

Mooc's Daunting Journey: Bridging the Gaps between Theoretical and Practical Demands

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Over the past 2 years, the Malaysian education landscape has seen considerable growth in the popularity of MOOCs (Massive Open Online Courses). This has been strengthened by the ninth shift in the Malaysia Education Blueprint for Higher Education with its emphasis on globalised online learning. As such, higher education providers are expected to provide a learning environment in which MOOCs have been seamlessly integrated into teaching and learning processes. This paper attempts to document the journey, as undertaken by Malaysian public universities, towards the process of designing, developing and the eventual deployment of MOOCs. As such, this paper focuses on three major concerns pertaining to the challenges inherent in MOOCs: understanding the context of learning, appropriate pedagogy and methodology, and the reality of MOOC practises. The data for this paper was obtained from various research activities undertaken in collaboration with the platform provider for the pilot MOOCs programs of four compulsory University courses provided to all public University students in Malaysia from the beginning of the 2014/2015 academic year. Three important findings emerged from these studies, and it is suggested that the decision to embrace MOOCs, while not without its benefits, may still require further consideration, especially on the part of content developers and policy makers. This paper attempts to document the journey undertaken by Malaysian public Universities in designing and developing the content of MOOCs. Various approaches and instruments were used for data collection purposes. In the first pilot study, students and lecturers were administered a battery of questionnaires. In the second pilot study, transcripts of participant remarks made during series of MOOC design and content development workshops were analysed. During the third pilot study, focused interviews were held with respective MOOC administrators, as well as content developers. Lastly, data from the

platform provider was used to gain insights into the behaviours of students using MOOCs. The findings of these four pilot MOOC deployment studies provide insights into the development of MOOCs in Malaysia and have the potential to impact the design and quality of curriculum development initiatives, as well as teaching and learning throughout Malaysian higher education. MOOCs provides a significant new mechanism for teaching and learning, especially for providers of higher education. Nevertheless, an evaluation of how this integration of learning and technology is used to support an increasingly diverse student population is timely. In addition to this evaluation of MOOCs utilisation, effort should be undertaken to analyse the sustainability and development of MOOCs.

Keywords: *Open Learning, MOOC deployment, MOOC research methodology, Open Online Course, Higher Education, MOOC utilisation, MOOC effectiveness.*

Introduction

Providing a strategic approach to leverage the Malaysian educational system, particularly for higher education, is a daunting task. Given the diverse and pluralistic nature of Malaysian society, the drive to liberalise knowledge in Malaysia has largely been influenced by the national goals of achieving quality, equity and accessibility in education. MOOCs (Massive Open Online Courses) are generally seen as supplementary or alternative form of learning; however, Malaysia's approach to MOOC development is somewhat unique as compared to other parts of the world in terms of highlighting an increasingly significant role for MOOCs in tertiary education. This repositioning of MOOCs in Malaysia is driven by a desire to prepare for a future-oriented Malaysian educational landscape. As such, this push toward MOOC development has its basis in the earlier promotion of e-learning initiatives in Malaysian higher education institutions through the *Majlis Ketua-Ketua Penyelaras e-Pembelajaran IPTA (MEIPTA)*.¹

Digital e-teaching and learning in Malaysian public higher education evolved out of a common Learning Management System (LMS) used to support more traditional teaching and learning practices. This in turn led to the development of Open Educational Resources (OER), Open CourseWare (OCW) and more recently MOOCs to cater for a wider community of learners. The move towards MOOCs reflects a genuine desire to change the core of Malaysia's educational culture, thus moving beyond mere resource sharing and availability. As such, MOOC provides an essential medium for Malaysian universities to expediently disseminate knowledge over a larger audiences. The Malaysian MOOC initiative was launched in November 2013 with the aim of rolling out four common first year undergraduate courses in September 2014 via the *Open Learning* platform, namely Islamic Civilisation and

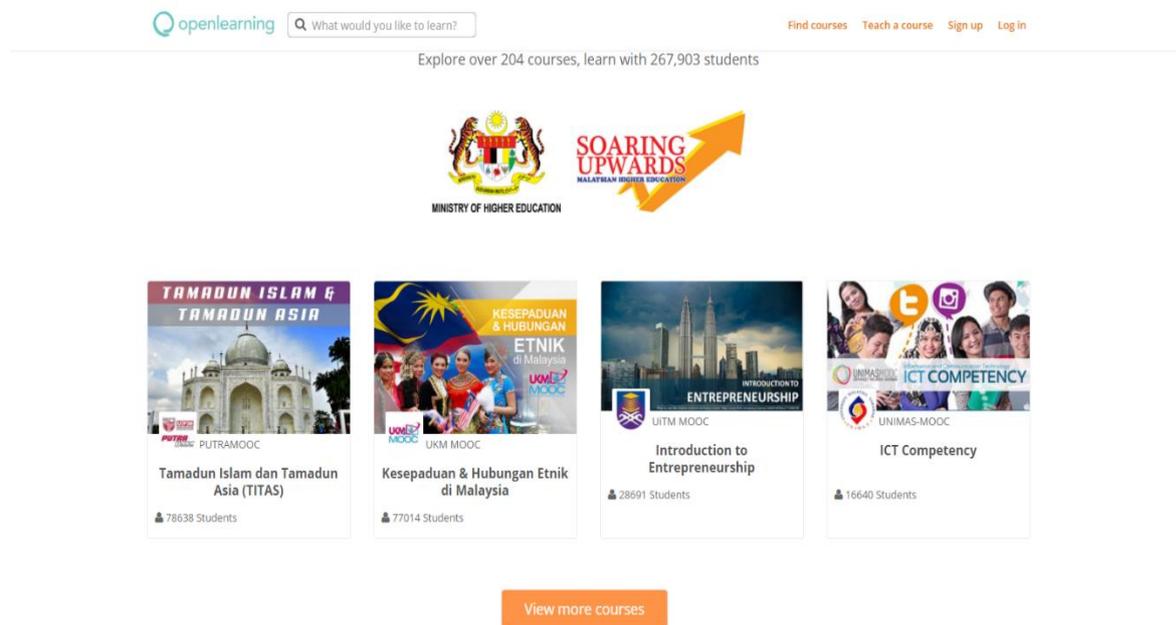


Asian Civilisation (TITAS), Ethnic Relations, Introduction to Entrepreneurship, and Information and Communications Technology (ICT) Competency. As of December 2014, the four courses were successfully deployed using the *Open Learning* platform, and almost 40,000 first year students from 20 public Universities took part in the initiative.

Studies shows that MOOCs are gaining in popularity among students, finding the content MOOC offers to be more convenient and attractive. MOOCs provide students with the opportunity to either learn independently or to enhance their learning potential by collaborating with and helping other students (Epelboin, 2013; Ettu,et.al 2016). MOOCs allow for co-learning as students engage in the process of exchanging ideas, sharing information and collaborating to solve difficulties in the learning process. Students are also able to improve their skills by creating, researching and sharing educational resources openly through the MOOC platform (Abeer & Miri, 2014). The method of MOOC implementation can also enhance student cognition in terms of ideas, problem solving, concepts and principles (Kamal Abdul Nasir, Ab Jalil, & Mahmud, 2018). The use of MOOC in the teaching and learning process can also enhance students' soft skills, such as leadership, teamwork, communication and so forth.

Figure 1 suggests that the number of students enrolling in the aforementioned four courses is staggeringly high. From about 40,000 students in December 2014, as of June 2017, approximately 200,983 students have enrolled in these four courses alone (*Open Learning*). While it might be argued that the compulsory nature of these University courses means that students have no choice but to participate in these MOOCs, the real question is whether these students have actually benefited from them . Consequently, this paper attempts to document the journey of designing and developing the content of MOOC offerings by Malaysian public Universities. As such, it focuses on three major concerns pertaining to the challenges inherent in MOOCs: understanding the context of learning, appropriate pedagogy and methodology, and the reality of MOOC practices.

Figure 1. Screenshot of the first page of a Malaysian MOOCs



The development of the Malaysian MOOC initiative was a collaborative effort amongst various stakeholders, including the international educational technology company Open Learning, to improve the efficiency of teaching and learning in Malaysian institutions of higher education. The Malaysian MOOC initiative is also aimed at promoting international branding, with Malaysian MOOCs being open to enrolment by individuals and other Universities worldwide. This move towards the internationalisation of Malaysian higher education parallels the eighth and ninth shifts of the *Malaysia Education Blueprint for Higher Education (2015–2025)*. The blueprint outlines 10 Shifts intended to spur continued excellence in higher education, namely holistic, entrepreneurial and balanced graduates; talent excellence; a nation of lifelong learners; quality technical vocational education and training (TVET) graduates; financial sustainability; empowered governance; innovation ecosystem; global prominence; globalised online learning; and transformed higher education delivery (Ministry of Education Malaysia, 2015).

A project partnership has been established between the Ministry of Higher Education (MOHE) (through MEIPTA) and Open Learning in which both parties agree to collaborate towards the development of a Malaysian MOOC pilot. As one of the world's leading MOOC providers, Open Learning has offered the MOHE the benefits of its platform and hosting services. In terms of platform performance, Open Learning is a user friendly system with respect to course development and delivery. Other important issues needing to be addressed by the MOHE in order to develop an effective online platform for the delivery of MOOCs include the services by the platform provider, the provision of data and analytics and the need



to ensure a sufficiently flexible platform with which to allow for feature updates to accommodate the future needs of providers.

The Study

As a newly emerged learning mediator, it is high time that some evaluation of MOOC be undertaken to determine how this learning–technology integration is used to support an increasingly diverse student population. In addition to this evaluation of MOOCs utilisation, efforts should be undertaken to analyse the sustainability and development of MOOCs. This evaluation can be achieved either by through ongoing evaluation exercises or applied research. Evaluation is not a simple, standardised practice; it has evolved to meet the needs of many different groups (Ab Jalil, et. al. , 2016). Although the relationship between MOOC evaluation and research remains somewhat contested, evaluation can contribute to research, as well as providing feedback with which to elucidate a better understanding of teaching and learning online. Ab Jalil et al. (2016) further add that the difference between evaluation and research concerns how the findings will be used. In evaluation, findings are interpreted by an immediate, local audience and used to support decision making; research, on the other hand, interprets findings in terms of theories, which are then presented as a contribution to knowledge.

A study was conducted in the early stages of the Malaysian MOOC deployment to evaluate the effectiveness of content development and the technical requirements of four pilot MOOCs offerings. These pilot MOOCs were provided to all first year students of public Universities in Malaysia during their first semester for the 2014/2015 academic year. The findings, discussed later in this paper, provide valuable insights for stakeholders on critical aspects of MOOCs, and have subsequently been used to guide the development of the next stage in MOOC utilisation in Malaysian institutions of higher education.

This mixed-methods study saw a range of data collection strategies being employed to better understand the experience of designing, implementing, and participating in a MOOC program. The initial phase of this study involves the collection of quantitative data from students and lecturers alike, each of whom received different sets of questionnaires. The second and third stages incorporate qualitative data, with transcriptions being made in the second stage of a series of MOOC workshop presentations from Universities involved in the design and content development of the four pilot MOOCs. In the third stage, structured interviews are held with the respective MOOC administrators and developers from each University involved in the pilot. Lastly, data from the platform provider is used in order to better understand student behaviour in relation to the use of MOOCs. Following data analysis, the results are presented as descriptive statistics, including frequencies, mean, and standard deviation. Content analysis is performed on interview transcription, with template



analysis in the final stage in order to facilitate consensus on the qualitative data. However, it must be emphasised, that the authors did not collect the data themselves; rather, the data originated from a pilot study conducted by the researchers who were also involved in the content development of the four MOOCs. Notwithstanding, the data for this pilot study is considered key to identifying solutions to existing issues within Malaysian MOOCs.

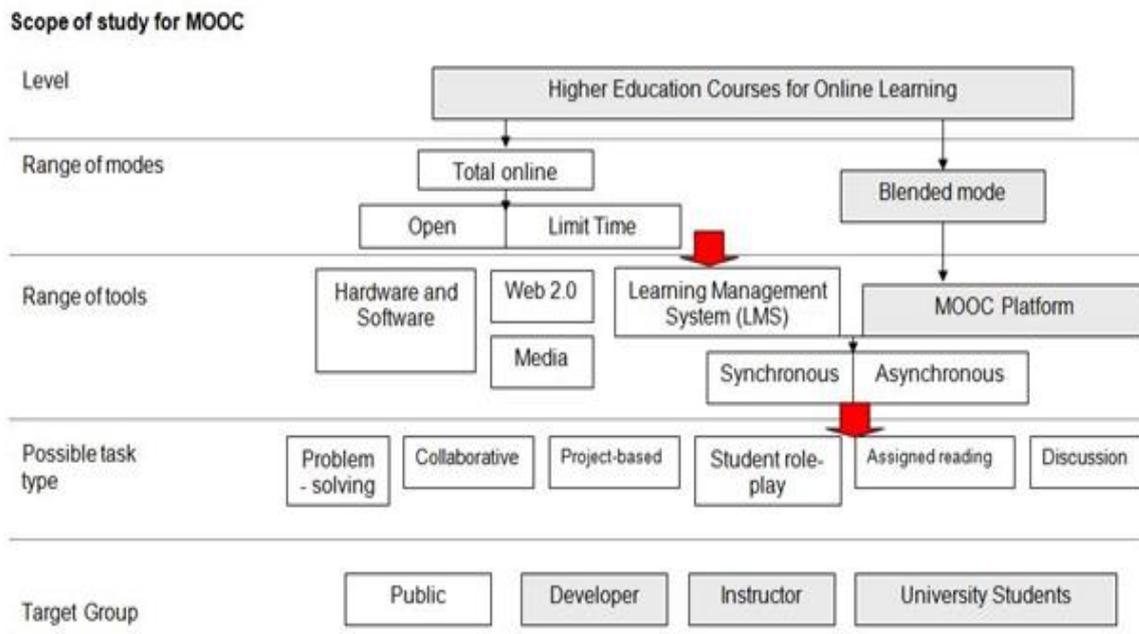
In addressing the three main concerns for this study, this paper is divided into five sections, including an introduction. The second section examines the research challenges encountered in this study, which in the third section is followed by a discussion of the methodology that has been adopted for conducting research into MOOCs. The fourth section provides an overview of the findings from the pilot study; while the last section concludes the discussion with some suggestions for future research.

Research Challenges

Identifying the Learning and Research Context

According to Phillips, McNaught and Kennedy (2012), it is imperative that the learning context and learning environment be understood and clarified when planning for research related to MOOCs. This imperative stems from the fact that MOOC research may include various entities. Figure 2 shows the spectrum of the learning context and what might potentially be researched given the research focus on the MOOC setting. Any evidence of learning, however, will be situated within the virtual environment, as reflected through participants' learning behaviour. Therefore, a strategy for describing the context or the learning environment is necessary in order to define the parameters of measurement.

Figure 2. MOOC Research Context Mapping



As shown above, the MOOC learning context is mapped to a broader learning landscape and underpinned on the aspects of learning modes, use of tools, possible task types and the MOOC community. This study began by obtaining copies of national and University level e-learning policies and practices related to MOOCs, after which the mode of learning within the MOOC deployment model was identified. Next, the tools used for constructing the MOOC deployment platform were determined. This was followed by an attempt to identify all possible learning tasks within each MOOC. Lastly, based on the information gathered, an attempt is made to identify the MOOC community as the target group who is capable of offering feedback. As shown above, although the public might be considered as the end-users of a MOOC, the context of this study inevitably deprioritises the input of students or end-users. From the perspective of stakeholders, the primary concern is in knowing how MOOC can boost the University's teaching and learning within the context that they need to focus on. Therefore, findings related to the context of MOOC may be more meaningful and easier to infer.

The Nature of Data and Universalism vs. Particularism

Research on MOOC encompasses quantitative, qualitative and mixed method research designs. Compared to other studies of learning environments, the nature of MOOCs can potentially yield massive amounts of data, which at some points can become overwhelming. The 'M' of MOOC implies the massiveness of the data involved in its range. Empirical research drawing upon such massive data would usually lead to internally valid



generalisations of findings. However, there are other potential means of investigation that might be more useful in understanding MOOCs.

Most online communication continues to rely on text: messages are typed on a keyboard and read as text on a screen, typically by a person(s) at a different location and time. Nevertheless, there are myriad other ways in which users might interact online or conduct virtual activities in the online environment. This has given rise to a contextually rich window for the study of online activities and communities. For example, computer-mediated discourse (CMD) is defined as “communication produced when human beings interact with one another by transmitting messages via networked computers” (Herring, 2003). CMD represents a unique form of data—written data that has been produced by writers themselves. Conversations amongst learners and between learners and providers on the MOOC platform often take the form of these text-based discussions, thus yielding a rich pool of potential data. Such qualitative data, however, presents a problem when attempting to perform quantitative analysis. As such, strict adherence to the quantitative paradigm runs the risk of devaluing the quality of the evidence of the learning processes. To this end, Hodder (1998) often refers to text-based evidence as *mute evidence*, a reflection of the theoretical constraints posed by massive collections of unquantified and perhaps unquantifiable data. Therefore, such data poses a problem in terms of trying to search for theories related to teaching and learning behaviour, as well as communication. Nevertheless, one might reasonably assume that in the absence of face-to-face contact between learners and providers, the only way in which to gauge where learning has occurred is through such student postings. Therefore, researchers must embrace a new paradigm if they are to understand the nature of online communities.

Methodological challenges can arise for the researcher from all angles when studying MOOCs. There is clear evidence, even within this context, that the MOOCs design remains somewhat experimental. As shown in Figure 3, MOOC remains a fairly new approach for students, as well as content and platform providers. For example, there is no clear development or separation between socialising and learning. As such, there is nothing to ensure that the content of student posts are focused on learning. Participation in the learning network is not universal and continues to be contingent upon either the tutor or the student as a key actor. Therefore, this relationship needs to be addressed early in the research strategy. To this end, it is perhaps the intrinsic massiveness of MOOC data that poses the biggest problem for the researcher, and as such, a paradigm shift in one’s thinking about research methodologies is necessary before being able to even scratch the surface of this data. Furthermore, capturing human related factors that might motivate their MOOC-associated behaviour into binary form before scaling them down further into dualist notions to facilitate generalisations carries its own intrinsic dangers.

Figure 3. Students' First Time Using a MOOC.



Note: For more than 90% of respondents, this was their first experience of learning through MOOCs.

To some extent, this debate is a reflection of wider discussions concerning the nature of data in educational research. For some, there is an implicit assumption that data must be quantitative, and as such, it should be possible to collect data in an objective fashion, with all data being presumably similar despite their respective contexts. However, for others, all data is subjective, having been created by humans; therefore, feelings and interpretations should be considered unique. Therefore, the challenge here is to explore the possible nature of data derived from MOOCs in accordance with the needs of the research.

Methodology

The methodology of this study is inferred from the research aims. As such, the aims of a study are central to the decision making of researchers when considering how best to go about answering the research question. Is the purpose of the study to arrive at a set of research outcomes aimed at convincing policy makers, or is it to understand the specifics of an educational situation? The former usually involves larger samples in order to form more accurate generalisations, while the latter might benefit from much smaller sample sizes. The first position aims to develop objective educational knowledge that can be used to make useful predictions and influence policy. The second — position adopted for this study attempts to develop an understanding of the social contexts and processes underpinning MOOCs, rather than having any explicit instrumental function (i.e. post-positivism). A third possible position articulates the research as a process of transformation or emancipation (i.e., critical and postmodernism), in which the research process becomes the main aim. Table 1 describes the three possible research paradigms that might be used to respond to the aims of a study.

Table 1: Summary of the Characteristics, Outcomes and Methodology of Research in Different Paradigms

	Characteristics	Outcomes	Methodology
Positivist	Research is objective, rational external to the research; focus on deductive reasoning	Generalisation; theory refinement; laws which enable prediction and control	Focus on accuracy, reliability, validity and inferential statistical analysis
Post-positivist	Maintain the essence and many of the central beliefs and methods of positivist, recognition of researchers' subjectivity and bias	Reality is there to be investigated	Deeper understanding
Critical and postmodernism	Action oriented and informed by theoretical ideas; ideologically and politically motivated	Evidence-based change in social practice	Leaning towards critical review and theoretically-informed argumentation

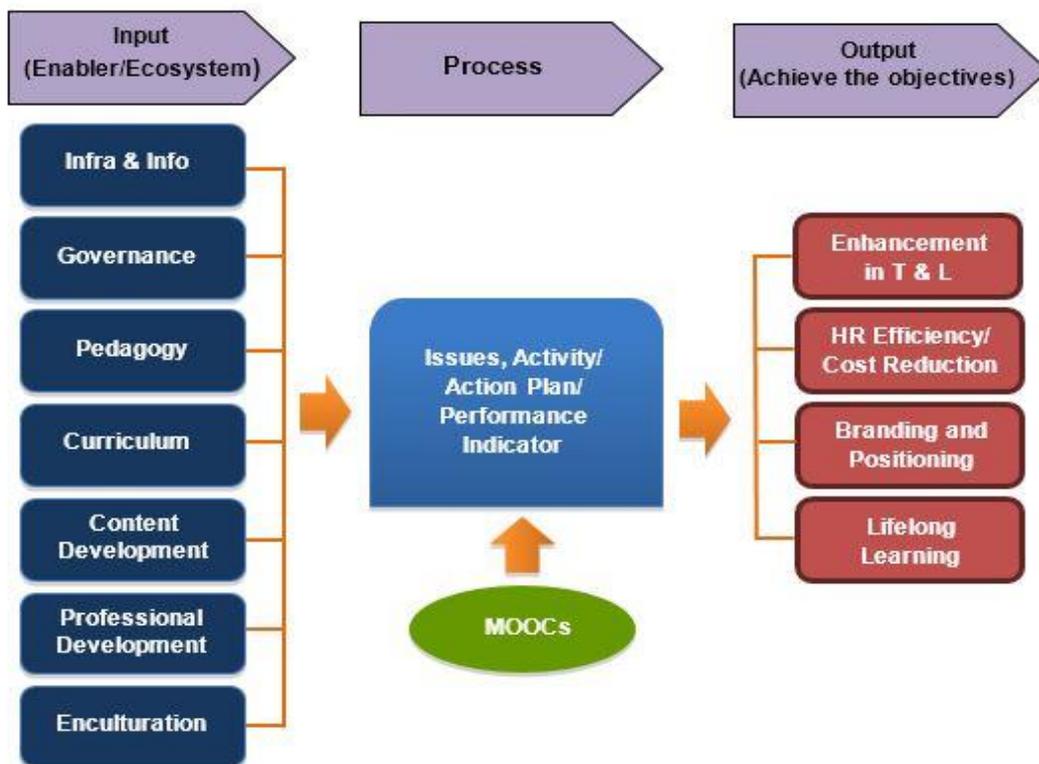
There is a considerable diversity in the methods available to researchers seeking to understand the Malaysian MOOC implementation experience from either quantitative or qualitative perspectives. However, any process of methodological engagement must necessarily be constituted by meta-theoretical commitments, which will invariably have implications for research design. These meta-theoretical assumptions frame the research design in terms of what to focus on in the study, what types of data will be needed, how to collect and analyse the data and how to theorise and write up the research accounts.

In the present context, the collection and interpretation of data is in accordance with some methodological positions within post-positivist and critical traditions. To this end, this study has been informed by an array of different approaches to data collection, which is perhaps typical of multiphasic research studies. In the first phase, different sets of questionnaires were distributed to students and lecturers. In the second phase, transcriptions were made of a series of MOOC workshop presentations from the various Universities involved in the design and content development of the first four pilot MOOCs. For the third phase, transcripts were made of structured interview sessions held with respective MOOC administrators as well as developers. In the last phase, data was gathered from the platform provider in order to understand the behaviours of students using MOOCs.

Conceptual Framework

A conceptual framework was adapted from the *Overall National Implementation Framework* and used to guide the process of data collection in the pilot study (Figure 4). This framework assumes that achieving the desired output or outcomes in terms of teaching and learning processes in MOOCs is simply a matter of ensuring sufficient inputs. To this end, the framework consists of *input* (i.e. infrastructure and information, governance, pedagogy, curriculum, content development, professional development, and enculturation), *process* (MOOCs) and *output* (enhancement in teaching and learning, human resources efficiency/cost reduction, branding and positioning, and lifelong learning). *Infrastructure/information structure* refers to the facilities of hardware and software used for MOOC practices, including the platform, computers and the Internet, as well as fixed-line telecommunications, mobile and other wireless communications devices, networks, broadband and various specialised digital devices. The minimum institutional requirements in order to deploy e-learning services include an ICT infrastructure and a basic information structure. In this study, infrastructure and information structure variables focus on three constructs: access, equipment and platform. *Access* refers to bandwidth speeds and network connections; *equipment* refers to computing facilities and hardware; while *platform* describes issues of user friendliness, features, functionality as well as ease of navigation.

Figure 4. National MOOC Implementation Framework (Ab Jalil et al., 2016)





The governance of MOOCs refers to the planning, coordination and management of MOOC development, as well as the monitoring of MOOC deployment, which is the responsibility of relevant councils and international networks. Pedagogy refers to the networked learning strategies used in MOOCs (Guàrdia, Maina, & Sangrà, 2013). A well-integrated Malaysian MOOC is necessary for the delivery of University courses, but also imperative for gauging the effectiveness of delivery, use and learning. The main concerns, however, are related to issues of course design and delivery, engagement, assessments and additional readings. Furthermore, curriculum variables include the alignment of the overall structure of the MOOC with the original course and learning objectives, delivery approaches and learning modes. In content development, high quality content is needed (Guàrdia et al., 2013). Waard (2013) states that the core principles of content design include the need to provide interactivity, immediate feedback, and small size content to fit contemporary lifelong learning. Moreover, it is necessary to use information sources that are both recent, as well as proven over time, keeping access to content as simple as possible.

Meanwhile, Grainger (2013) has identified a number of variations in course content. Therefore, the focus with MOOCs should be on students' level of engagement with the content (i.e. interactivity, assessments), the presentation of content (e.g. colour schemes), media usage (i.e. use, quality and range of media), alignment with learning objectives, quality of content as a whole, functionality and additional resources. For professional development, the appropriate training in MOOCs needs to focus on acquiring the necessary skills, knowledge and attitudes for successful implementation. The enculturation variable covers the existence of an enculturation mechanism and publicity. However, not all aspects in the framework can be directly observed. In the experience of this research group, the real challenge lies in trying to put the actual data into perspective.

Every aspect of planning for, developing and deploying MOOCs requires meticulous attention. For example, one benefit of MOOCs (i.e., output) in the national framework includes enhancements in teaching and learning (Ab Jalil et al., 2019). To this end, there should be evidence of lifelong learning amongst learners, as well as the enculturation of digital learning. Assuming such evidence does exist, it is often too complex to make any meaningful sense out of. Moreover, each University uses its own LMS to manage campus learning. These individual LMS systems are often closed in nature, intended to be used only by those enrolled in the University programs or courses. This is not the case with MOOC platforms (López-Sieben, Peris-Ortiz, & Gómez, 2014). By its very nature, a MOOC is necessarily open to anyone as long as they register for the course. Problems may exist, however, in terms of overlaps in the role of the systems, instructor strategies, student participations and so on. Therefore, drawing the line between a MOOC and a conventional e-learning system within an organisation's teaching and learning practices, especially in an institution that has simultaneously implemented MOOCs, might result in a misleading



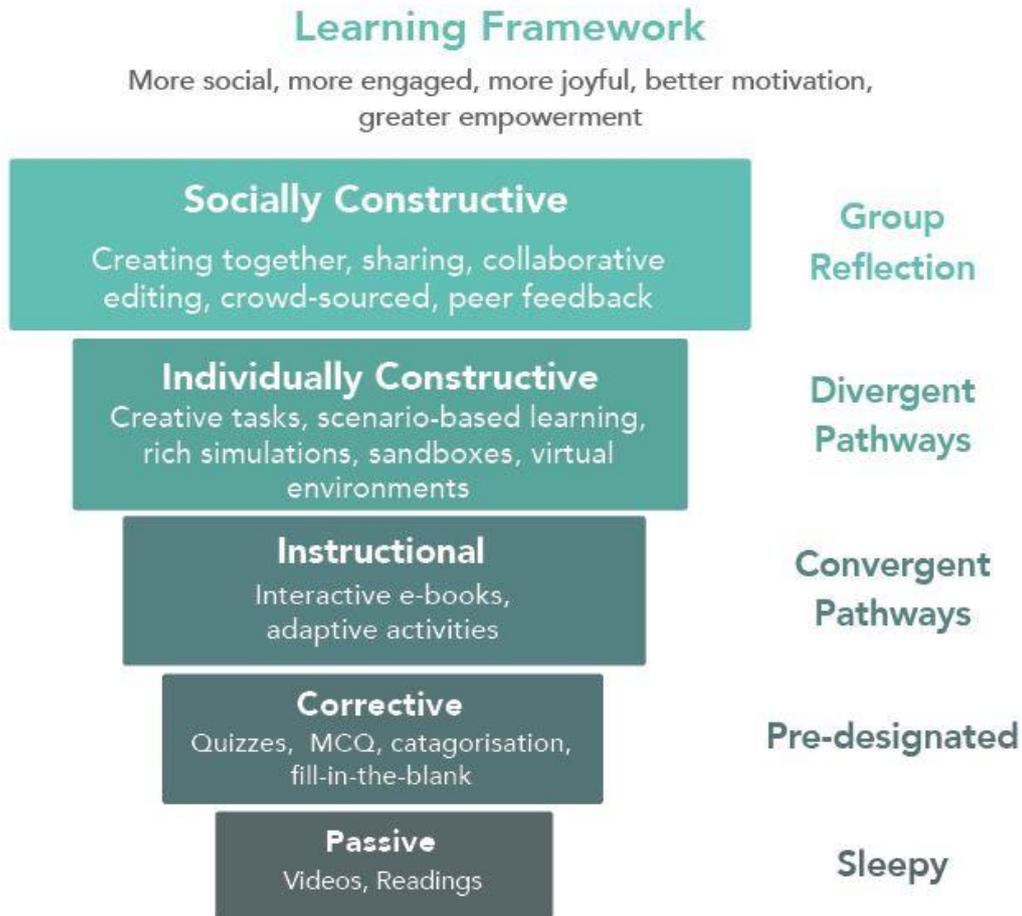
symbiosis of systems. Consequently, any claims about the effectiveness of a MOOC must also take into consideration the potential for the data to have been contaminated by user experiences and data pertaining to conventional e-learning systems.

Alignment of Instructional Design to Learning Philosophy

It is imperative that the instructional design adopted for MOOC courses parallel the nature and learning philosophy of the platform being used. *Open Learning* still being a relatively new system for Malaysian universities at the time that the MOOCs initiative was implemented, it is clear that approaches taken towards the development and delivery of Malaysian MOOCs were very much influenced by traditional e-learning approaches designed for on-campus teaching and learning, as reflected in the use and roles of the LMS. The philosophy seems to have revolved around simply placing the course content on the platform, with some formative assessments having been provided between static notes and less-than-sophisticated videos. Content development, therefore, was heavily focused on developing notes, videos and quizzes, but neglected to consider the *design of learning activities* that should take place on the platform.

On the other hand, *Open Learning* embraces social learning as its core philosophy. The platform facilitates both learning and community engagement processes, while promoting student-centred learning through constructive activities that leverage social learning mechanics. Through personalised learning, students can control the pace, choose the best learning approach and have the power to follow their personal interests; at the same time, they are able to learn from their learning community. The proposed learning framework for *Open Learning* is shown in Figure 5.

Figure 5. Learning Framework by Open Learning



This expected misalignment between instructional design and learning philosophy has led to disappointment in terms of MOOC completion rates. The low completion rate, as shown in Table 2, suggests that certain aspects of the instructional design used for these MOOCs might not be well aligned with the original philosophy behind the platform. This poor completion rate might also reflect a misalignment between the method of instruction and the way in which the current Generation Z learns. This is a generation that is accustomed to open online environments that value self-learning; as such, the current approach to course design might simply be too awkward and restrictive for Generation Z's learning needs. Notwithstanding, an awareness of this possible generational issue opens up new research opportunities in the area of instructional design for Malaysian academics.

Table 2: Completion Rate

Courses	10% Completion	50% Completion	75% Completion	100% Completion
TITAS	2.20%	48.12%	36.17%	24.39%
ETNIK	4.97%	42.83%	30.70%	17.22%
ENTREPRE.	3.54%	46.21%	38.62%	9.53%
ICT COMPT.	3.74%	48.91%	38.95%	14.38%

Revisiting the Design and Development of MOOCS

Turning Research into Practice

Learning design in MOOCs seems to be the biggest challenge towards successful utilisation. Hatzipanagos (2015) states that “MOOC requires different learning designs from those that work for small student numbers” (p. 1). Consequently, a number of progressive approaches have emerged in the recent literature to improve MOOC designs based on empirical research. At present, online learning platforms are developed without any clear design patterns, despite a wealth of data pertaining to student interactions with the system (e.g. through functionalities observed in the LMS). Such progressive approaches, therefore, tend to search for information, deploying one limited process at a time, followed a short time later by another platform. This is not without its advantages; for example, such changes seldom affect users to any great extent, and the design risk is relatively small. However, this needs to be considered against the fact that it takes significantly longer to report on all the benefits and thus to create the best design practice for MOOCs. In terms of utilisation, the selected approach will ultimately depend upon the urgency of the organisation and its degree of risk tolerance. For example, a methodology called 3D2P (Data-Driven-Design-Pattern-Production) uses data collected from existing online learning systems has been developed to inform design pattern production processes, to direct stakeholders with respect to important design decisions, to evaluate the quality of design patterns, and to collaborate with other stakeholders to refine design patterns (Inventado, et. al. , 2017). This raises the question as to whether such research is able to inform relevant authorities on the best MOOC design while simultaneously influencing the revolution of teaching and learning practices for a global audience.

Based on the findings of the pilot MOOC study, the role of the teacher/instructor is another key determinant of the success of a MOOC. Integration between the e-moderator and the instructional designer plays a significant role in the design process of comprehensive, relevant and accurate e-courses (Fayyumi, et. al. , 2015). This integration is necessary because those responsible for the development of content for MOOCs need to have skills in scaffolding students’ learning and managing the course. Critical roles include planning at the beginning and monitoring continuously, while taking sufficient action throughout the course



to fit the learning needs. Other skill that are needed by the instructor include contingency management, used by instructors to reward desired behaviours through praise/encouragement, or to control undesirable behaviours through punishments in the form of reprimand/censure (Ab Jalil, 2007, 2011; Ab Jalil & McFarlane, 2010). For example, a skilled instructor might come to recognise undesirable learning behaviours, such as students' tendency to replicate their responses from others or leave the MOOC groups. Such behaviours are beyond the control of the system itself, but should be within the realm of control of the instructor. To this end, the instructor needs to have interpersonal skills to manage forthcoming learning activities, while the systems administrator should aim to ameliorate problems of a more technical nature, working collaboratively with the instructor in such a way as to maximise learner benefits.

In terms of the learning experience in MOOC, what students perhaps benefit from the most in terms of their learning is the discussion. The concept of discussion is a central notion in learning that "occurs through internalising dialogical activity and its signification systems (that is, language) that occur in the social" (Vygotskiĭ, 1978). These discussions can occur either face-to-face or through an online environment. Discussions are emphasised in the teaching and learning processes of higher education as they can help students:

- become better connected to a topic,
- develop skills of synthesis and integration,
- learn the process and habits of democratic discourse,
- explore a diversity of perspectives,
- feel respected for their input and experiences,
- recognise and investigate their assumptions,
- develop habits in collaborative learning,
- increase their awareness and tolerance,
- encourage attentiveness,
- develop a new appreciation for continuing differences,
- increase intellectual agility,
- become co-creators of knowledge,
- develop the ability to clearly communicate their ideas,
- develop skills in negotiating meaning, and
- become more assertive.

Most of these benefits were visible in the student discussions during the pilot MOOC. Annamalai, et. al. (2015) argue that teachers or instructors involved in online teaching and learning activities need to encourage students to be involved in critical thinking. Applying MOOCs in teaching and learning can enhance students' skills such as critical thinking (Voss,



2013). Through discussions, students have the opportunity to communicate with people from different cultures and to collaborate; as such, these discussions can benefit students' cultural and collaboration values (Welsh & Dragusin, 2013). However, exploring students' discussion practices in higher education is fraught with difficulty, especially given the numerous affective domains integrated in the online teaching and learning process..

The data sources from the *Open Learning* platform is promising, suggesting that students might be well engaged in online discussions. Notwithstanding, as shown in Table 3, the number of student comments in each course is far from an accurate reflection of the number of students enrolled in a course. In fact, the number of students does not reflect the average number of individual postings. In effect, the most comments per student comes from the courses with the least number of students. This illustrates the fact that the number of comments alone is not as significant as the frequency . Therefore, comment volume per course is not an accurate measure with which to make inferences about MOOC performance.

Table 3: Number of Student Comments (Academic Year 2014/2015)

Courses	Semester	Students	Comments	Comments per Student
Ethnic Integration and Ethnic Relation in Malaysia (ETNIK)	Semester 1	17689	83324	4.71
Ethnic Integration and Ethnic Relation in Malaysia (ETNIK)	Semester 2	8808	40677	4.618
ICT Competency	Semester 1	5634	45724	8.116
ICT Competency	Semester 2	1609	9412	5.85
Islamic Civilisation and Asian Civilisation (TITAS)	Semester 1	22017	110710	5.028
Islamic Civilisation and Asian Civilisation (TITAS)	Semester 2	5757	60843	10.569
Introduction to Entrepreneurship	Semester 1	10256	32970	3.215
Introduction to Entrepreneurship	Semester 2	3779	8251	2.183
Total	Semester 1	55596	272728	4.906
Total	Semester 2	19953	119183	5.973

Another interesting finding of this study, as mentioned previously, concerns the completion rate. Less than 25% of students achieved 100% completion for all courses. Moreover, almost 50% of students who enrolled in a course completed at least half the course content.

In terms of the Malaysian MOOC pilot, the audience included University students enrolled in all Malaysian Universities. Ideally, the move to the MOOC platform should have helped

students to have completed their course more easily, allowing students to perform better by exploiting their innate learning abilities, but ironically, this was not the case. According to the survey, students had positive perceptions towards their learning with MOOCs (Table 4). Nonetheless, this seems to have had little impact on their course completion. In other words, students' perceived learning with MOOCs does not reflect their completion of MOOC tasks (Table 2). It would seem that students might be better off learning via some other means to ensure that they complete their courses.

Table 4: Student Responses to MOOC Enhances the Teaching and Learning Processes

Items	Mean	SD
1. MOOC enhances my learning experiences.	3.86	0.59
2. I learn more effectively using MOOC.	3.73	0.66

N=4,44

Understanding student patterns of course completion is helpful in providing course administrators with critical feedback on improving their content and teaching strategies. This information can help to track course data, and identify at which point in the course (or which topic) seems to correspond with students becoming less involved with their learning. This would enable appropriate corrective strategies to be implemented.

Conclusion

This paper has raised a number of issues pertaining to the utilisation of MOOCs in Malaysian institutions of higher learning. Despite success stories (based on the number of enrolled students for the four MOOCs and the number of original contents developed), policy makers, decision makers and—most importantly—instructors should revisit the design and development of MOOC contents so that students will eventually learn and become better engaged with the materials. Having documented the journey of designing and developing MOOCs, it is critical that immediate action be taken in relation to the concerns highlighted in this paper.

In conclusion, the MOOCs initiative has changed the Malaysian higher education online learning landscape for the better. Positive and negative findings from various parties with respect to the MOOC pilot have provided some valuable insights into critical aspects of the Malaysian MOOC development, including curriculum, design, quality content and impact on teaching and learning in Malaysian higher education. Although this is a daunting journey, MOOCs do indeed provide a significant new mechanism for teaching and learning, especially amongst higher education providers. Nevertheless, this paper also highlights some of the



issues or challenged presented by attempts to investigate MOOCs. As such, new research methodologies are needed to facilitate the investigation of MOOCs, taking into consideration the different contexts of MOOCs, the nature of MOOC data and other challenges implicit in the research of MOOCs. Future research should also consider the development of MOOCs in other countries in order to compare and contrast effective strategies in MOOC deployment.

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