Faculty of Cognitive Sciences and Human Development

UNCOVERING THE MOTIVATING LEARNING APPROACHES FOR MASSIVE OPEN ONLINE COURSES (MOOCs)

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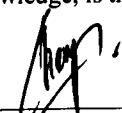   Nur Farahanim binti Zainuddin (53147)

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UNCOVERING THE MORIVATING LEARNING APPROACHES FOR MASSIVE OPEN ONLINE COURSES (MOOCs)

NUR FARAHANIM BINTI ZAINUDDIN

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This project is submitted in partial fulfillment of the requirements for a Bachelor of Science with Honours (Cognitive Science)

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The project untitled 'Uncovering the Motivating Learning Approaches for Massive Open Online Courses (MOOCs)' was prepared by Nur Farahanim binti Zainuddin and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfillment of the requirements for a Bachelor of Science with Honours (Cognitive Science).

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ABSTRACT

Massive Open Online Courses (MOOCs) is a unique open learning platform that offers free and open access to all learners around the globe. Uniquely, MOOCs nowadays become a popular trend in the education field, either for distance learning or open learning and it acts as a new technology that can enhance learning. Many studies reveal that MOOCs have low retention rate and high drop-out rate. The purpose of this study is to uncover the learning approaches that motivate learners to learn in MOOCs based on ARCS motivational model which stands for Attention, Relevance, Confidence, and Satisfaction. The Fuzzy Analytic Hierarchy Process Approach (FAHP) was used as the main methodology for this study. This study involved 200 participants. The study has revealed the most motivating learning approaches for each motivation dimension proposed by the ARCS motivational model. Based on these findings, strategies to implement motivating learning approaches in MOOCs are recommended.

Keywords: Massive Open Online Courses (MOOCs), Learning Models, Motivation, Fuzzy Analytic Hierarchy Process (FAHP) approach, and Attention, Relevance, Confidence and Satisfaction (ARCS) instructional model.

ABSTRAK

Massive Open Online Courses (MOOCs) adalah platform pembelajaran terbuka yang unik yang menawarkan akses percuma dan terbuka kepada semua pelajar di seluruh dunia. Uniknya, MOOCs kini menjadi trend popular di bidang pendidikan, sama ada untuk pembelajaran jarak jauh atau pembelajaran terbuka dan ia bertindak sebagai teknologi baru yang dapat meningkatkan pembelajaran. Banyak kajian yang mendedahkan bahawa MOOCs mempunyai kadar pengekalan yang rendah dan kadar penurunan yang tinggi. Tujuan kajian ini adalah untuk mengetahui pendekatan pembelajaran yang mendorong pelajar belajar di MOOCs berdasarkan model motivasi ARCS yang bermaksud Perhatian, Relevan, Keyakinan, dan Kepuasan. Pendekatan Proses Hierarki Analitik Fuzzy (FAHP) digunakan sebagai metodologi utama untuk kajian ini. Kajian ini melibatkan 200 peserta. Kajian ini mendedahkan pendekatan pembelajaran yang paling memotivasi untuk setiap dimensi motivasi yang dicadangkan oleh model motivasi ARCS. Berdasarkan penemuan ini, strategi untuk melaksanakan pendekatan pembelajaran motivasi di MOOCs adalah dicadangkan.

Kata kunci: Kursus Terbuka Secara Massive (MOOCs), Model Pembelajaran, Motivasi, Proses Hierarki Analisa Analitik (FAHP), dan model pengajaran Perhatian, Kaitan, Kepercayaan dan Kepuasan (ARCS).

CHAPTER 1

INTRODUCTION

Overview

The purpose of this study is to uncover the motivating learning approaches for Massive Open Online Courses (MOOCs) via Fuzzy Analytical Hierarchy Process (FAHP) approach. Overall, this chapter discusses the background of the study, problem statement, objectives, research questions, conceptual framework, significant of the study, scope of the study and the definition of terms.

Background of the Study

Technology can be used as methods in different and various areas in order to achieve their own objectives. Technology is also used as an influential instrument for education field which it can transform education in a better way (Serdyukov, 2017). This is because it can improve the productivity of learners and instructors. Besides, according to Shah (2013), technology helps to maintain and advance a relationship between the instructors and learners. Nowadays, technology is everywhere in education (Benjamin, 2016). Due to that reason, we can see that many approaches to learning using technology are being introduced in this 21st century. With that, learners can learn 24 hours a day, 7 days a week and most important it can increase learner's commitment and motivation which accelerates their learning.

Nowadays, in the 21st century, there is a big deal in term of energy, passion, and lots of shifting happening in today's education sectors. So, in order to overcome such challenges in education sectors, new forms of education have been introduced and used in university, college,

and school with the existing of the Internet, Information and Communication Technology, digital content and social networking. According to Stacey (2013), one of the free online courses that have all gained grip as important drivers of education modernization is Massive Open Online Courses (MOOCs). Then, according to Youssef, Chatti, Schroeder, Wosnitza, and Jakobs (2014), the concept of MOOCs itself is to propose free access courses for a huge number of learners from all over the globe and also known as the effective technology-enhanced learning (TEL) in higher education. Similarly, according to Kop and Caroll (2011), MOOCs is one of the best web-based courses that offer free which without any charge to any learner despite different geographical areas and also time differences. Then, according to Geno (n.d.), MOOCs are the latest educational trend, and it is a free, open and such as effective way to take exciting online classes from well-known instructors. There are many universities around the world offer MOOCs such as Harvard University in United State, Stanford University in United State, the University of Michigan in United State, Monash University in Australia, the University of Tokyo in Japan and many more.

In the past three years, surprisingly MOOCs has been discusses in many ways of publications such as unclear pedagogical challenges, learning model challenges and the reasons for high-dropout rates (Conole, 2013). Not only that, according to Meyer (2012), dropout rates of MOOCs that been accessible and presented by Stanford University from United State and University of California, Berkley from California were 80 to 95 percent and only 7 percent of students completed Engineering course that provided in the MOOCs. Because of a very low rate of completion, it is useful to improve the retention rates of MOOCs by discovering why the students dropout the courses that they participated at first.

Learning is the knowledge that acquired by instructors and gives it to the learners. Then, according to Dislen (2013), in order to make the students learn effectively and boost up their spirit, commitment and get their interest to learn is by having the motivation to study by themselves. Motivation involves the biological, emotional, cognitive and social forces to stimulate learners' action and motivation is normally used to explain why a learner does something such as learning (Cherry, 2017). When knowing the factors that contribute motivating them to learn in MOOCs, the quality design of MOOCs can be improved and can attract many learners to complete their courses taken in MOOCs. The aspect that should be taken seriously when designing and implementing the MOOCs is pedagogical aspects and others aspects (Youssef et al., 2014). Pedagogy or arts of teaching is very critical for the 21st century as it needs to discover the competencies that today's learners need to develop (Scott, 2015). Learners learn in various type of ways, so the challenges for instructors is to discover and identify which pedagogy aspects in MOOCs help them learn most effectively (Scott, 2015). Pedagogies aspects that support in MOOCs are collaborative learning and informal learning (Ala-mutka, Redecker, & Punie, 2013; Gijsbers & Schoonhoven, 2012; Leadbeater & Wong, 2010; Robot, 2004). Even though there is research about pedagogy aspects but then the rate of dropout is high.

One of the learning approaches that acts as the role of education is andragogy. Andragogy can be defined as "the art of science of helping adults learning" (Knowles, 1980). Thus, andragogy is any kind of form or method for adult learning (Kearsley, 2010). In andragogy, learners need to know how, why, and what to learn. Then, according to Knowles (1984), there are five assumptions of adult's learner, which are, self-concept, adult learner experience, readiness to learn, orientation to learn, and motivation to learn. Self-concept means the learner is self-directing in their learning. Adult learner experience can be referred to any

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resources or the mental model that the learner had experienced before and use the resource back for learning. Meanwhile, readiness to learn is learner matures of his or her readiness to learn and becomes oriented progressively more to the life-related or developmental tasks of those learner roles in social (Pappas, 2013). When it comes to the orientation to learn, it means the learner matures in term of time in their learning and focus on the problem-centered and contextual learning (Knowles, 1984). The last assumption is motivation to learn, it means "as a learner matures the motivation to learn is internal" (Knowles, 1984). Besides, Knowles (1984) stated that there are four principles that needed to follow when it comes to adult learning. There are, adults learners must be involved in planning and evaluation of their instruction, their learning activities based on their experience, learning a subject that relevant and give big impacts to job scope interest the adults' learners more in learning, and type of adults learning is more to problem-centered. Interestingly, the cMOOC approach had used this andragogy learning approach. In which, the instructor acts as the facilitator, while learners need to interact with each other actively. When applied andragogy approach in MOOCs, it is not the knowledge transfer from an instructor to a learner, but it focuses on learners self-organized in their learning, and actively participate in finding their own learning goals based on their past knowledge and based on their common interests (Kop, 2011).

Others learning approaches that play a big role nowadays is heutagogy. Heutagogy can be referred as the focus with the learner-centered learning which the learner act as the main driving force in their own learning, which happens as an outcome of the individual experiences (Hase & Kenyon, 2007). The instructor thinks that the learner can manage their learning experience but actually the instructor's role is still needed but it limited when transferring the knowledge to the learner. In heutagogy, learning only can occur when the learner is ready to learn rather than waits

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for the instructor to manage their learning or can be summarized as the approach that facilitated

by the development of the learner capacities for self-determined learning (Anders, 2015). He

also stated, if heutagogy applied in the MOOCs, it offers a strong emphasis on the growing

connections between the learner and the resource. But, "some studies have shown that learners

who preferred heutagogy in MOOCs are challenged by the low social presence context of

connectivist learning, the learning curve of virtual collaboration tools, and by becoming

overwhelmed by information flows and distracted by external demands" (Kop, 2011; Mackness,

Mak, & Williams, 2010) and even though there are lots of benefits from this heutagogy approach

but still the rate of drop-out still higher. In conclusion, even pedagogy and heutagogy already

had been implemented in a certain type of MOOCs but still the number of learners who not

completed the course in MOOCs still higher. That is why need to figure out more aspects to

overcome this problem.

Keller had suggested the instructional model which known as ARCS model to gain

student's sense of motivation (1987). Four components as the important contribution for the

motivation, which is, Attention (A), Relevance (R), Confidence (C) and Satisfaction (S). The

importance of this ARCS model is it gives useful information to instructional designer and

lecturers which can systematically develop learners' motivation. The best way for selection of

learning approaches aspects is by using a multiple-criterion decision-making (MCDM) problem.

An approach that used to solve MCDM problem is Analytic Hierarchy Process (FAHP) (Ashtiani

& Abdollahi Azgomi, 2015). Saaty is the first person that using AHP approach to choose a

difficult decision problem by using the multilevel hierarchical structure of objectives, criteria,

sub-criteria, and alternatives. After deciding the objectives, criteria, sub-criteria, and alternatives,

the decision maker needs to compare all criterions of the problem in the pair-wise method that

prepared in matrices. According to Mann and Triantaphyllou (1995), the comparison from the criterions are used to gain the weights of significant decision criteria and comparative performance measures of alternatives in each single decision criterion and if the comparisons not completely consistent, then it provides tools for improving the reliability. MCDM also plays a crucial role in real life problems. Not only that, fuzzy logic is related to AHP approach in solving MCDM problems because it involves the human uncertainty.

Problem Statement

Recent, MOOCs have gained a great deal of interest from educators and learners. One of the reasons why MOOCs gained attention because MOOCs offer free and open access online courses for massive learners around the world (Yousef, et al., 2014). But many past research claimed that MOOCs seems to be decreasing in term of completion of courses that provided in MOOCs with 95 percent drop-out rate in current years (Gamage, Fernando, & Perera, 2015; Hone & Said, 2015; Yousef, et al., 2014). The rate of drop-out is too high. Meyer also stated that only 7 percent of 50,000 students in University of California, Berkley completed engineering online course in MOOCs (2012). Not only that, Reich (2014) also stated only 10% of learners that completed their online courses in MOOCs throughout these current years. The latest, according to Ahearn (2017), only 5.5% of students who enroll in open online courses of HarvardX and MITX earns certificates of completion. So, in order to know and discover these unexpected phenomena is significance to investigate as MOOCs is one of the online courses that relevant to teaching and learning platform in higher education like the university and school.

Motivation is one of the reasons for a learner to complete any MOOCs (Davis, Dickens, Leon, Vera, & White, 2014). According to Barak, Watted, and Haick (2016), motivation seems

as an objective of a learner to act in a certain behavior in a certain situation. Not only that, according to Ames (1992), motivation is about an individual's target, behavior and attitude on what is significant and what is not. So, basically, the motivation of learners can determine whether learners are interested or not in using the MOOCs for their learning. Furthermore, motivation in learning acts as the internal basis which maintains student's cognitive improvement (Brophy, 2004). Brophy (2004) also stated that motivation to learn means to search suitable education tactics and tricks and gain the future benefits from it. There are also some studies on the pedagogical challenges and technological challenges in MOOCs (Yousef, et al., 2014) but very few studies. Thus, this study focuses on identifying learning approaches that are motivating to learners to reduce the drop out rates.

Objectives

General Objectives

The main objective is to uncover the motivating learning approaches for Massive Open Online Courses (MOOCs) via Fuzzy Analytical Hierarchy Process (FAHP) approach.

Specific Objectives

1. To derive the learning approaches that are suitable for MOOCs.

2. To identify the motivating learning approaches for MOOC based on ARCS motivational model via Fuzzy Analytical Hierarchy Process (FAHP) approach.

3. To recommend the strategies for implementing the learning approaches that most motivated student in the MOOCs.

Research Question

1. What are the suitable learning approaches for MOOCs?

2. How can FAHP approach be used in identifying the motivating learning approaches for MOOC based on ARCS motivational model?

3. What are the strategies for implementing the aspects of learning approach that motivated students to use MOOCs?
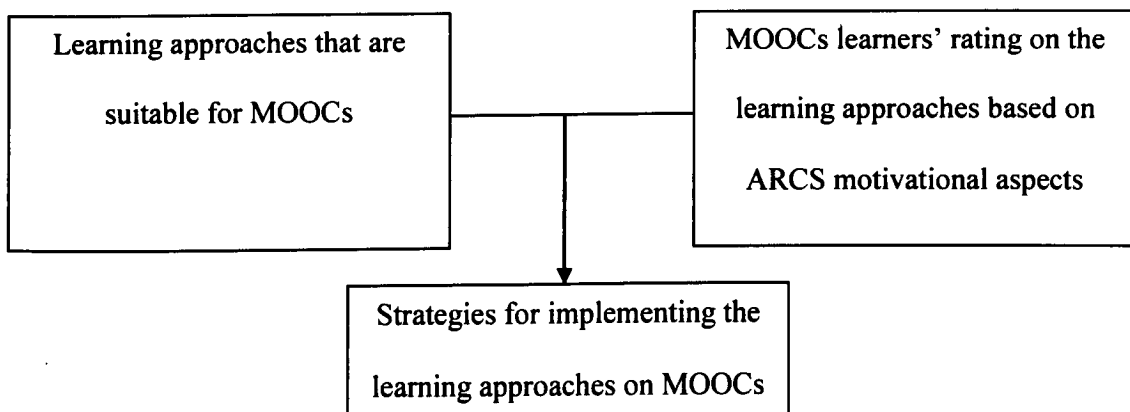
Conceptual Framework

Figure 1. Conceptual Framework

Significance of the Study

Knowledge

This study provides insight into learning approaches that are motivating for MOOC students. Such knowledge is significant to derive useful strategies that are aligned to these approaches to guide the design of MOOCs.

Methodology

The full report of this research can be used as a reference for the future researcher who is interested to study about criteria that contribute successfully of MOOCs. Then, the data analysis framework can also be used by the future researcher. Not only that, the research framework which are problem statement, objectives, research questions and conceptual framework in this study could be used by next researchers who would like to replicate this study in future.

Practitioners

The beneficiaries of this study are lecturers, developers of MOOCs, parents, and students. The results and the findings from this research give information to lecturers and developers of MOOC on how to implement better MOOCs based on the derivation of important learning model based on ARCS motivational aspects. Then, for future researchers, they can benefit from this research in order to serve as a pointer from which other research can derive and determine others learning approaches to implement and make successful MOOCs that can attract students and make them learning actively on it.

The scope of the study

This study focused on three learning approaches (pedagogy, andragogy, and heutagogy) and employed the FAHP approach on the main methodology to determine the motivating learning approaches. The ARCS motivational model was employed to examine the motivational aspects. The study only involved 200 of students of UNIMAS.

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Definition of Terms

Conceptual Definition

Massive Open Online Courses (MOOCs)

MOOCs are web-based online courses that are free and open a widely-shared set of courses that available over the Internet with a massive number of participants of people (McAuley, Stewart, Siemens, Cormier, 2010).

Pedagogy

Pedagogy refers to the learning, and purpose of teaching (Department of Education, Employment and Workplace Relations (DEEWR, 2009a, p.42).

Andragogy

"Andragogy is the art and science of adult learning (Knowles, 1984)".

Heutagogy

Heutagogy can be defined as the self-determined learning (Hase & Kenyon, 2000).

Motivation

"Motivation is the engine of the steering wheel of a car and it generates energy and controls the action of people (Gage & Berliner, 1992)".

Attention, Relevance, Confidence, and Satisfaction (ARCS) instructional model

According to Keller (2006a), a motivation of a person is the amount of effort and willingness to achieve the target and for that reason; the model of motivation can be designed into four categories, which are attention, relevance, confidence, and satisfaction.

Multiple-Criteria Decision Making (MCDM)

MCDM is a process of characterized multiple actors, criteria and objectives, this process has five components which are: goal, alternatives, criteria, and sub-criteria and including the decision maker (Kumar, Sah, Singh, Deng, He, Kumar & Bansal, 2017; San Cristóbal Mateo, 2012; Wang, Jing, Zhang & Zhao, 2009).

Fuzzy Analytical Hierarchy Process (FAHP)

FAHP is a technique that used the hierarchical structures to solve the MCDM problems based on four components of MCDM (goal, alternatives, criteria and sub-criteria and decision makers) by computing the local and global weights of the criteria and sub-criteria and rank it based on the weights for the user to make a choice (Ali, Sabri, Noor, & Ismail, 2012).

Instructor Dependent

The learner fully depends on the instructor for learning purposes (Beaven, Hauck, Comas-Quinn, Lewis, & Arcos, 2014; Blaschke, 2012)

Self-Dependent

Learners are 'problem-finders' and depend on themselves and other learners for the learning purposes (Gerstein, 2016).

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Structured Learning

Overview of a standard model of supervised learning in which all the contents of the learning are prepared by the instructors (Mueller, 2013).

Semi-structured Learning

Semi-structure learning means the instructor still provides learning guidance to learner learning but empowers the learner with some responsibility in their learning (Carlson, 1989).

Unstructured Learning

Open-ended learning in which the learning is not planned, learn in the novel situations and the learner is responsible for their own learning (Andrews, 2016; Wells, 2014).

Summary

Basically, this chapter discusses the MOOCs and learning approaches elements. The Fuzzy Analytical Hierarchy Process (FAHP) approach is the main methodology used in this research. Not only that, the significance of the learning approaches aspects in MOOCs learners' also been emphasized. Last but not least, limitation of the study also been described and the definition of terms also been listed for better understanding.