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COMMUNITY OF INQUIRY, SELF-REGULATED LEARNING, AND LEARNERS' SATISFACTION IN ENTREPRENEURSHIP MASSIVE OPEN ONLINE COURSES (MOOCS)

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**DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
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Abstrak

Massive Open Online Courses (MOOCs) sebagai satu platform pembelajaran baharu telah berkembang dengan pesatnya, menghasilkan suatu pembelajaran yang positif kepada para pelajar. Walaupun kajian lepas telah menyoroti banyak pengalaman MOOCs daripada perspektif pelajar, kefahaman tentang kepuasan pembelajaran dalam konteks MOOCs didapati masih terhad. Berdasarkan model Komuniti Inkuiri (Community of Inquiry, CoI) dan teori Pembelajaran Regulasi Kendiri (Self-Regulated Learning, SRL), kajian ini menyelidik hubungan antara interaksi pengajaran, interaksi sosial, interaksi kognitif, pembelajaran regulasi sendiri, dan kepuasan pelajar dalam Malaysia MOOCs. Pendekatan kaedah campuran penjelasan berurutan telah digunakan sebagai reka bentuk kajian. Data dikumpulkan daripada 398 pelajar MOOCs melalui tinjauan berasaskan web, dengan 11 orang pelajar kemudiannya ditemu bual untuk memberikan maklumat yang lebih mendalam kepada data. Hubungan hipotesis telah diuji menggunakan pemodelan persamaan berstruktur (SEM) melalui AMOS versi 23, sementara ATLAS.ti versi 8 digunakan untuk membantu analisis tematik data temu bual. Analisis SEM menunjukkan bahawa interaksi pengajaran, interaksi kognitif, dan strategi SRL menjelaskan secara signifikan kepuasan pelajar terhadap MOOCs. Selain itu, terdapat kesan tidak langsung yang signifikan melalui SRL daripada interaksi sosial, dan interaksi kognitif terhadap kepuasan pelajar. Walau bagaimanapun, SRL tidak mempunyai hubungan pengantaraan antara interaksi pengajaran dan kepuasan pelajar. Selanjutnya, melalui analisis tematik data temu bual pelajar, empat tema dikembangkan secara deduktif daripada penemuan fasa kuantitatif dan satu lagi tema (penerimaan MOOCs) muncul secara induktif dalam menjelaskan kepuasan terhadap MOOCs. Kajian ini menyumbang kepada bidang penyelidikan dengan mengetengahkan pemboleh ubah langsung berkaitan pelajar yang dapat mempengaruhi kepuasan pelajar melalui perspektif teori CoI dan SRL. Penemuan ini juga memberikan implikasi praktik kepada pembangun dan pengajar MOOCs untuk mereka bentuk MOOCs yang memfokus kepada pengukuhan interaksi pengajaran, sosial dan kognitif, mendorong kemampuan pelajar dengan melaksanakan strategi SRL dan memupuk penerimaan MOOCs untuk meningkatkan kepuasan pembelajaran dalam talian.

Kata Kunci: *Massive open online courses*, Komuniti inkuiri, Pembelajaran regulasi sendiri, Kepuasan pelajar, Kaedah campuran.





Abstract

Massive Open Online Courses (MOOCs) as a new learning platform are rapidly growing, providing learners with positive learning outcomes. Although past studies have highlighted the experiences in MOOCs from the perspectives of learners, the insights to the satisfaction in learning within the MOOC context is still marginal. Based on the Community of Inquiry (CoI) model and Self-Regulated Learning (SRL) theory, this study has examined the relationships between teaching presence, social presence, cognitive presence, self-regulated learning, and learners' satisfaction in Malaysia MOOCs. A sequential explanatory mixed-method approach has been employed. Data has been collected from 398 MOOCs learners through a web-based survey, with 11 learners subsequently being interviewed to provide depth to the data. The hypothesised relationships have been tested using structural equation modeling (SEM) via AMOS version 23, while ATLAS.ti version 8 have been employed to assist the thematic analysis of the interview data. The findings of SEM indicated that teaching presence, cognitive presence, and SRL strategies significantly explained learners' satisfaction in MOOCs. Besides, there were significant indirect effects through SRL from social presence, and cognitive presence to satisfaction. However, SRL did not mediate the relationship between teaching presence and learners' satisfaction. Further, through the thematic analysis of learners' interview data, four themes were deductively developed from the findings of quantitative phase and one more theme (MOOC acceptance) was inductively emerged in explaining satisfaction in MOOCs. The study contributes to this area of research interest by highlighting learner-level variables that influence learners' satisfaction through the theoretical perspectives of CoI and SRL. The findings have also provided practical implications for MOOC developers and instructors in designing MOOCs that focus on strengthening the teaching, social and cognitive presences, encouraging learners' ability by implementing SRL strategies and inculcating MOOC acceptance to enhance online learning satisfaction.

Keywords: Massive open online courses, Community of inquiry, Self-regulated learning, Learner satisfaction, Mixed-method.





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List of Abbreviations

CoI	Community of Inquiry
CP	Cognitive Presence
MOE	Ministry of Education
MOOCs	Massive Open Online Courses
OCW	Open Courseware
OER	Open Educational Resources
SP	Social Presence
SRL	Self-Regulated Learning
TP	Teaching Presence





CHAPTER ONE

INTRODUCTION

1.1 Introduction

This opening chapter briefly explains the whole structure of the present study. It starts with an introduction, followed by the background of the research, and elaboration of the research problems. The next sections provide the research objectives, research questions, research hypotheses, and conceptual framework. Lastly, this chapter presents the significance of the study, definition of the constructs, and summarising the overall structure of the research.

1.2 Background of the study

The numbers of online and hybrid courses offered by higher education institutions are currently on the rise at a global scale. Globally, there are more than hundred million learners who enrol in at least one or more online courses (Shah, 2018). It is known that more learners and corporate employees are interested in open, flexible, and distance learning options and the demands are increasing (Fredericksen, 2017). The global expenses for online learning services and products are over 35.6 billion dollars by 2011 (Ambient Insight, 2012). The huge number of investments has influenced the growth of online learning to move to the next level with the introduction of Massive Open Online Courses (MOOCs).

MOOCs are provided via online platform and delivered with significant differences from previous online educational approaches. Compared to traditional online education, MOOCs draw more students, the courses are free and open to all types of





learners (Alraimi, Zo & Ciganek, 2015; Voss, 2013). MOOCs are considered as an open learning movement which is provided by well-known universities. In the late summer of 2011, more than 160,000 learners from more than 190 countries were attracted to MOOC which was offered by two artificial intelligent researchers from Stanford University (Markoff, 2011). Considering this achievement, MOOC has become an attraction which results in the appearance of a considerable number of MOOC providers and platforms to offer a variety of online courses.

At the beginning of 2012, online courses were quickly expanding through MOOC providers including edX, Udacity, and Coursera. In August 2012, the number of students enrolled in Coursera alone was more than one million (Koller, Ng, Do & Chen, 2013). The massive increase in MOOCs development was seen in 2018 when approximately 101 million students from more than 900 higher education institutions enrolled in 12,400 MOOCs (Shah, 2018). Figure 1.1 shows the growth of MOOCs from 2012 until 2018. The rapid growth indicated that the demands on MOOCs could increase dramatically in the higher educational institutions.

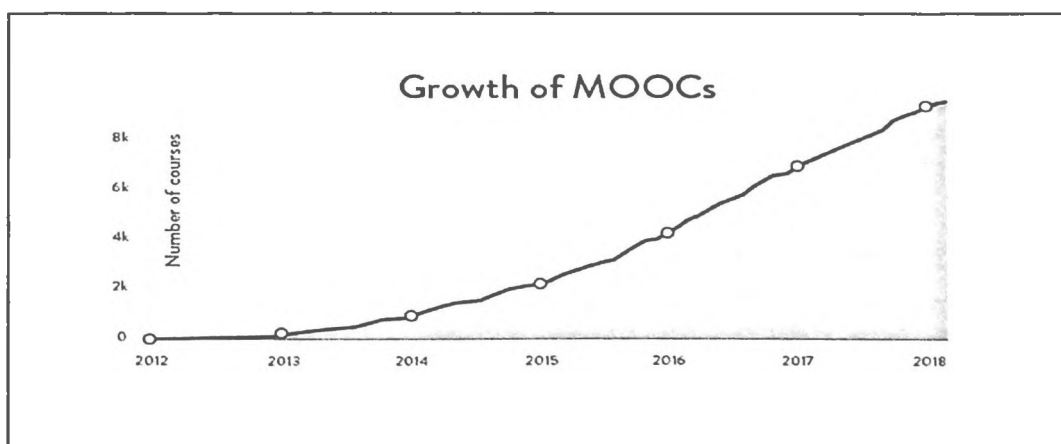


Figure 1.1. The Growth of MOOCs from 2012 to 2018





Universities around the globe including Malaysia have been making efforts to develop MOOCs. In September 2015, the Ministry of Education (MOE) had launched *Malaysia MOOCs* which is the country's first national coordinated online learning initiative. Presently, the MOOCs implementation in Malaysia is parallel with some of the national plans such as the 11th Malaysia Plan (2016-2020), the National Economic Model, and the Malaysian Education Blueprint for Higher Education (Fadzil, Latif, & Shariffadeen, 2015). The 9th chapter (or shift) namely *Globalize Online Learning* specifically addressed the MOOCs. The MOE stated the leverage of MOOCs to use the technology to improve the excellence and expand the access to education (Ministry of Education Malaysia, 2015).

The development of MOOC in Malaysia has exponentially increased in the past few years although it is still at an early stage of its implementation. Currently, the MOOC in Malaysia is operated under OpenLearning Global (M) Sdn. Bhd. In June 2018, there are 478 courses and 352,622 learners who enrolled in Malaysia MOOC (OpenLearning, 2018). Table 1.1 shows the number of courses developed by the institutions in Malaysia MOOC and the number of learners. Based on these figures, MOOC can be an alternative medium for Malaysian universities to impart knowledge suitably to a larger number of learners.



Table 1.1
Information on Malaysia MOOC

Institutions in the Malaysia MOOC	Number of MOOCs	Number of enrolled learners
UKM MOOC	164	166,926
UiTM MOOC	88	55,479
UMP MOOC	24	7,086
UNIMAS MOOC	23	28,013
PUTRA MOOC	21	46,018
UniSA MOOC	18	2,833
UTM MOOC	17	6,959
USIM MOOC	16	2,060
UTEM MOOC	16	6,982
USM MOOC	10	880
UPNM MOOC	13	1,142
UPSI MOOC	12	5,365
UMT MOOC	12	8,252
UUM MOOC	12	9,311
UniMAP MOOC	9	1,145
UMS MOOC	8	666
IIUM MOOC	5	1,383
UTHM MOOC	4	1,048
UMK MOOC	4	309
UM MOOC	2	765
Total	478	352,622

Source: OpenLearning (2018)
Note: The list includes four Malaysia’s pilot MOOCs; Tamadun Islam dan Tamadun Asia (PUTRA MOOC), Hubungan Etnik (UKM MOOC), Introduction to Entrepreneurship (UiTM MOOC), and ICT Competency (UNIMAS MOOC).

However, there are evidence that online courses are unsuccessful in fulfilling learners’ needs despite the rapid growth of online courses and an increasing number of learners’ enrolment in MOOCs (Bozkurt & Keefer, 2017; Gyamfi & Sukseemuang, 2018; Harrathi, Touzani, & Braham, 2018). It was found that learners are dissatisfied with online learning (Breslow et al., 2013; Guest, Rohde, Selvanathan, & Soesmanto, 2018; Shrader, Wu, Owens, & Ana, 2016; Sun, Tsai, Finger, Chen, & Yeh, 2008). This issue was the main focus among online educators. Researchers stated that several factors



such as instructors, course contents, peer interactions, and learning strategies could influence the success of online courses (Garrison, Anderson & Archer, 2010; Gasevic, Adesope, Joksimovic, & Kovanovic, 2015).

Nevertheless, most researchers have been focusing on learner's characteristics, namely motivation, self-efficacy, acceptance, perceived usefulness and ease of use with regards to their influence on MOOC learning outcomes (Hew & Cheung, 2014; Instructure, 2013; Nordin, Norman & Embi, 2015; Jung & Lee, 2018). In terms of the methodology, log data were used in several studies in the attempt to quantitatively measure learning engagement by observing trends in the number of lecture playbacks or the number of posts on discussion boards (Kizilcec, Piech, & Schneider, 2013; Milligan, Littlejohn, & Margaryan, 2013). Since MOOCs incorporate various interconnected aspects, a thorough understanding of MOOC learners, instructors, peers and learning support systems is vital to maintaining learners' engagement and satisfaction throughout the learning process (Rha, 2016).

Garrison, Anderson & Archer (2000) has therefore established the Community of Inquiry (CoI) model that has become one of the inevitable frameworks used to improve student learning experiences and satisfactions in online learning (Arbaugh et al., 2008; Castellanos-Reyes, 2020; Cleveland-Innes, Vaughan, & Garrison, 2018; Rockinson-Szapkiw, Wendt, Wighting, & Nisbet, 2016). The CoI model is a constructivist framework that has seen popularity in the online courses where students participated in a "search for meaning and understanding" articulated by themselves (Akyol, Garrison, & Ozden, 2009, p. 66). An online learning community consists of an





instructor and learners with three types of presences, including teaching presence, social presence and cognitive presence (Figure 1.2).



Adapted from (Garrison et al., 2000, p. 88)

Figure 1.2. Community of Inquiry Model

The first construct of the CoI model, *teaching presence*, involves instructors in designing, supporting, and directing student activities to deliver effective learning experience. This presence requires three components: (1) the design and organisation of course materials and learning activities; (2) facilitation discourse by providing encouragement and guidance to produce learning; and (3) direct instruction through providing expertise and information (Anderson, Rourke, Garrison & Archer, 2001). It was also claimed that teaching presence is essential to the transition of social presence to cognitive presence (Dempsey & Zhang, 2019).





Social presence is the second construct which refers to the amount of social and emotional connection that is experienced among the online course members (Cleveland-Innes et al., 2018). The components of social presence include: (1) open communication with other course members; (2) group cohesion and (3) affective expression with other learners (Diaz, Swan, Ice & Kupczynski, 2010; Garrison & Arbaugh, 2007). Social presence has been discovered to facilitate learning (Kozan & Richardson, 2014) through social interaction; supporting the need for online community of inquiry to be constructed (Garrison et al., 2000). Nonetheless, more research is required to understand the role of social presence in improving learning in the online learning context (Garrison, 2017; Kreijns, Van Acker, Vermeulen, & Van Buuren, 2014).



The third construct of CoI model is *cognitive presence* that focuses on the reflection of learning and inquiry process. This construct is operationalised in Practical Inquiry (PI) model that functions in four phases: triggering event, exploration, integration and resolution (Garrison et al., 2000). Intellectual engagement with course concepts is vital in cognitive presence as students' capacity to extract meaning from ideas and facts are honed through discussion, reflection and application (Rubin, Fernandes, & Avgerinou, 2013). Despite being regarded as essential to successful in higher education level (Garrison, 2017), cognitive presence is the least known element in the CoI framework due to its complex component.

It was found that these presences had successfully produced positive outcomes in online courses including learners' satisfaction (Akyol & Garrison, 2011a; Arbaugh, 2008; Garrison & Arbaugh, 2007; Joo, Lim, & Kim, 2011; Kozan & Caskurlu, 2018;





Maddrell, Morrison, & Watson, 2017). Akyol and Garrison (2011a) specifically discovered that teaching, social and cognitive presences were significantly correlated with learners' satisfaction. Moreover, Arbaugh (2008) found that cognitive and teaching presences had much larger effects than social presence in predicting student learning. It was also revealed in the same research that social and teaching presences predicted learners' satisfaction with the online medium. Therefore, it is generally evident that teaching, social, and cognitive presences in CoI model play a significant role in determining learners' satisfaction and achievement in online courses (Garrison, 2017).

In addition, the success in learning based on the CoI framework might also be influenced by learners' commitment to fostering a positive learning community. By playing a more active and demanding role in online learning environment such as MOOC (Bol & Garner, 2011; Broadbent & Poon, 2015), learners would take more responsibility over their learning (Barnard, Paton, & Lan, 2008; Cho, Demei, & Laffey, 2010), in comparison with that of face-to-face settings. Nonetheless, such learners' self-driven factors have often been neglected in research concerning community of inquiry (Shea & Bidjerano, 2010, 2012).

Students' success in online learning is particularly associated with *Self-Regulated Learning* (SRL) as an important element (Bol & Garner, 2011; Broadbent & Poon, 2015; Cho & Heron, 2015). Zimmerman and Schunk (1989) defined SRL as the incorporation of learners' self-generated thoughts, feelings, and actions in the learning process which is aimed at goal attainment. Self-regulated learners will proactively determine their learning goals and engage in the process of achieving them. These





learners will be in charge of planning their tasks, monitoring the task progress, and reflecting on goal accomplishment. Hence, a comprehensive understanding of MOOC learners with regards to their SRL strategies should be taken into consideration within the CoI model to draw their relation with other learners and instructors.

Despite the abundance of studies investigating the role of self-regulation in the nature of online community of inquiry (Cho, Kim, & Choi, 2017; Shea & Bidjerano, 2012), thorough research is still crucial to explore the influence that self-regulation skills have in the MOOC context (Littlejohn, Hood, Milligan, & Mustain, 2016). Their influence has not been studied altogether neither within the CoI framework nor its three-presence separately since both CoI and SRL give a positive impact on learners' satisfaction in the online learning environment. Consequently, the present literature, therefore, aims at exploring new findings particularly concerning the interconnectivity between CoI and SRL in terms of their impacts on learners' satisfaction in MOOCs.

1.3 Problem statement

Ideally, MOOCs were recommended as an educational innovation that promotes life-long learning that can overcome the structural limitations of traditional university systems, namely high tuition fee and low accessibility (Dennis, 2012). However, despite this quality, the efficacy of MOOCs was particularly criticised for their low retention and completion rates. Several studies have consistently recognised low course completion and retention rates as among the major problems in MOOCs (Hew & Cheung, 2014; Jacobs, 2013; Kolowich, 2013; Xiong, Kornhaber, Suen, Pursel & Goins, 2015). It has been recorded that globally, MOOCs completion rates are



typically very low, being around 10% of the enrolment as the courses progress (Aydin, 2018; Breslow et al., 2013; Jordan, 2014). The same issue is likely to occur in Malaysia MOOCs.

Initial research in the Malaysia pilot MOOCs (Habibah Ab Jalil, Norasiken Bakar & Zanariah Jano, 2015) discovered that the percentage of learners with 100% completion for all courses did not exceed 17% in average (Table 1.2). Approximately, half of the MOOC learners only completed 50% of the course content even though learning the courses completely was compulsory for them. This low course completion and retention rates could weaken the effectiveness and sustainability of MOOCs (Jung & Lee, 2018), as the development and operation of MOOCs require huge monetary investment (Hollands & Tirthali, 2014). Low completion and participation in online learning experience are a major concern in terms of learners' needs and satisfaction as effective learning can only occur when learners are actively involved in their learning process (Alqurashi, 2019).

Table 1.2
Percentage of Completion in Malaysia Pilot MOOCs

Malaysia Pilot MOOCs	Number of learners	Percentage of Completion			
		10% Completion	50% Completion	75% Completion	100% Completion
TITAS	27,774	2.20%	48.12%	36.17%	24.39%
Hubungan Etnik	26,497	4.97%	42.83%	30.70%	17.22%
Introduction to Entrepreneurship	14,035	3.54%	46.21%	38.62%	9.53%
ICT Competency	7,243	3.74%	48.91%	38.95%	14.38%

Source: Habibah Ab Jalil, Norasiken Bakar and Zanariah Jano (2015)



Accordingly, among the factors contributing to the low completion rates in MOOCs is lack of motivation (Fini, 2009; Instructure, 2013), inability to understand the content material and having no one to turn to for assistance (Belanger & Thornton, 2013), as well as having other commitments to accomplish (Belanger & Thornton, 2013; Rice, 2013). Additionally, the survey conducted by Xu and Jaggars (2011) elaborated on common reasons for dropping out of online courses, namely lack of both teaching and social support and interaction, sense of isolation, poor time management, and a general lack of satisfaction.

In this case, course satisfaction in online learning, especially in MOOC has become the focus among online educators (Alraimi et al., 2015; Gameel, 2017; Li, 2019; Rabin, Kalman & Kalz, 2019). Subsequently, efforts to study and understand this phenomenon are initiated, prompting different theories and frameworks to be applied in the implementation of MOOCs (Kop, Fournier, & Mak, 2011). Accordingly, in a Community of Inquiry (CoI) resulted from successful online courses, learners will not only engage with one another actively, they will also interact with instructors and the learning materials to develop new knowledge and skills. When online courses have a strong CoI, it is observed that students will learn more by participating in discussions, become more satisfied with the learning experience and possess greater retention (Arbaugh, 2008; Garrison, 2017). In online learning environment, researchers have identified three presences: teaching, social, and cognitive, based on the CoI framework, which have a major impact on online course satisfaction (Garrison, 2017). A higher level of presence will cause the level of satisfaction to rise and vice versa.





In contrast, other research in MOOCs considered other additional factors, such as motivation (Alraimi, et al., 2015; Barba, Kennedy, & Ainley, 2016; Zhou, 2016), attitudes toward MOOC (Breslow et al., 2013; Kolowich, 2013; Jacobs, 2013), learning challenges (Belanger & Thornton, 2013; Rice, 2013), teaching challenges (Breslow et al., 2013), as well as certification and accreditation issues in MOOC (Daniel, Cano, & Gisbert, 2015; Hew & Cheung, 2014). Thus, minimal attention has been directed toward researching the dynamic relationship and interaction between teaching, social and cognitive presences in relation to learners' satisfaction in MOOC.

Additionally, learners' commitment to cultivating a positive learning community such as their self-regulated learning (SRL) strategies could be another important factor for success with the CoI framework (Broadbent & Poon, 2015; Cho, Kim, & Choi, 2017).

Not only is SRL significant in traditional face-to-face learning, it is also essential in online learning environment since information era requires learners to be independent and take charge of their own learning. Initial research examining the role of SRL in supporting MOOC learning has recognised a range of cognitive, affective, and behavioural factors that positively impact learning in an MOOC environment (Hood, Littlejohn, & Milligan, 2015). SRL also has a crucial influence on learners' achievements and satisfaction in online courses (Broadbent & Poon, 2015; Kuo, Walker, Belland, & Schroder, 2013).

In Malaysian context, few studies have extensively examined the role of SRL strategies in conventional classroom settings (Hafizah, Norhana, Badariah, & Noorfazila, 2016; Kanammah, Melissa, & Shahizan, 2013; Muhamad Ikhwan Mat Saad, Ong Eng Tek, Sadiyah Baharom, 2011; Melissa, 2016; Yong & Yeo, 2014).



However, past research have not adequately addressed the role of SRL strategies in online learning environments, especially in the Malaysia MOOCs. In general, it is believed that SRL could maximise learners' satisfaction in MOOCs by taking their cognitive, behavioural and interactional factors into consideration.

Nevertheless, inconsistencies have been found in research outcomes pertaining to the relationship between CoI and learners' satisfaction that may be resulted from the role of SRL as plausible mediator in this relationship. For instance, Joo et al. (2011) noticed that only cognitive and teaching presences could significantly predict learners' satisfaction in an online university course in Korea. Additionally, Enightoola, Fraser, and Brunton (2014) claimed that learners' satisfaction was correlated for only those dimensions of each presence in the CoI framework, namely, exploration, and resolution within cognitive presence. In contrast, Akyol and Garrison (2011a) discovered that all three presences were significantly correlated with satisfaction. While there were ambiguities reported in the literature particularly on the direct relationship between CoI model and course satisfaction (Rubin et al., 2013), SRL elements such as goal setting, task strategies, time management, and self-evaluation could explain the indirect link between CoI and learners' satisfaction in MOOCs (Alraimi, et al., 2015; Chu, Ma, Feng & Lai, 2015; Zhou, 2016; Lim, Tang & Ravichandran, 2017; Littlejohn et al., 2016). These findings, therefore, call for more research to progress with the utilisation of the CoI framework as a basis for web-based learning, as well as the mediating role of SRL that will contribute in order to gather a detailed and comprehensive view with respect to learners' satisfaction in MOOCs.



Another perspective of researchers in online learning suggest that apart from teaching, social, and cognitive presences, SRL could be reflected as learning presence in the CoI framework (Shea et al., 2012). Suggestions to include learning presence as the fourth construct in the model has been forwarded in several studies, claiming that it is an essential requirement to incorporate self-regulation in CoI framework (Cho et al., 2017; Pool, Reitsma, & van den Berg, 2017; Shea & Bidjerano, 2012; Traver, Volchok, Bidjerano, & Shea, 2014). Despite these claims, original authors of CoI framework refuted by arguing that the presence of SRL in this model can be understood as the interaction of cognitive presence and teaching presence (Garrison & Akyol, 2015). Therefore, more research should be conducted to resolve the on-going debate concerning the role of SRL in the CoI framework.

Despite the fact that many studies have employed this approach to research key elements of CoI in online courses (Cho et al., 2017; Gasevic et al., 2015; Scott, Sorokti, & Merrell, 2016; Shea & Bidjerano, 2012), limited study has been done particularly on MOOCs in terms of its comprehensive influence toward learners satisfaction. Although Kovanović et al. (2018) have elaborated on the updated CoI model focusing on its distinctive characteristics within MOOC setting; the current study extends this knowledge using another comprehensive model of SRL and satisfaction in MOOCs.

Apart from that, most studies done on MOOCs applied quantitative approach by concentrating on learners' role (Veletsianos & Shepherdson, 2016; Zhu, Sari, & Lee, 2018). There were very few researches that employed mixed methods and qualitative approach in studying MOOCs (Liyaganunawardena, Adams, & Williams, 2013; Park, Jung, & Reeves, 2015). Researchers would only apply qualitative approach to focus





on the MOOC providers and the instructional designs of an MOOC; a comprehensive understanding of learning behaviour and satisfaction in MOOC was, however, not addressed. Hence, it may be advantageous for MOOC researchers to more actively incorporate a qualitative approach to explain or build on initial quantitative results in understanding the comprehensive relationship between MOOC learners, instructors, peers, and learning support in MOOCs (Zhu et al., 2018).

Therefore, the present study will fill the gap by employing the sequential explanatory mixed-methods approach to provide an in-depth explanation on the relationship between CoI elements (teaching presence, social presence, and cognitive presence), thus, consequently examine the role of SRL in the CoI framework. It is vital to further investigate the interconnectivity of these factors in terms of their ability to influence satisfaction levels among diverse learners in the Malaysia MOOCs context. Instructors and MOOC providers can, therefore, consider the dynamic relationship among learners, instructors, and peers in MOOC development to provide a worthy experience and satisfaction during the MOOC learning process.

1.4 Research objectives

The main objective of this study is to examine the relationship between teaching presence, social presence, cognitive presence, and learners' satisfaction in Malaysia MOOCs, through the mediating role of self-regulated learning. Specifically, the present study intends to meet the following both quantitative and qualitative objectives:



**Quantitative research objectives:**

1. To identify the perceived level of community of inquiry elements (teaching presence, social presence, cognitive presence), self-regulated learning and learners' satisfaction in the Malaysia MOOCs.
2. To examine whether teaching presence, social presence, cognitive presence, and self-regulated learning have any significant relationship with learners' satisfaction in the Malaysia MOOCs.
3. To examine the mediating role of self-regulated learning on the relationship between teaching presence, social presence, cognitive presence, and learners' satisfaction in the Malaysia MOOCs.

**Qualitative research objective:**

4. To explore the role of teaching presence, social presence, cognitive presence, and self-regulated learning strategies in enhancing learners' satisfaction in the Malaysia MOOCs.





1.5 Research questions

The following research questions are derived based on the research objectives above and are divided into the quantitative research questions and the qualitative research question:

Quantitative research questions:

1. What are the perceived levels of teaching presence, social presence, cognitive presence, self-regulated learning, and learners' satisfaction in the Malaysia MOOCs?
2. What are the relationships between teaching presence, social presence, cognitive presence, self-regulated learning and learners' satisfaction in the Malaysia MOOCs?
3. Does self-regulated learning mediate the relationship between teaching presence, social presence, cognitive presence, and learners' satisfaction in the Malaysia MOOCs?

Qualitative research question:

4. How can teaching presence, social presence, cognitive presence, and self-regulated learning strategies enhance learners' satisfaction when learning in the Malaysia MOOCs?





1.6 Research hypotheses

The following research hypotheses are derived for quantitative phase of this study and related to research question two and research question three as above:

Hypotheses for research question two:

H1: Teaching presence has a positive and significant relationship with learners' satisfaction in the Malaysia MOOCs.

H2: Social presence has a positive and significant relationship with learners' satisfaction in the Malaysia MOOCs.

H3: Cognitive presence has a positive and significant relationship with learners' satisfaction in the Malaysia MOOCs.

H4: Self-regulated learning has a positive and significant relationship with learners' satisfaction in the Malaysia MOOCs.

H5: Teaching presence has a positive and significant relationship with self-regulated learning in the Malaysia MOOCs.

H6: Social presence has a positive and significant relationship with self-regulated learning in the Malaysia MOOCs.

H7: Cognitive presence has a positive and significant relationship with self-regulated learning in the Malaysia MOOCs.





Hypotheses for research question three:

H8: Self-regulated learning mediates the relationship between teaching presence and learners' satisfaction in the Malaysia MOOCs.

H9: Self-regulated learning mediates the relationship between social presence and learners' satisfaction in the Malaysia MOOCs.

H10: Self-regulated learning mediates the relationship between cognitive presence and learners' satisfaction in the Malaysia MOOCs.

1.7 Conceptual framework

An online learning community acts as a platform that serves social needs as well as enhancing learners' satisfaction and learning through community involvement (Arasaratnam-Smith & Northcote, 2017). There have been numerous models and variables being proposed and examined in previous studies in the evaluation of learners' satisfaction in online courses. Community of Inquiry (CoI) is among the most influential and frequently adopted models in studying learners' satisfaction within online learning environment (Castellanos-Reyes, 2020; Giannousi & Kioumourtzoglou, 2016; Rockinson-Szapkiw et al., 2016). The collaborative constructivist theories and approaches become the basis of inquiry in CoI framework. This framework is comprised of three essential elements: teaching presence, social presence, and cognitive presence. The function of each presence to attain high levels of learning and satisfaction was discussed below.





Teaching presence involves designing, facilitating, and directing of social and cognitive processes during the learning experiences in order to obtain educational learning outcomes. Teaching presence takes place prior, during, and at the end of the course. Within this presence, the instructor is in charge of preparing the online lesson and coordinating social and content-related interactions among learners. Various studies have investigated the fundamental role of teaching presence in online learning environment (Ke, 2010; Caskurlu, Yukiko, Richardson & Lv, 2020) where it was identified as a significant predictor for students' sense of a learning community (social presence) and the development of students' enquiry on the course content (cognitive presence). Consequently, previous research findings have consistently revealed that all dimensions of teaching presence are strongly correlated with students' satisfaction and perceived learning (Arbaugh, 2008; Khalid & Quick, 2016, Kyei-Blankson, Ntuli, & Donnelly, 2016).



Social presence reflects on the learners' sense of social and emotional connection with others. When learners have a high degree of social presence, the existence of oneself and others will be acknowledged, leading to a sense of connectedness and belonging in the online learning environment (Giannousi & Kioumourtzoglou, 2016; Kreijns et al., 2014; Richardson, Maeda, Lv, & Caskurlu, 2017). Furthermore, social presence has been found to be a prominent influence on course satisfaction. In a meta-analysis studies of data collected from 3862 students in 19 studies, Richardson et al. (2017) found that social presence alone contributed approximately 86% of the variance in predicting satisfaction. A similar finding was recorded in a hierarchical multiple regression analysis using data collected from 214 undergraduate students, whereby





social presence accounted for 39% of the variance in the students' satisfaction scores (Giannousi & Kioumourtzoglou, 2016). Overall, it is evident that social presence plays a significant role in affecting learners' satisfaction. Nonetheless, instructions on how learners should participate as well as the nature of online interactions should be taken into consideration with regards to the studies of satisfaction in MOOCs.

Cognitive presence, on the other hand, concerns the learners' capacities in building and verifying meaning acquired through a process of reflection and discourse during their engagement with the course content (Garrison, 2017). This presence requires students to undergo four phases, namely (a) a triggering event, (b) exploration, (c) integration and (d) resolution. There were several empirical researches that evaluated the influence of cognitive presence on students' satisfaction (Akyol & Garrison, 2011a; Enightoola et al., 2014; Choy & Quek, 2016). For instance, Akyol and Garrison (2011a) discovered a strong correlation between students' perceived level of cognitive presence, perceived learning and satisfaction in an online blended course. In a more recent research, it was reported that cognitive presence accounted for 36% of the variance in satisfaction (Enightoola et al., 2014). Exploration and resolution were reported to be the dimensions within cognitive presence that positively correlated with satisfaction.

Therefore, the interconnectivity of these three presences has been tested and confirmed in various studies (Arbaugh et al., 2008; Garrison, Cleveland-Innes, & Fung, 2010; Joo et al., 2011; Kovanović et al., 2018). However, in investigating the issues of learners' satisfaction in online courses, it has been suggested that self-regulated learning (SRL) should be incorporated in the CoI framework as a learning presence





(Garrison and Akyol, 2015; Shea & Bidjerano, 2010). Besides the components of teaching, social and cognitive presences, the learning element in terms of SRL might play a substantial role in influencing learners' satisfaction in MOOC.

Accordingly, it has been recorded that parallel with the CoI model, SRL also has a major impact on online courses in terms of students' achievement and satisfaction (Broadbent & Poon, 2015; Kuo et al., 2013). Motivation factors, as well as SRL elements, namely goal setting, task strategies, time management, and self-evaluation, were found to influence the intention to use and course satisfaction in the context of MOOCs (Alraimi, et al., 2015; Chu et al., 2015; Lim et al., 2017; Littlejohn et al., 2016; Othman, Tashimaimaiti, Yusuf, & Al-Rahmi, 2017; Xiong et al., 2015; Xu, 2015; Zhou, 2016). Furthermore, SRL can also significantly predict learners' performance, satisfaction, and achievement in MOOCs (Barba et al., 2016; Magen-Nagar & Cohen, 2017; Rabin et al., 2019).

Thus, the use of CoI and SRL frameworks to investigate a comprehensive relationship between learners, instructors and peers could be beneficial in understanding learners' satisfaction in MOOC. Based on the theories, model and findings of prior studies, the researcher incorporates a conceptual framework of this study as shown in Figure 1.3.



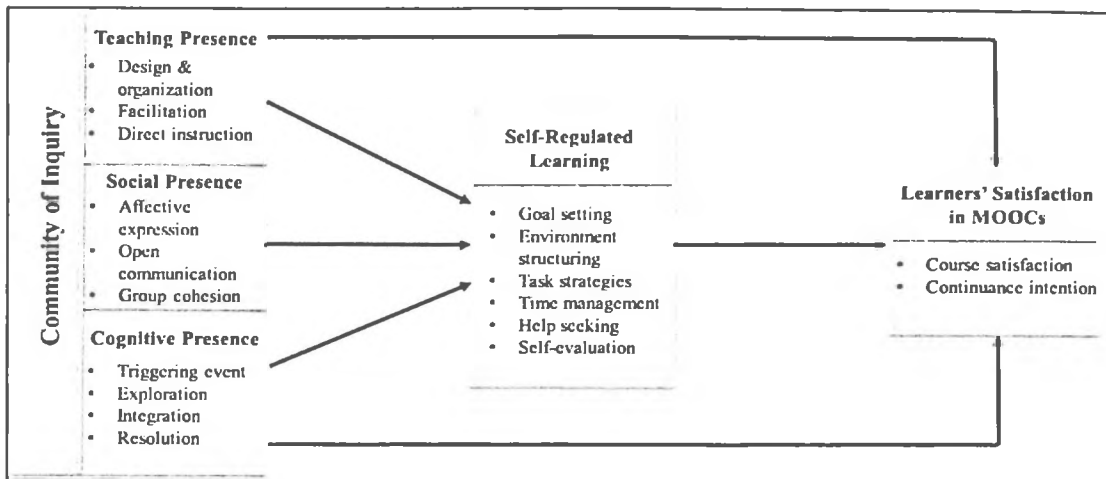


Figure 1.3. Conceptual Framework

1.8 Significance of the study

The present study is essential for both theoretical and practical grounds. As far as theoretical aspects are concerned, this study is one of the first investigations that critically analyses variables that are linked to learners' satisfaction in Malaysia MOOCs. This research has examined the role of peers, instructors, and course content in influencing online course learners' satisfaction, which therefore contributes to the literature on related factors in the success of MOOCs.

Moreover, the role of community of inquiry and self-regulated learning has not been extensively studied with regards to course satisfaction in a single framework (Broadbent & Poon, 2015; Cho et al., 2017; Garrison & Akyol, 2015). Rather, the existing literature predominantly focuses on the role of motivational factors in MOOCs without explicitly addressing the importance of CoI and self-regulated learning strategies in influencing learners' satisfaction in online courses (Alraimi et al., 2015; Milligan & Littlejohn, 2017; Wu & Chen, 2017; Zheng, Rosson, Shih, & Carroll, 2015). In addition, the low completion rate in MOOCs resulting from lack of



presence between instructors and learners also requires further critical investigations (Hew & Cheung, 2014; Kolowich, 2013; Xiong et al., 2015). The current research, therefore, addresses these issues by employing CoI model alongside its components (teaching presence, social presence and cognitive presence), as well as learners' self-regulation to explain learners' views on their satisfaction in Malaysia MOOCs.

Furthermore, by highlighting CoI and SRL as the alternative models in studying learners' satisfaction in MOOCs, this research may as well contribute to the methodological aspect of the literature. As there is little evidence on the application of these models in the Malaysia MOOCs context, this research has adopted mixed-methods approach (quantitative and qualitative data collection methods) to increase the validity of this research and can, therefore, be further tested by MOOC researchers



in different contexts.



In practical terms, the findings provide useful recommendations for the Malaysia MOOCs developers as well as the instructors so that online learning quality can be enhanced and the level of course satisfaction in Malaysia MOOCs can also be increased. Not only will this study contribute to the body of knowledge, it also aims to support stakeholders who are both directly and indirectly involved in the development of Malaysia MOOCs for students, higher learning institutions, as well as professionals. This research is particularly important for MOOC providers, instructional designers, instructors and online learning researchers as the connection between learners' participation, experience and satisfaction in the Malaysia MOOCs will be made clear based on the findings. Hence, it is expected that this study serve as a useful guide for future studies regarding the Malaysia MOOCs, specifically



strengthening the application of the CoI model and its relationship with SRL to investigate learners' satisfaction in an online learning environment (Cho et al., 2017; Garrison & Akyol, 2015; Shea et al., 2012).

1.9 Definition of terms

The definitions of constructs in this study are as follows:

1.9.1 Massive Open Online Courses (MOOCs)

MOOCs are online courses that are offered for free and open to all. Contents in MOOCs are delivered through short video lectures and online discussion, while feedback is managed either via peer-review and group collaboration or via automation. Some of the platforms of MOOC include Coursera, edX, Udacity, Udemy and *OpenLearning* which are usually associated with highly-regarded higher learning institutions (Holdaway & Hawtin, 2013).

In the context of this study, the courses are taken from the public universities in Malaysia that offer MOOCs related to entrepreneurship which are operated under the *OpenLearning* platform; as the official national MOOC platform appointed by Malaysia's Ministry of Higher Education.

1.9.2 Community of Inquiry

The Community of Inquiry is a theoretical perspective based on collaborative constructivist principles that perceive the success of online courses based on learners' abilities to engage in a shared and individual "search for meaning and understanding"



(Akyol, Garrison, & Ozden, 2009, p. 66). The CoI Framework primarily focuses on the learning process (Akyol et al., 2009; Swan, Garrison, & Richardson, 2009) in terms of the interaction between learners, instructors and peers in an online learning environment.

In this study, the learners and instructors together construct an integral component of an online learning community in the Malaysia MOOCs platform that comprises of three “presences”: teaching presence, social presence, and cognitive presence (Arbaugh et al., 2008; Garrison et al., 2000).

1.9.3 Teaching presence

Teaching presence refers to the interaction that link between cognitive and social presences in terms of the design, facilitation, and direction in extracting relevant and meaningful learning outcomes (Garrison & Arbaugh, 2007). This presence highlights the role of instructors to present information as well as students’ motivation to learn and gain new knowledge (Garrison et al., 2000; Moore, 1989).

In this study, teaching presence specifically evaluates the level of interaction and online discussion happening between learners and instructors in the Malaysia MOOCs platform based on the CoI framework: design and organisation, facilitation, and direct instruction. In order to measure the perceived level of teaching presence in MOOCs, the researcher has adapted an instrument developed by Arbaugh et al. (2008) and Kovanović et al. (2018).





1.9.4 Social presence

Social presence is the learners' capacities to present themselves as distinctive real individuals in the community of learners (Garrison et al., 2000). In academic discourse, learners should be able to discuss questions and share ideas without depending on the instructor (Garrison et al., 2000; Moore, 1989).

In the present study, social presence refers to the communication and interaction shared among learners that is specifically conducted via the Malaysia MOOCs platform in terms of CoI framework: affective expression, open communication, and group cohesion. The researcher adapted an instrument developed by Arbaugh et al. (2008) to assess the perceived level of social presence in MOOCs.

1.9.5 Cognitive presence



Cognitive presence is the extent to which learners can construct meaning through a process of sustained reflection and discourse (Garrison, Anderson, & Archer, 2001). Cognitive presence is considered as the core of educational experience in bringing about changes in knowledge (Garrison et al., 2000; Moore, 1989).

In this study, cognitive presence refers to learners' ability to understand course content and also to participate in an effective online discussion, activities and assessment in the Malaysia MOOCs based on CoI framework: triggering event, exploration, integration, and resolution. The researcher adapted an instrument developed by Arbaugh et al. (2008) to assess the perceived level of cognitive presence in MOOCs.





1.9.6 Self-regulated learning

Self-regulated learning is the composition of “self-generated thought, feelings and actions that are planned and cyclically adapted to the attainment of personal goals” (Zimmerman, 2000, p.14). Zimmerman categorised three phases of self-regulation namely, forethought, performance, and self-reflection.

In this study, self-regulated learning refers to the Malaysia MOOC learners proactively determining their learning goals and their consistent engagement in the process of goal attainment through goal setting, environment structuring, task strategies, time management, help seeking, and self-evaluation (Barnard et al., 2008). In order to measure the level of self-regulated learning strategies among MOOCs learners, this study adapted the Online Self-Regulated Learning (OSRL) questionnaire created by Barnard et al. (2008).

1.9.7 Learner satisfaction

Learner satisfaction refers to the level of fulfilment and gratification felt by the students about their online course learning. Gameel (2017) and Rabin et al. (2019) have described learners’ satisfaction as a relevant learning outcome in an online setting like MOOC.

In the present context, learners’ satisfaction is defined in terms of two core components: overall course satisfaction and continuance intention to use (Arbaugh, 2000; Artino, 2008). Learner satisfaction is evaluated based on these characteristics: (1) learners’ needs and expectations are met, (2) understanding of the course content is achieved, (3) the possibility of learners to recommend the course to others, and (4)





the intention to continue learning in Malaysia MOOCs in the future. The researcher adapted an instrument developed by Joo, So & Kim (2018) and Sun et al. (2008) to assess learners' satisfaction in MOOCs.

1.10 Research structure

This study is divided into five chapters. Chapter one introduces the issues related to the topic being investigated while explaining the basic idea of the research. Chapter two critically reviews the relevant literature pertaining to the relationship between the elements in the community of inquiry framework (teaching presence, social presence, and cognitive presence), self-regulated learning and learners' satisfaction in online and MOOC setting. Chapter three describes the research design and methodologies, which includes the application of sequential explanatory mixed-method approach adopted to address the research questions and to test the proposed hypotheses. Chapter four presents a descriptive analysis of the findings, as well as the empirical and interview results. Finally, chapter five provides a summary of findings, discussion on the contributions of the study, recommendations for future studies, and a conclusion.

