

Undergraduates' Perception on Critical and Creative Thinking Skill via Massive Open Online Course (MOOC)

Persepsi Siswazah Terhadap Kursus Kemahiran Pemikiran Kritis dan Kreatif melalui Massive Open Online (MOOC)

Kalthom Husain¹, Mohd Fauzi Kamarudin², Rosfazila Abd Rahman³, Mokmin Basri⁴,
Che Wan Shamsul Bahri Che Wan Ahmad⁵ & Mohd Shahrul Nizam Mohd Danuri⁶

ABSTRACT

The Massive Open Online Course (MOOC) is a very recent development in the higher education institutions in Malaysia. September 2015, Universiti Teknikal Malaysia Melaka (UTeM) has introduced Critical and Creative Thinking under Malaysia Massive Open Online Course. The study has focused on engineering undergraduates' perception of MOOC in Critical and Creative Thinking (CCT) course in elevating their employability skills. The researchers used qualitative method as a research design. An interview was used to investigate their perception of MOOC in CCT course to elevate their employability skills. Undergraduates in from three faculties in UTeM were selected as the participants of this study. The findings show that among all the employability skills, participants believe CCT MOOC fosters two employability skills which are 'problem solving' and 'decision making'. This study on MOOCs is important for decision making in an organisation. This research is also significant for its contribution towards E-teaching and E-learning practices in higher education institutions.

Keywords: *Perceptions, Critical and Creative Thinking (CCT), MOOCs, Decision Making, Problem Solving*

ABSTRAK

Massive Open Online Course (MOOC) adalah platform pembelajaran secara maya merupakan pembelajaran maya terkini di institusi pendidikan tinggi di Malaysia. September 2015. Universiti Teknikal Malaysia Melaka (UTeM) telah memperkenalkan kursus Pemikiran Kritis dan Kreatif menerusi MOOC. Kajian ini memberi tumpuan kepada persepsi pelajar-pelajar kejuruteraan yang mempelajari kursus Kritis dan Pemikiran Kreatif (CCT) melalui MOOC bagi meningkatkan nilai tambah kemahiran untuk alam pekerjaan mereka nanti. Para penyelidik menggunakan kaedah kualitatif sebagai reka bentuk penyelidikan. Satu temu bual digunakan untuk menyiasat persepsi mereka tentang MOOC dalam kursus CCT. Siswazah dari tiga fakulti di UTeM dipilih sebagai peserta kajian ini. Dapatan kajian menunjukkan bahawa partisipan percaya bahawa pembelajaran menerusi MOOC dapat memupuk dua kemahiran pekerjaan yang 'menyelesaikan masalah' dan 'membuat keputusan'. Kajian mengenai MOOC adalah penting untuk membuat keputusan dalam organisasi. Kajian

¹ Kalthom Husain, PhD, KUIS, kalthom@kuis.edu.my

² Mohd Fauzi Kamaruddin, PhD, UTeM, mohdfauzi@utem.edu.my

³ Rosfazila Abd Rahman, PhD, KUIS, rosfazila@kuis.edu.my

⁴ Mokmin Basri, PhD, KUIS, mokmin@kuis.edu.my

⁵ Che Wan Shamsul Bahri Che Wan Ahmad, PhD, KUIS, cwshamsul@kuis.edu.my

⁶ Mohd Shahrul Nizam Mohd Danuri, PhD, KUIS, msnizam@kuis.edu.my

ini juga penting kerana ia menyumbang terhadap amalan pengajaran dan E-pembelajaran di institusi pengajian tinggi.

Kata Kunci: *Persepsi, Kemahiran Berfikir Secara Kritis dan Kreatif, MOOC, Membuat Keputusan, Penyelesaian Masalah.*

Introduction

A new landscape in teaching and learning is gaining attention by many stakeholders. Malaysia higher institutions are directing towards reaching for more learners via technology advancement. Technology is changing the way teaching and learning is portrayed. As we moved into 21st century, instructors as well as students must equip themselves with all types of technology's skill to ensure the effectiveness and advancement in teaching and learning. The development of educational technology is evident in higher education institutions in Malaysia. It is the results due to the effort played by the Ministry of Education in Malaysia to steer the economy towards a knowledge-based one as discussed by Dawam, Ahmad, Jusoff, Tajuddin, Elias and Mansor (2009).

Universiti Teknikal Malaysia Melaka (UTeM) has also showed its effort to launch MOOC in 2015 in order to introduce CCT course online . All the stakeholders who are responsible for CCT MOOC need to ensure the effectiveness of CCT MOOC in learning. The study has focused on engineering undergraduates' awareness and perception of MOOC in CCT course in fostering their employability skills. The researchers had chosen the engineering undergraduates in UTeM as the participants of this study. The researchers decided to use qualitative method as a research design. An interview will be used to investigate their perception in CCT MOOC.

This study embarks on two objectives:

- i. To investigate engineering undergraduates' awareness on employability skills
- ii. To examine undergraduate's perception on the effectiveness of CCT MOOC in fostering their employability skills

Problem Statement

Instructors at higher institutions need to ensure that their students have been equipped with the employability skills needed by the industries. UTeMs' graduate's employability rate six months after the convocation in year 2012 and year 2013 from the six respective faculties was 86% in 2012 and 84% in 2013 respectively (<http://www.utem.edu.my/portal/collaboration-and-engagement.html.D>). It shows a decrease of the employability from year 2012 to year 2013. The researchers believe that the percentage of graduate employability can be increased through enhancement of employability skills when using MOOC as a learning tool. Researchers would like to study on engineering undergraduate's awareness on employability skill. MOOC is an emerging trend of higher education institutions in Malaysia; it is built on the active engagement of large number of students. Besides personal interest, the participation of MOOCs students could be driven by workplace requirement; therefore the researchers would also like to study the engineering undergraduates' perception of CCT MOOC in enhancing their employability skills. These

two areas of study enable the researchers to find out the enhancement method to increase graduate employability skills among undergraduates in UTeM
Two research questions underpin the present study:

R1: To what extent the engineering undergraduates are aware of the importance of employability skills?

R2: How do undergraduates perceive the effectiveness of CCT Massive Open Online Course in fostering their employability skills?

Review of Related Literature

Massive Open Online Course (MOOC)

Massive Open Online Course (MOOC) is a very recent development in Malaysia. It is best described by McAuley, Stewart, Cormier, and Siemens (2010) as an integration of the connectivity of social networking, the facilitation of an acknowledged expert in a field of a study, and a collection of freely accessible online resources. Autonomy, diversity, openness, and interactivity are characteristics of a MOOC. Students can take control on their learning such as where, when, how, what and with whom they learn (Mackness, Mak, & Williams, 2010).

According to Fadzil, Latif, and Munira (2015), Taylor's university, Universiti Putra Malaysia (UPM), Universiti Kebangsaan Malaysia (UKM), Universiti Teknologi MARA (UiTM), Universiti Malaysia Sarawak (UNIMAS), and Open University Malaysia (OUM) are the first batch of institution involved in MOOCs development in Malaysia. UPM, UKM, UNIMAS, and UiTM are public universities whilst Taylor's University is a private university in Malaysia. These universities have developed the official portal for MOOCs (Malaysia MOOCs).

The UTeM's CCT MOOCs is shown in Figure 2.

Figure 2: Massive Open Online Course (MOOC)



Source: <https://www.openlearning.com/courses/creativecriticalthinking>

The reasons for MOOC's adoption in higher education institutions which include to provide quality education to everyone, promoting an institution's brand, attracting new learners to enrol at an institution, potential for collaborating with other institutions, potential for research and development in online education as well as transforming traditional teaching and learning approaches (Fadzil et al., 2015). MOOC has challenged the higher institution which is still using age-old, traditional approaches in teaching and learning. Hence, the

perception and readiness of the MOOCs learner should be studied as MOOC is a global trend nowadays.

MOOCs will improve teaching and encourage institution to develop mission. (Daniel, 2012). MOOCs can offer many benefits to Malaysia such as collaboration with international partners, global visibility of Malaysian expertise, as well as showcase best programme and research area in Malaysian higher education institution. (Fadzil et al., 2015). MOOC is an emerging trend in higher education institution which exists to cater to the needs of globalization. According to Rena (2010), future trends of higher education include rapid globalisation, impact of technology and movement of students and scholars, programmes and institutions across borders and others.

Critical and Creative Thinking and Employability

Burnett, N.; Jayaram S. (2012) mentioned that four salient core skills (communication, critical and creative thinking, problem solving, critical thinking) have become increasingly important in the globalized economy. Vocational and technical skills are essential, but employers are seeking applicants with more than these, and to date this need is a long way from fully met. They added that the drawing on survey data from nine countries, found that less than half of employers were able to find the skills they needed in entry-level workers. These skills benefit those newly embarking on the labour market, existing employees and employers. For the individual, they improve the ability to get and keep a job, to move around in the labour market and to engage in lifelong learning. Learning skills enable one to manage one's own time and get the most out of it, whether in work or studying. Teamwork and communication skills show one how to get the best out of working with others. Problem-solving helps individuals to develop a systematic approach to tackling the inevitable challenges they will encounter in their studies, work and everyday life. For the employer, these core skills mean employees better able to respond more readily to changes in the workplace, reducing the time taken for a product to be conceptualized, manufactured, distributed and sold. Workers equipped with these skills will be able to learn more quickly and perform more effectively, allowing enterprises to develop more innovative and flexible workplaces, where employees can offer novel ideas, and to adjust more quickly to technological change and organizational restructuring.

Studies on employability skills has emphasised on core skills based on its importance and job requirements. Regardless to the different results across research, it is noted that successful employment occurs only if the employability skills of the undergraduates match with the employers' expectations. Therefore, this study investigates whether the engineering undergraduates' awareness of the employability skill is aligned with the employers' expectations. As employers prefer to hire competent employees who are equipped with employability skills, therefore, engineering undergraduates should aware of the employability skills needed at the workplace to avoid skills gap or mismatches.

Methodology of the Research

The research design used in this study is qualitative in nature. Focus group interview method was adopted in obtaining related data. The research is an institutional case study and was carried out at Universiti Teknikal Malaysia Melaka (UTeM). Furthermore, case study will allow the researcher to study in depth by focussing on only twenty participants.

The issue of accessibility of participants to the researchers was made prime in selecting the participants. The researcher decided to confine their study to engineering undergraduates in one of the government higher education institutions in Melaka. The setting of the focus group interview in this study is in a classroom and the chosen course is Critical and Creative Thinking (CCT). The rationale for the chosen site and setting is firstly, there are no previous studies done on the same topic before in the chosen site and setting. Secondly, the principal researcher was the coordinator of the CCT Course. This set forth provides better understanding about the background of the students. The selection of respondents is done using purposeful sampling method. The researcher's participants were the students who registered for CCT MOOC course online for duration of fourteen weeks in their second semester 2015. Twenty students were selected as participants from the class to be interviewed in the study.

The focus group interview was adopted to permit an open exploration which allowed the participants to provide any information or interpretation if necessary. Secondly, while having a set of general questions for interview, the researchers could follow up on the participants' responses and actively engage with them in the meaning related to the research topic. The interview began with the opening statement from the principal researcher and finally directing question to get the data for the research questions. The interview questions were adapted from the instruments developed by Mohamad Sattar Rasul and Rose Amnah Abdul Rauf (2010) on employability skills, however the questions were made open ended so as to elicit rich data from the participants. Fundamentally, these questions are designed to gauge the engineering undergraduate's awareness on CCT MOOC in fostering the employability skills. The interview took place lasted for an hour. The interview was conducted in English and the transcriptions of the interviews were based on their original given information. Analysis followed the principle of grounded theory by searching the transcripts for common themes or categories.

Findings of the Study

The findings are arranged by themes:

Engineering Undergraduate's awareness on employability skill

In the interview, participant's awareness on the importance of employability skills are shown in the excerpts below:

The employee must have the cores skills like communication competency, team work and able to think critically and creatively

(Participant 4)

I think the employer will want to have employee with thinking skill, it shows how we solve the problem and make decisions...and next is information gaining skill like how they find information online and last is system and technology skill like they know how to use the technology when they are working

(Participant 7)

Every employer will employ worker who are technologically incline and also employee who are competent in solving problems as this would enhance production line....

(Participant 11)

Nowadays it is challenging getting into the workforce. Most candidates has degree but what makes us different is the employability skills...How effective our communication is, Can we solve problems and make decisions, working in team....

(Participant 17)

There is a significant change of higher institution from the traditional role due to globalization. MOOC is one of the online learning which will improve teaching and encourage institution to develop mission (Daniel, 2012). The initiative by University Teknikal Malaysia Melaka (UTeM) to introduce CCT MOOC is to keep abreast with the 21st century. Participants' prior experience on MOOC learning in other course such as Islamic and Asia Civilisation / TITAS was considered in the successful of CCT MOOC initiative.

Engineering Undergraduate's perception on the effectiveness of CCT Massive open online course in fostering their employability skills

In the interview, engineering undergraduates indicated that they have positive perception on the effectiveness of CCT MOOC in fostering their employability skills.

Using MOOC at first I found it difficult, however when I have mastered the way the online learning takes place, it is effective...

(Participant 7)

MOOC is an interesting way to learn. If I don't understand, I can revisit the video and learn again...again and again. This is effective. I can't make my lecturer repeat and repeat and repeat coz she will be mad at me....

(Participant 9)

According to Bruff, Fisher, McEwen, and Smith (2013), flexibility, customization, and accessibility are three encouraging elements in an online learning for students to have self-paced learning. Among all the employability skills, students believe CCT MOOC fosters two employability skills which are 'critical and creative thinking skills' and 'problem solving skill'. 16 out of 20 students have showed their positive perception on the effectiveness of CCT MOOC in fostering their information gaining skill.

MOOC is good because students can learn through video... it is exciting...and I can tune in at any time of the day...

(Participant 4)

The benefit is we can get new information on Critical and Creative Thinking skills. People can get information easily...

(Participant 13)

I think this is a very good idea from UTeM because this is a very interactive online learning method....It is actually giving more opportunities to student to explore

(Participant 15)

Sixteen out of twenty participants showed positive perceptions on the effectiveness of CCT MOOC in fostering their critical and problem solving skills. Below are some of the excerpts that are commonly cited:

This CCT course help students to be critical and creative thinking especially learning the tools such as six hats...This online learning is very appealing to me...

(Participant 10)

MOOC is also an effective way for student to experience online learning and communicate with other student from other university...This course contains very important information that helps students to acquire skills on how to solve problems

(Participant 20)

As engineering students, we are engaged on problem based learning...so CCT MMOC are very useful as we can develop skills on how to solve problem and think creatively...

(Participant 18)

These findings explicates the positive aspects of learning the specified course (Critical and Creative Thinking via MOOC).

Significance of the Study towards Practices

This study provides valuable insights and contributions towards online learning practices. The research results can be utilised by the CCT MOOC administrators and CCT content providers to improve the teaching and learning of the CCT subject. As an educational provider, evaluation on the learning tool used is needed to ensure that the end user of the program really learnt. It enables policy makers and administrators to make sound decisions. Some form of empirical data from this research will envisage future research. More research is needed so that we can come up with newer approaches resulting in better student engagement in CCT MOOC.

Conclusion

Embracing technology in education will create new learning environment on students' learning, constructivist and collaborative learning. Rena's (2010) research shows that active learning using ICT approach is a new trend in higher education. The importance of a quality learning environment is to ensure that students would not left out from the world of technology.

This study has managed to answer the research questions which show that the undergraduates are aware of the employability skills needed at the work place. They showed their positive perceptions on effectiveness of CCT MOOC which can foster their employability skills such as problems solving and making decision skills. The limitation of this study is only twenty participants were chosen for an interview which lasted for an hour. This study is significant in determining the content of CCT MOOC material which may lead to an effective learning process. To evaluate the effectiveness of CCT MOOC in fostering engineering undergraduates' employability skill, more research should be done to evaluate whether this course can address the issue on employability.

Acknowledgment

The authors would like to thank Universiti Teknikal Malaysia Melaka (UTeM) for supporting this research particularly the Centre for Instructional Resources and Technology and the valued participants.

Bibliography

- Burnett, N.; Jayaram S. (2012). Skills for employability in Africa and Asia, paper prepared for the Innovative Secondary
http://www.resultsfordevelopment.org/sites/resultsfordevelopment.org/files/resources/ISESE%20Skills%20Synthesis_Final_0.pdf
- Bruff, D. O., Fisher, D. H., McEwen, K. E., & Smith, B. E. (2013). Wrapping a MOOC: Student perceptions of an experiment in blended learning. *MERLOT Journal of Online Learning and Teaching*, 9(2), 187-199.
- Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox and possibility. *Journal of interactive Media in education*, 2012(3), Art-18.
- Dawam, S. R. M., Ahmad, K. A., Jusoff, K., Tajuddian, T., Elias, S. J., & Mansor, S. W. (2009). The use of ICT in public and private institutions of higher learning, Malaysia. *Computer and Information Science*, 2(4), 122.
- Fadzil, M., Latif, L. A., & Munira, T. A. (2015). MOOCs in Malaysia: A preliminary case study.
- Mackness, J., Mak, S., & Williams, R. (2010). The ideals and reality of participating in a MOOC, 266-275.
- McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice.
- Mohamad Sattar Rasul and Rose Amnah Abdul Rauf. (2010). *Pembangunan Alat Ukur tahap Kemahiran kebolehdapatan kerja*. Penerbit Universiti Putra Malaysia.
- Rena, R. (2010). Emerging trends of higher education in developing countries. *Analele Stiintifice ale Universitatii "Alexandru Ioan Cuza" din Iasi-Stiinte Economice*, 2010, 301-316.