected through semi-structured interviews. It is established that the module supports interactive learning approaches. The module functions as a pedagogical tool that appears to be a possible solution in heightening the eagerness of learning the Experiencing Malaysian Architecture module and the self-confidence of tertiary students while emphasizing prospective ventures and trials one might face when implementing MOOCs in as related or completely dissimilar environment.*

**Keywords:** MOOCs, module development, tertiary

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## INTRODUCTION

Lately, educators, higher learning institutions and researchers are in progress of incorporating MOOCs, to intensify face-to-face learning experiences in a blended learning environment (Bruff, Fisher, McEwen, & Smith, 2013; Caulfield, Collier, & Halawa, 2013; Firmin, Schiorring, Whitmer, Willet, Collins, & Sujitparapitaya, 2014). The development of MOOCs module has increased the usage of on-campus modules around the globe that are gradually complementing face to face classroom modules (Koller, 2012). Garrison and Vaughan (2008) mentioned the simple approach of blended learning in a MOOCs module such as "face-to-face oral communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose" (p.5). The amount of face-to-face and online learning activities may differ significantly. Nonetheless, MOOCs are largely used as individual online courses; a smaller number of MOOCs modules were used in other setups to support the face-to-face learning environment.

This paper reviews MOOCs that were integrated into traditional classrooms that differ in various areas. These areas of differences encompass student population size ranging from ten to several hundreds of students, quantity of courses offered, length of the module or the programme spread over a particular academic period, and implementation approaches from a complementary text to a fully incorporated course in traditional teaching space as cited by Bruff et al. (2013), Caulfield et al. (2013), Firmin et al. (2014), Griffiths et al. (2014), and Holotescu et al. (2014).

### Types of MOOCs module

A unique advantage of MOOCs is to provide an exceptional chance for reforming reputable instructional approaches. They inspire novel techniques of information retrieval and the knowledge acquisition that defy the fundamentals of strategies in acquiring knowledge, engaging pioneering pedagogical approaches to education. Furthermore, developing appropriate principles and precise guidelines for MOOC design is a challenging endeavour as this area is still in an experimental stage. In addition, according to Guàrdia, Maina and Sangrà (2013) prior to presenting the design philosophies it is necessary to emphasise that there are, at least, two distinguished categories of MOOC with clear uniqueness in terms of entrenched instructional practices. These two categories: eMOOCS and x MOOCs are briefly described below:

a. xMOOC:

These MOOCs are more conservative methods to acquiring knowledge where the educator is seen as the utmost pertinent and trustworthy source of knowledge and information; similar to a traditional classroom setting. These types of lessons comprise the combination of pre-recorded video lectures with quizzes, tests, or other assessments. The instructor plays the role of a facilitator by uploading video recorded classes and additional resources and learning activities. Additionally, assessment is done through preset tests. This variety of MOOC promotes knowledge transfer and focuses on instructional approaches highlighting behaviourism as cited by Bates (2012).

b. cMOOC:

These MOOCs concentrate on connectivist values and incorporate them into the development of the programme. Hence, the emphasis is towards networking among learners in an individual learning setting. Furthermore, this kind of MOOCs is flexible and promotes self-directed learning where students are encouraged to be active knowledge seekers and team

players where they work on content and peer assessment. cMOOC promotes a new form of acquisition of knowledge that supports teaching approaches are social constructivism and connectivism as highlighted by Siemens (2012).

**Benefits of using MOOCs module as a pedagogical tool**

Several advantages of using MOOC include the capability to accommodate for interactive user forums to upkeep unrestricted interaction between students and the teaching members as cited by Bates (2012). Furthermore, teaching and learning activities could be conducted as distance education as they are reachable via the web with minimal involvement of the teaching members or venues, therefore decreasing cost and supervision hours. Another advantage of MOOCs is to assist group formation and interconnectivity in a social learning environment and promote exchange of ideas. This learning style could maintain motivation and inhibit learners from moving away due to lack of interest and leaving the programme as cited by Siemens (2013). Generally, MOOCs act as online courses and at times, MOOCs are adopted in other designs to support the face-to-face learning environment.

**Designing a MOOCs module**

The design of MOOCs focuses on collaborative learning approaches like teamwork activities and online discussion platforms. Self-directed learning approach and self-assessment together with peer support and interest groups formation support student participation on a larger platform with a common interest to share and learn as cited by Bates (2012). The design of the module should support additional exchange platforms for and by the students. Furthermore, this kind of module must offer relevant guidelines for involvement in online discussion forums or other cooperative activity as appropriate rules stimulate quality and in-depth involvement among independent learners.

An acclaimed activity on MOOCs is small group focused discussions. The design of asynchronous discussion should enable participants to form clusters and smaller groups based on their interest. In addition to that, Koller (2012) has also mentioned that once a group or subgroup is formed, each member should be allotted a position. The MOOCs large participation encourages the formation of various interactions that focus on awareness of culture, location, language, or other characteristics that draw individuals together as highlighted by Siemens (2013).

MOOCs have been experimented in many disciplines. One of them is in teaching the module entitled Experiencing Malaysian Architecture. Therefore, this paper analyses this MOOCs module that was developed and integrated into a traditional classroom setting. Two common modalities of learning, such as visual and auditory approaches were used to develop this module which can inform instructors on ways to optimise student engagement and enhance learning outcomes. The first modality is visual learning. This method not only uses text like articles and related websites but also pictures. The second technique, auditory learning, uses videos to enhance the learning process and to promote retention and transfer of knowledge.

Hence, incorporating these two modalities in a module will support students learning engagement process and boost their motivation level. In addition, Chandler (2005) points out that the use of multiple media by teachers creates opportunities for the teachers to meet the requirements of students with numerous learning styles.

Moreover, as cited by Perinpasingam, Arumugam, Subramaniam, and Mylvaganam (2014), instructional design is the technology of crafting learning experiences and atmosphere which

foster these instructional activities. The development of instructional design methods and its purpose are to outline strategies to integrate these instructional activities that will relate to the accomplishment of the objectives. The preeminent lesson design is establishing knowledge about the learners, assignments point towards the objectives and relevant teaching approaches together with an appropriate pick of instructional design tools or technology.

**PROBLEM STATEMENT**

This study was led to determine the development method of using MOOCs in Experiencing Malaysian Architecture classroom. While recent research has concentrated on technology usage in higher learning intuitions, little focus has been given to the process on ways instructors integrate current technologies into their classrooms. Moreover, there is a gap in the research when looking at instructors who integrate instructional design approaches when incorporating technology into their modules. In order to make the Experiencing Malaysian Architecture module more engaging, numerous teaching and learning methods such as discussions, comments, uploading images and videos were introduced through MOOCs. On the other hand, the execution of a module will not achieve its intended objectives without an appropriate pedagogical feature and instructional design. Lowenthal and Wilson (2010) stated that the relevance of an instruction depends on how far the teacher or instructor connects the pedagogical, content and technology in the process of delivering knowledge to lead to meaningful learning experience among students.

Therefore, this study is carried out to describe the methods involved in designing the module using MOOCs. The experts' opinions with regards to the development and evaluation of this module to teach Experiencing Malaysian Architecture using MOOCs will be given due consideration. In Malaysia, literature has not given much attention to designing interactive modules as cited by Perinpasingam, Lee, Cheah, Lee and Arumugam (2014) especially in architecture classrooms among tertiary students. Henceforth, it is essential to design an apt module in order to teach on MOOCs in a Malaysian higher learning institution.

**THE PURPOSE AND SCOPE OF THE STUDY**

This study aims to examine the criteria necessitated in developing a module using MOOCs in Experiencing Malaysian Architecture classroom. It can serve as a guide for instructors to develop a commendable instructional material. This study can put forward constructive information to establish the phases and features that are required in designing and developing an instructional module. Consequently, this study will focus on the implementation of this analysis by responding to the research question:

What are the methods or criteria involved in developing a MOOCs module for an architecture classroom?

**THE THEORETICAL FRAMEWORK AND METHODOLOGY**

The theoretical framework and methodology for the MOOCs in Experiencing Malaysian Architecture module is based on Hannafin and Peck's Model. This design model investigates the content, students' characteristics and the learning objectives.

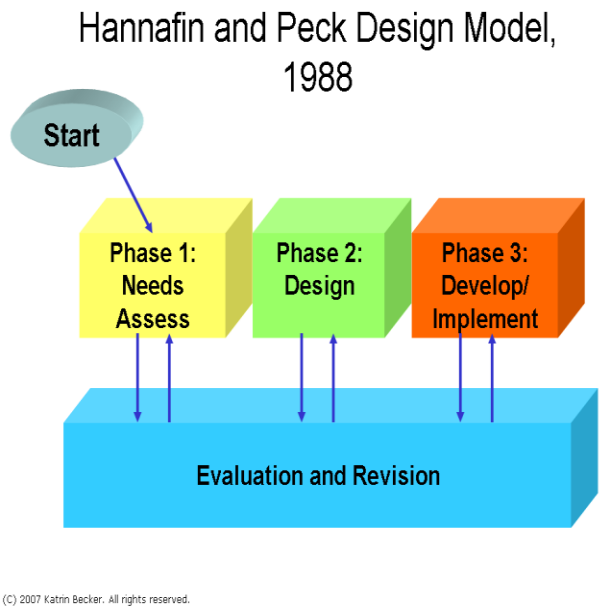


Figure 3.1: Hannafin & Peck Design Model (1988)

The Hannafin and Peck Design Model comprises a three phase process. This model helps to create the module and set the learning environment. Furthermore, the evaluation and revision of module are done at all the phases. Hence, all three phases are crucial in designing this model.

**Phase 1: Needs Analysis**

The first phase is also known as Needs Analysis Phase. At this level, students' needs are demarcated as a breach between what is expected and what actually exists in reality. In a constructivist approach, needs evaluation is essential. Firstly, the prerequisites of students need to be identified before specifying the units and objectives. Needs analysis is carried out to ascertain the needs relevant to a specific task or role such as the challenges influencing one's performance, pinpoint dire needs, and establish significances for choosing an intervention, and offer a standard data to evaluate the effectiveness of instruction.

The module is designed to meet the needs of students. Once the requirements of the learners are checked, the units are systematised respectively to meet the level of the students. Then the parts and components are prepared to suit the learners' level and standard, from easy to difficult topics. This is followed by time allotted for each unit and topic. Topics are selected carefully to suit the duration allotted. The objectives of the module are written after the needs analysis, arrangement of module and determination of duration has been determined. As this module aims to focus on the optimum benefits to students, it adopts the constructivist method.

The instructor needs to use her own teaching methodology by considering the individual differences among the students. Once the aims and objectives are selected, the appropriate media needs to be determined. The resources are available online. The instructor prepares the lesson by uploading all related resources on the MOOCs module. These online based materials were designed to cater to different learning needs as some prefer visualizing style while others prefer rote learning technique. For instance, videos and images for the module are uploaded on this module site to enable learners to gain insight through visual presentation. Materials assist the students to utilise them appropriately whenever they are in

need of using them, at their own stride. The main requirement of for Experiencing Malaysian Architecture MOOC was to engage in a flipped classroom approach.

This module was taught previously in a traditional classroom setting with lectures and tutorials. Prior to the transformation of this module through MOOC, Experiencing Malaysian Architecture was carried out in a traditional classroom where the instructor speakers and the learners listen passively, (Twigg, 2013). However, technology has changed the traditional homework and classwork through this module. This module allows learners a head start on classroom sessions by making them active participants and not merely listeners. Students can enjoy a switch from having the lecturer as the sole active player to experiencing learning with many active student players in class. MOOCs, the active online interactive sessions make a great shift by changing the face-to-face sessions to online sessions accompanied by recorded explanation, simply changing to online lectures.

**Phase 2: Designing of module**

In order to integrate more hands-on and interactive learning processes, the Experiencing Malaysian Architecture MOOC is designed to adopt a personalised approach. The design of this MOOC is based on materials, i.e. journals and magazines on Malaysian architecture. This is contributed by one of the researchers whose interest as an avid writer on Malaysian architecture, with publications in Habitus Australia, Cubes Singapore, Architecture Australia, Architecture Malaysia and Architecture Asia. Besides the flipped classroom, on a more global scale, the MOOC - Experiencing Malaysian Architecture classroom aims to disseminate content that was very localized to Malaysian context to a global audience.

The MOOC extracts the topics from the taught classroom module into weekly activities. The weekly activities are based on themes relating to Malaysian architecture, each having a combination of video, articles and require students to read the articles and provide comments. In addition, one of the uniqueness of this MOOC module is it has options for Site Visits to local Malaysian buildings facilitated by the instructor. However, this is only possible for local students who are taking this MOOC.

The content relies heavily on online articles. Based on the notion that the world is a library, the materials selected for MOOC are articles on Malaysian architecture, published by the Malaysian Institute of Architects as well as other international and regional architecture magazines. Hence, MOOC creates an opportunity for experiential learning regardless of teacher-centred or student-centred learning.

Apart from that, Kristof and Satron (1995) suggested that the design procedure of an interactive learning structure can be divided into three rudiments, which are Information, Interactive and Presentation Designs. Collectively with the evaluation of a module, this system can produce an interactive learning environment. Interaction Design emphasizes on assistance provided to users in order to accustom the learners to search for any information required while Presentation Design focuses on screen layout, backdrop colour, font size as well as the use of graphs and animations. Information Design concentrates on the goal and the learning outcome of the lesson, the subject matter and the accuracy of instruction given.

**Phase 3: Development and Implementation**

The third stage of Hanafin and Pecks model (1988) commences with pre – assessment whereby the chosen module and lesson are evaluated before commencing the actual teaching in the classrooms. The pretest is indeed a tool to diagnose if a learner has grasped the

required skills in order to monitor a module or program. The Experiencing Malaysian Architecture module is developed to showcase the uniqueness of Malaysian architecture to a broader audience. Most of the modules taught on Malaysian Architecture focus on historical chronology. Therefore, operating from an architecture school in a private higher learning environment in Malaysia, it is important to be up-to-date with current and contemporary architecture and pedagogical trends.

Next, from the outcomes of the pretest or pre-assessment, the instructor can formulate a picture on the learners' readiness, and their requirement skills. Furthermore, the instructor may open a file for each student to monitor the progression of the students. After obtaining the results of the pre-assessment, the instructor may restructure her module by focusing on three aspects which are the results of pre –assessment, needs analysis, and time factor. Subsequently, the instructor will reorganize the lesson and ultimately implement the lesson by taking into consideration the three parts mentioned above. Upon carrying out process, the weaknesses, and the advantages are well-thought-out.

**Evaluation and Revision**

The evaluation process is divided into a formative and summative evaluation. Formative evaluation helps the teachers to evaluate students' strengths and weaknesses. Instructors record those flaws in students' portfolios respectively. This indirectly becomes a platform towards improving instructors' method of teaching as suggested by Bhola (1990). A summative assessment is conducted at the end of the semester to evaluate as the final assessment of the students' performance.

While formative evaluation acts as a form of feedback to the instructor, the summative evaluation proves to be the evidence to the instructor if the students have acquired the taught skills. Assessments are in fact a vehicle for educational improvement. The process of evaluating and revising was carried out concurrently during development and implementation process. The Information Design experts and the lectures' opinion and findings have assisted in fine-tuning the module further.

Moreover, revision is done concurrently throughout the development and evaluation stage. The students answer questions after the module is taught. In this module, the instructor takes the role of a facilitator to all students. The students study in groups by helping one another, the instructor assists the students to have a better understanding of the module by helping them to recapture what they have learned earlier. In order to recognize whether the students comprehend the module or not, during the semester, the instructor gives tutorial questions via online discussion, a formative evaluation. Furthermore, the purpose is to elevate and enhance students' understanding which will ultimately improve on the students' weaknesses.

## CONCLUSION AND RECOMMENDATION

The study aimed to decide on the aptness and the shortfalls of the module. It discusses three different mechanisms namely; information, interaction and presentation design as mentioned by Kristof and Satron (1995). The summative evaluation aims to ensure the minimum levels of knowledge and skills acquired as well as the transformation of attitudes that has been attained by the intended learners as claimed by Bhola (1990).

The instructional technologists and content experts were optimistic at the provided constructive responses. They perceived this module to be useful and engaging. Hence, it could be concluded that this module has been aptly designed to meet the requirement of the

tertiary environment. In general, this study become a platform for educators to integrate an appropriate technology like MOOCs in the Experiencing Malaysian Architecture module. This is further asserted by Higgins, Beauchamp and Miller (2007) and Wood and Ashfield (2008) that the teacher is the decisive factor, who interact with students, towards producing the desired outcomes in the integration of Interactive Whiteboard as an instructional tool.

Future research could consider investigating feedback from students to improve the content and materials used in developing and designing the module. This is essential to further improve the module from the student's perspective instead of performance-based.

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