

FACTORS INFLUENCING THE SUCCESS OF MASSIVE
OPEN ONLINE COURSES FROM LEARNERS'
PERSPECTIVE

BY

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A dissertation submitted in fulfillment of the requirement for
the degree of Ph.D. in Information Technology

Kulliyyah of Information and Communication Technology
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MARCH 2025

ABSTRACT

Massive Open Online Courses (MOOCs) have become a transformative force in modern education, offering flexible and accessible learning opportunities to diverse populations. Although MOOCs have great potential, MOOCs face persistent challenges, including low completion rates—ranging from 5–15% globally and reportedly as high as 90% in some contexts—and a lack of personalized learning interventions. This study investigates factors influencing MOOC success, focusing on learner motivation, diverse learning styles, and the critical role of instructors in student retention. Using a mixed-methods approach, the research integrates quantitative data with qualitative insights from surveys and interviews with participants and facilitators from three Malaysian universities. Findings highlight that while MOOCs excel at fostering independent and collaborative learning, their success depends on addressing diverse learner needs. Visual and aural learning styles were identified as the most effective for participants, underscoring the need for personalized instructional strategies. Additionally, the study reveals a disparity in instructors' social versus academic contributions, with limited emphasis on systematic scaffolding and inquiry-based learning support, which are crucial for fostering higher cognitive engagement. The research contributes theoretical, practical, and methodological insights into the MOOC landscape, particularly within Malaysia, where over 20% of higher education students reportedly enrolled in MOOCs by 2022. The study emphasizes learner-centered design and personalized intervention strategies, which could enhance engagement and improve retention rates by up to 30%. It also underscores the importance of instructor involvement in guiding inquiry and adapting teaching strategies to diverse learning styles. In conclusion, while MOOCs hold significant promise for democratizing education, addressing challenges such as high dropout rates and insufficient academic support is critical. This study offers valuable recommendations for developers, educators, and policymakers to enhance MOOC implementation and effectiveness, paving the way for more inclusive and successful online education models globally and in Malaysia.

ملخص البحث

ظهرت الدورات الدراسية المفتوحة على الإنترنت (MOOCS) كقوة تحويلية، حيث توفر فرص تعلم متاحة ومتنوعة. ومع ذلك، فإن التحديات المستمرة، ولا سيما معدلات الإكمال المنخفضة التي تتراوح بين 5-15% على مستوى العالم، تدفع إلى التحقيق في العوامل المؤثرة على نجاح MOOCS. يؤكد هذا البحث على الدور الحاسم للتعليم عن بعد والتطورات التكنولوجية في تسهيل انتشار MOOCS. وعلى الرغم من الاستثمارات الكبيرة من قبل المؤسسات، إلا أن التحديات مستمرة، مما يدفع إلى التركيز على العوامل الأساسية التي تؤثر على نجاح MOOCS. تُعتبر أساليب التعلم عاملاً حاسماً، حيث تُعد استراتيجيات التدخل الشخصية ووعي المدرسين ضرورية للتصدي لمعدلات الانسحاب المرتفعة. على سبيل المثال، تكشف الدراسات السابقة أن المسارات التعليمية المخصصة يمكن أن تزيد من مشاركة الطلاب في الدورة بنسبة تصل إلى 30%. عند دراسة مشهد MOOCS في ماليزيا، حيث أفادت التقارير بأن أكثر من 20% من طلاب التعليم العالي قد التحقوا بـ MOOCS بحلول عام 2022، يهدف هذا البحث إلى تقديم إسهامات نظرية وعملية ومنهجية. تتضمن الإسهامات النظرية سد الفجوات في الأدبيات الحالية، وتقديم وجهات نظر جديدة حول MOOCS، وفهم عوامل النجاح من وجهة نظر المتعلمين. عملياً، يستكشف البحث تصورات عوامل النجاح وأساليب التعلم، مقدماً رؤية قيمة للمطورين وصناع السياسات لتحسين فعالية MOOCS في التعليم العالي الماليزي. من الناحية المنهجية، يدعو البحث إلى اتباع نهج متعدد الأساليب، يمزج بين البيانات الكمية - مثل تحليل معدلات الإكمال، وقياسات المشاركة، والعوامل الديموغرافية - مع الرؤية النوعية المستمدة من المقابلات والمجموعات البؤرية لتقييم تأثير MOOCS بشكل شامل. تشير النتائج الأولية إلى أن التصميم الموجه نحو المتعلم يمكن أن يحسن معدلات الاحتفاظ بنسبة تصل إلى 20%، مما يبرز أهمية تكييف MOOCS مع احتياجات المتعلمين المتنوعة. في المجمل، يؤكد هذا الملخص على أهمية MOOCS في التعليم العالمي، ويبرز التحديات، ويضع الدراسة كاستكشاف شامل يساهم في تحسين نجاح MOOCS، لا سيما في السياق الفريد لماليزيا.

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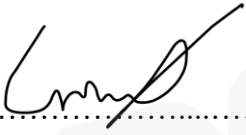
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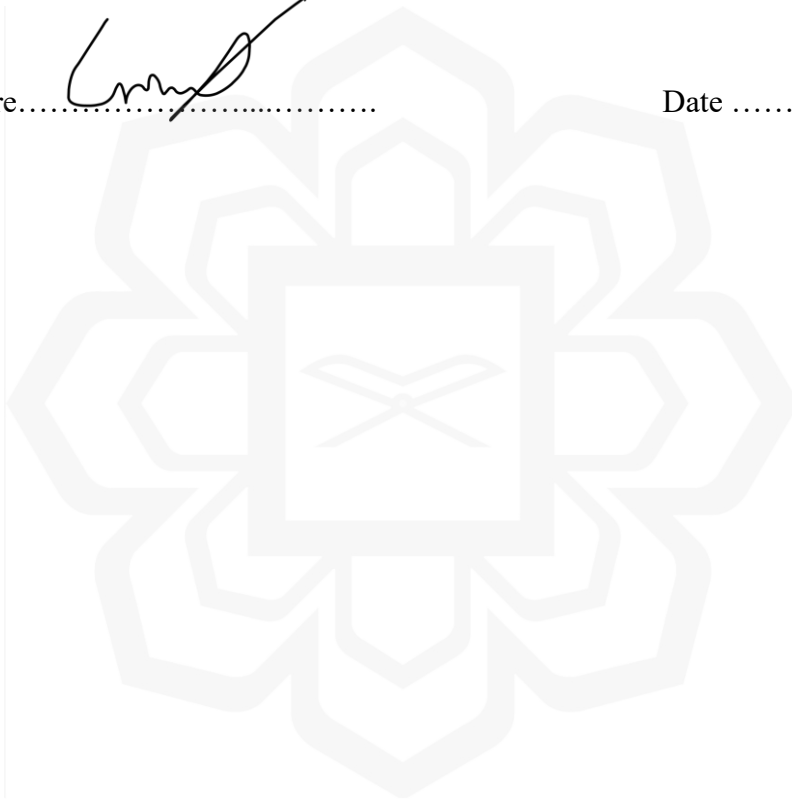
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DECLARATION

I hereby declare that this dissertation is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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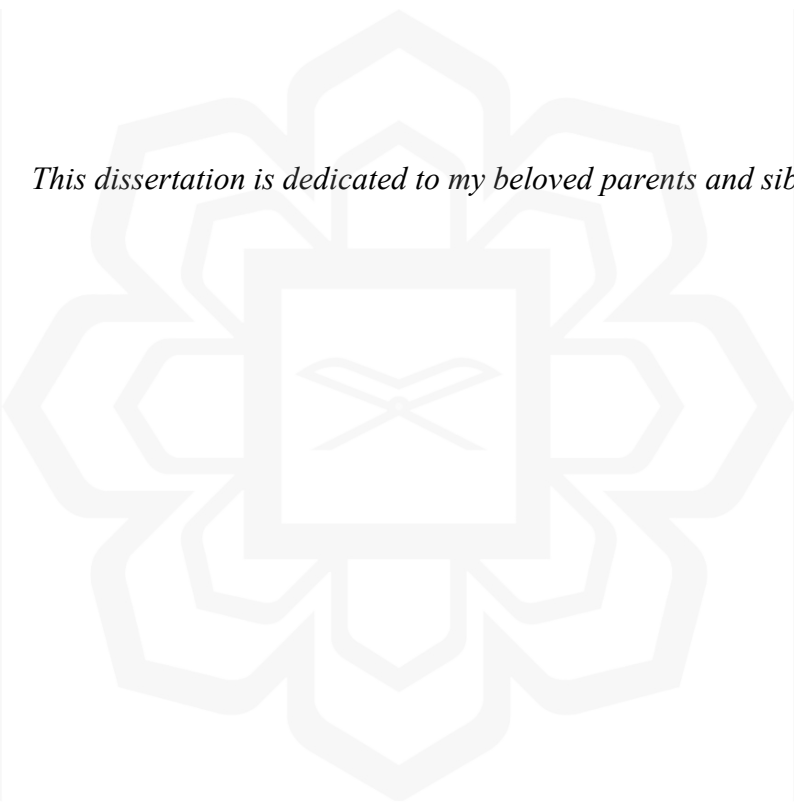
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This dissertation is dedicated to my beloved parents and siblings

ACKNOWLEDGEMENTS

All praise and thanks are due to Allah SWT, the Most Gracious, the Most Merciful. His boundless Grace and countless Blessings have been my constant source of strength, comfort, and guidance throughout the course of this academic journey. Despite the trials and challenges that accompanied this program, His infinite Mercy lightened my path, eased my burdens, and empowered me with the resilience and determination needed to bring this dissertation to completion. Truly, without His divine assistance, none of this would have been possible.

I am deeply and sincerely grateful to my beloved family, whose unwavering support, heartfelt encouragement, and wise counsel have been pillars of strength for me during this entire journey. From the earliest stages of this work to its final completion, their faith in my ability and their constant presence have been both a source of inspiration and a sanctuary of peace. Their love, patience, and sacrifices have played a vital role in helping me reach this significant milestone, and I am forever indebted to them for their immeasurable contributions.

Working on this dissertation has been both a privilege and an intellectually fulfilling experience. It has challenged me to grow, expanded my perspectives, and deepened my understanding. Every phase of this journey—despite its demands—has been meaningful, and I have truly valued the opportunity to immerse myself in such an enriching and rewarding academic endeavor.

I wish to express my sincerest and most heartfelt appreciation to my supervisor, Dr. Norsaremah Bt. Salleh. Her insightful guidance, continuous encouragement, and steadfast support have been critical to the development and completion of this dissertation. Her commitment to excellence, generosity with her time, and thoughtful mentorship have left an indelible mark on my academic journey. I am genuinely honored and grateful to have had the opportunity to learn under her supervision, and I will always carry with me the lessons and values she has imparted.

Once again, Alhamdulillah, for His infinite Grace and Blessings that made this accomplishment possible.

Once again, Alhamdulillah.

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CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter discusses the background of the study, the problem that motivated the researcher to conduct this study, and emerged research questions and objectives. The background of the study involves a discussion on Massive Open Online Courses (MOOCs) and their importance. The problem statement describes the issues around MOOCs and its successful completion. Then, the scope of study explains the boundaries and limitations of the present study. Lastly, the significance of the study is presented followed by definitions of the key terms.

1.2 Research background

The global development of education is a crucial and significant concern, inherited over time, and represents one of the most pressing challenges worldwide. Distance education emerges as a key approach for advancing education, facilitating the dissemination of knowledge, and aiding individuals in overcoming temporal and spatial constraints (Aljarrah et al., 2020). The proliferation of distant learning has been facilitated by the utilisation of various technologies and devices, like smartphones, laptops, computers, and tablets, making educational resources easily accessible. Technology has significantly influenced educational methods, transforming traditional limitations on access to learning materials for a select few (Al-Fraihat et al., 2020). The emergence of MOOCs as a key source of online learning content has led to an overwhelming proliferation of available courses today (Hilmy et al., 2019). MOOCs have gained substantial attention, with institutions investing significant efforts in their development, promotion, and delivery (Onah et al., 2014). Nevertheless, challenges in MOOCs persist, as highlighted in academic literature and the media. A prominent issue is the consistently low completion and high dropout rates among MOOC learners, a concern repeatedly discussed in

both scholarly publications and popular media outlets (Sujatha and Kavitha, 2018; Hosseindoost et al., 2022; Bhatia et al., 2023).

MOOCs encounter a substantial hurdle in achieving ultimate success because of the notable issue of low completion rates (Heusler *et al.*, 2019). Hence, the high rate of dropout raises a question about the factors contributing to the success of MOOCs and completing the course effectively. The success of MOOCs is influenced by several contributing factors. Exploring these factors has emerged as a crucial research challenge. This endeavor allows the formulation of innovative strategies aimed at diminishing dropout rates (Aparicio *et al.*, 2019). The literature highlights the role of learning style in improving the MOOCs efficiency and success rate (Azzi *et al.*, 2019; Zhao *et al.*, 2020; Agarwal *et al.*, 2022). Learning style is characterized as “the approach learners find most effective for taking in and handling information” (Hmedna *et al.*, 2019). Individual students possess varying learning styles, with some excelling through visual and auditory methods, others through reading, and some through hands-on experiences or a dynamic, interactive environment. Consequently, it is essential to take into account the different learning styles of students when designing a distance-learning course (Zapalska and Brozik, 2006). Nevertheless, many virtual learning environments overlook the fact that students possess distinct learning needs. Considering the changing traits and preferences of participants, these learning platforms should incorporate features for adaptation and personalization. This includes tailoring learning materials, and navigational designs to align with individual students' learning styles (Maaliw, 2020). Additionally, the instructor and quality of the teaching are the significant factors influencing excellence of courses offered in MOOCs and students' satisfaction (Amantha Kumar and Al-Samarraie, 2019; Sadeghi, 2019; Al-Fraihat *et al.*, 2020; Bingöl *et al.*, 2020). To promote learner agency in MOOC discussions, educators should create and guide the interactions with a focus on acknowledging learner diversity, encouraging cohesive communication, and offering suitable social and technological assistance (Ouyang et al., 2020).

Against the context, Malaysia's Ministry of Education has introduced MOOCs as a modern approach to learning (Albelbisi and Yusop, 2020). MOOC is a focal point on the national agenda within institutions, as outlined in the 11th Malaysian Plan within the Malaysian Education Blueprint. (Haron *et al.*, 2020). Malaysia is progressively adopting MOOC in national higher education approach (Asli *et al.*, 2020). The Malaysian Government strongly

advocates for the utilization of MOOCs and regards it as a platform to fully incorporate educational technology comprehensively into lifelong learning (Haron *et al.*, 2020). Malaysia's MOOC is currently in a developmental stage, and only a few studies have explored the related issues and challenges associated with the adoption of MOOCs within Malaysia's higher education system (Albelbisi and Yusop, 2020).

1.3 Problem statement

Recently, Massive Open Online Courses (MOOCs) have been drawing increasing interest for their innovative approach to education. They provide a flexible and inclusive learning environment that is accessible to people of all ages, educational levels, and cultural backgrounds. By offering a wide range of courses online, MOOCs empower learners to gain new skills and knowledge anytime, anywhere, making education more equitable and far-reaching than ever before. Although MOOCs hold great promise, they encounter critical challenges, including exceptionally high dropout rates, reduced learner motivation, and a perceived lower value compared to traditional educational methods. Dropout rates, in particular, present a significant barrier, with nearly 90% of students leaving courses before completion (Voudoukis & Pagiatakis, 2022). This trend underscores the urgent need to address the underlying factors contributing to learner disengagement and course attrition.

Key issues influencing MOOC dropout rates include the diversity of learners, asynchronous communication, and delayed feedback from instructors, which collectively result in disengaged participants (Kurtz et al., 2022). The vast scale and heterogeneity of MOOC participants create challenges in meeting the varied educational needs of students, further exacerbating retention issues. While some scholars have proposed methods to mitigate dropout rates, there remains a lack of comprehensive research exploring the main factors that influence the success of MOOCs and the retention of diverse learners. This gap emphasizes the need for tailored solutions that account for learners' unique characteristics and preferences.

One significant factor contributing to elevated dropout rates is the diversity in learning styles among MOOC participants. Learning preferences play a pivotal role in shaping learner engagement and success (Zhao et al., 2020). Individualized learning strategies and predictive

models for understanding student behavior can significantly enhance retention rates and learning outcomes (Ding et al., 2019). However, the role of instructors remains underexplored, particularly regarding their ability to adapt teaching methods to align with diverse learning styles and nd promote a nurturing online educational atmosphere. Research suggests that instructor engagement and adaptability are crucial for improving learners' commitment and completion rates in MOOCs (Kurtz et al., 2022). Yet, the scarcity of studies on the influence of instructors in MOOC success highlights a critical research gap (Ahmad et al., 2020).

This research seeks to fill these gaps by examining the current state of MOOCs in Malaysia and identifying factors that contribute to their success. Specifically, the research will examine the role of instructors and effective learning strategies in motivating students to complete their courses. By focusing on the interplay between personalized learning interventions, instructor engagement, and learner diversity, this study seeks to provide actionable insights to enhance MOOC effectiveness and reduce dropout rates in the Malaysian context.

1.4 Research Questions and Research Objective

Table 1.1 Research Questions and Research Objective

Research problem	Research Objective
RQ 1: What is the current state of MOOC among students in Malaysia?	RO 1: To examine the current state of MOOC in Malaysia
RQ 2: What factors contribute to the success of MOOCs?	RO 2: To identify the factors that contribute to the success of MOOCs
RQ 3: What are the effective learning styles through MOOCs?	RO 3: To evaluate the most effective MOOC learning styles from instructors' perspective
RQ 4: How are the current MOOCs offered in higher education institutes able to cater to different learning styles?	RO 4: To evaluate if the current MOOCs offered in higher education institutes are catering to the students' learning styles

1.5 Scope of the study

This mixed method study aims to explore the effective learning styles and factors that contribute to the success of the MOOCs in Malaysia. Additionally, the present research intends to explore the degree of influence instructors have in the successful delivery of MOOC courses. MOOCs are chosen as phenomenon of interest for the following reasons. First, despite several advantages of this emerging method, it faces issues that need to be addressed by scholars. Among others, low completion and high dropout rate raises concerns about effectiveness of learning style, the role of instructors and factors that lead to success of MOOCs. Second, scholars call for further studies on MOOC due to the significant role that it can play in future of education. According to Boonroungrut *et al.* (2022), limited studies are published in Scopus database and the existing ones have not been recognized as a prominent reference, having a medium-to-low impact index. Bingöl *et al.* (2020) acknowledged the need for further research to gain more in-depth insights into the factors that impact the success and completion rates of MOOCs.

In regard with context, the study focuses on MOOC in Malaysia. The rational to focus on Malaysia is that MOOC is changing the education ecosystem in Malaysia (Zulkifli *et al.*, 2020) and development of MOOC is emphasized in the 9th shift in the Malaysian Education Blueprint (MEB) 2021-2025 (Yue, 2022).

Alike any other academic endeavor, this study has certain limitations that need to be acknowledged and addressed. First, the present study contains a relatively small sample size in both qualitative and quantitative parts. Hence, the findings might not be generalized to other contexts. Additionally, this study is limited by the scope of the investigation. Although MOOC can be investigated from various perspectives, this study focuses on the perspectives of MOOC learners.

1.6 Significance of the study

This research has numerous contributions from theoretical, practical, as well as methodological perspectives. Theoretically, the current research bridges the shortcomings found in previous studies. First, the findings of this research should provide new insights about the current landscape of MOOCs from the learners' perspective and further our understanding of success factors and effective learning styles. Second, although MOOCs have gained popularity as an online learning method, existing studies have not provided comprehensive findings or delved deeply into the exploration of MOOCs (Irwanto *et al.*, 2023). Third, MOOCs play a substantial role in empowering individuals by offering opportunities to learn about diverse subjects. To fully harness the potential of MOOCs, it is crucial to comprehend the factors that contribute to their success (Aparicio *et al.*, 2019).

Practically, this research explores perception of learners and instructors on success factors and effective learning styles. This study contributes significant perspectives for developers and instructors to grasp the key success factors and effective learning styles, allowing them to personalize learning and, in turn, enhance the retention rate. It is presumed that tackling these issues could assist policymakers in proposing strategies for the advancement of MOOCs in Malaysian higher education. This, in turn, could enhance the success of MOOCs as Malaysia aims to become a prominent participant in the online learning domain (Albelbisi *et al.*, 2022). While these learning concepts continue to evolve, it is crucial to scrutinize the adoption of MOOC technology, particularly at the higher education level. The Malaysian Government strongly advocates for MOOC usage, viewing it as a platform to seamlessly integrate learning technology into lifelong learning (Haron *et al.*, 2020).

From methodological perspective, mixed method approach is thought to contribute more significantly to the existing body of literature, this is because it could offer a more comprehensive examination of the effects of online learning and its efficacy in enhancing student achievement. Majority of the studies that are conducted in the realm of MOOC, are limited to quantitative data using a self-report measurement. Including qualitative data, such as conducting interviews with participants, could enhance the validity of the instrument and provide a deeper exploration of the phenomena related to MOOC success (Albelbisi, 2020).

1.7 Definition of the key terms

1.7.1 MOOC

A MOOC is a sequence of educational content delivered online, accessible to a considerable group of participants situated in various locations and connected at different times (Hamid *et al.*, 2021). To be more particular, ‘massive’ indicates that MOOCs are offered to a large number of concurrent learners. The target audience may come from multiple environments and backgrounds (beyond the academic or corporate training environment) (Ansah *et al.*, 2020). ‘Open’ refers to the free participation for individuals anywhere, without academic prerequisites or other restrictions, except for the technical requirement of owning a computer and the capability to connect to the internet with adequate bandwidth. (Chiappe and Castillo, 2021). ‘Online’ means the web-based distance learning system (Amantha Kumar and Al-Samarraie, 2019; Ansah *et al.*, 2020) and ‘course’ pertains to the offering educational services for global users (Li, 2022). In this study, MOOCs refer to delivering online training courses to a considerable body of students

1.7.2 Success in MOOC

Success in Massive Open Online Courses (MOOCs) is measured through several key factors, including task completion, academic achievement, and certification. As noted by Breslow *et al.* (2013), success is commonly assessed based on a learner’s ability to complete coursework, attain a satisfactory grade in evaluations, and obtain a certificate. Task completion involves engaging with learning materials, contributing to discussions, and submitting assignments, which is particularly relevant given the high dropout rates in MOOCs (Jordan, 2015). Academic performance is determined through various assessments such as quizzes, assignments, peer reviews, and proctored exams, with passing grades reflecting a solid understanding and application of the content (Kizilcec, Piech, & Schneider, 2013). Certificates act as official proof of accomplishment and can support career advancement, skill-building, or academic pursuits (Hollands & Tirthali, 2014). However, beyond these conventional indicators, success in MOOCs can also be personal and subjective, depending on learners’ individual goals, such as acquiring new knowledge, developing skills, expanding professional networks, or transitioning careers, emphasizing the varied ways in which learners define their achievements (Milligan & Littlejohn, 2017).

1.7.2 Learning style

Learning style encompasses emotional, physiological and cognitive aspects employed to determine how the learner comprehends concepts and engages with the learning environment. (Khamparia and Pandey, 2020). According to Mishra *et al.* (2021), learning style means how learners interact with the elements of the course or what forms of elements they prefer over others. In this research, learning style refers to the learners' preference for understanding the concepts and interacting with the course elements.

1.8 Structure of the Thesis

This research is structured in six chapters as follow:

Chapter one gives an overview of the phenomenon of interest, the research problem and gaps. Then, research questions and objectives are presented followed by elaboration of the scope and significance of the study.

Chapter two presents a deep literature review concerning the MOOCs and the significant role that they play in educational sector. Additionally, different learning styles and models are discussed in detail.

Chapter three is dedicated to elucidating the research methodology. A mixed-method approach is chosen as the most effective approach to addressing the research question. The procedures for collecting and analyzing qualitative and quantitative data are outlined individually.

Chapter four focuses on the reporting the research findings for quantitative phase and chapter five provides the findings emerged from qualitative data analysis.

Chapter five is allocated to discussion of findings and highlighting the theoretical and practical contributions. The chapter concludes with explaining the limitations and recommendations for future research.

Chapter six focuses on summarizing the key findings and insights of the research. It serves to unify the different elements of the thesis and provide the reader with a comprehensive understanding of the study's significance and potential impact.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Massive Open Online Courses (MOOCs) represent a significant breakthrough in the landscape of digital education, attracting widespread media focus and contributions from a few members of the world's most esteemed academic institutions (Russell, Klemmer, Fox, A., Latulipe, Duneier, & Losh, 2013). These courses have introduced a novel model of open, inclusive, and flexible learning that emphasizes global participation and supports lifelong education (Bansal, 2013). As a relatively new format in online education, MOOCs integrate traditional course elements—such as reading materials, instructional videos, and problem-solving exercises—with unrestricted internet access, enabling large-scale enrolment from learners worldwide. In addition to this, MOOCs often feature interactive forums and discussion boards that encourage collaboration, peer engagement, and a supportive environment connecting students and instructors. This innovative educational approach continues to reshape how knowledge is shared and accessed across the globe.

This research investigates various learning styles and attributes to offer a deeper insight into data that contributes to learners' success and completion of courses in MOOCs. By identifying these factors, MOOCs may be implemented successfully and sustainably by preventing existing structural flaws and designing top-notch, high-quality courses that can increase participation. This chapter reviews the existing literature. First, the literature concerning the success of MOOCs is presented. Then, different learning styles and models are discussed. Lastly, the learners' engagement in MOOCs are reviewed followed by the instructor's role in successful implementation of the MOOCs is elaborated.

2.2 MOOC and Its Importance

Electronic learning, commonly referred to as e-learning, involves the use of online resources like online classrooms and virtual universities that facilitate online collaboration and remote education through technology (Hosseindoost et al., 2022). Recognized as a potent educational medium (Al-Fraihat et al., 2020), e-learning shifts from conventional teaching methods to delivering information electronically, marking an evolution in the contemporary education system for the convenience of both students and faculty members (Al-daqri, 2022).

The rising prevalence of online learning in advanced higher education, coupled with ongoing technological advancements, has given rise to Massive Open Online Courses (MOOCs), a globally acclaimed learning platform gaining rapid attention (Wahab et al., 2019; Ghazali et al., 2020). The undeniable importance of e-learning has led to a proliferation of online learning courses and systems offering diverse services (Al-Fraihat et al., 2020), impacting the teaching styles of instructors and transforming how learners acquire knowledge (Wahab et al., 2019). Assessing e-learning systems is essential to guaranteeing successful delivery, efficient utilisation, and beneficial effects on learners (Al-Fraihat et al., 2020).

The first MOOC, introduced in 2008 by George Siemens and Stephen Downes with the course title "Connectivism and Connective Knowledge" (CCK08), marked the beginning of a web-based platform providing distance education opportunities globally (Chea, 2016). MOOCs, with features like interactive sessions, forums, and video lectures, enable worldwide access to high-quality learning, breaking down financial, geographical, and cultural barriers (Santu Biswas, 2020). They are increasingly recognized as a means to provide free or low-cost educational opportunities to millions globally, requiring only a stable internet connection for registration (Chansanam et al., 2021). The widespread adoption of MOOCs is attributed to factors such as public accessibility, absence of financial constraints, global reach, and enhanced social interaction among students (Aljaraideh, 2019).

From the concept of lifelong learning for all to influencing higher education, MOOCs represent a potential step towards universal education. Two primary types of MOOCs, cMOOC and xMOOC, are identified in the literature (Daniel, 2012). cMOOC, initiated in 2008, is rooted in the connectivism learning theory, focusing on knowledge construction, autonomy, and social network learning (Downes, 2012). In contrast, xMOOC, introduced in 2012, aligns more

closely with traditional teaching, emphasizing knowledge dissemination, duplication, and structured learning methods like video lectures, homework, and tests (Downes, 2008). xMOOCs are content-based, widely popular, and follow an objectivity-based educational model, aiming to impart skills through content (Voudoukis and Pagiatakis, 2022). The various aspects of MOOCs are illustrated in Figure 1.

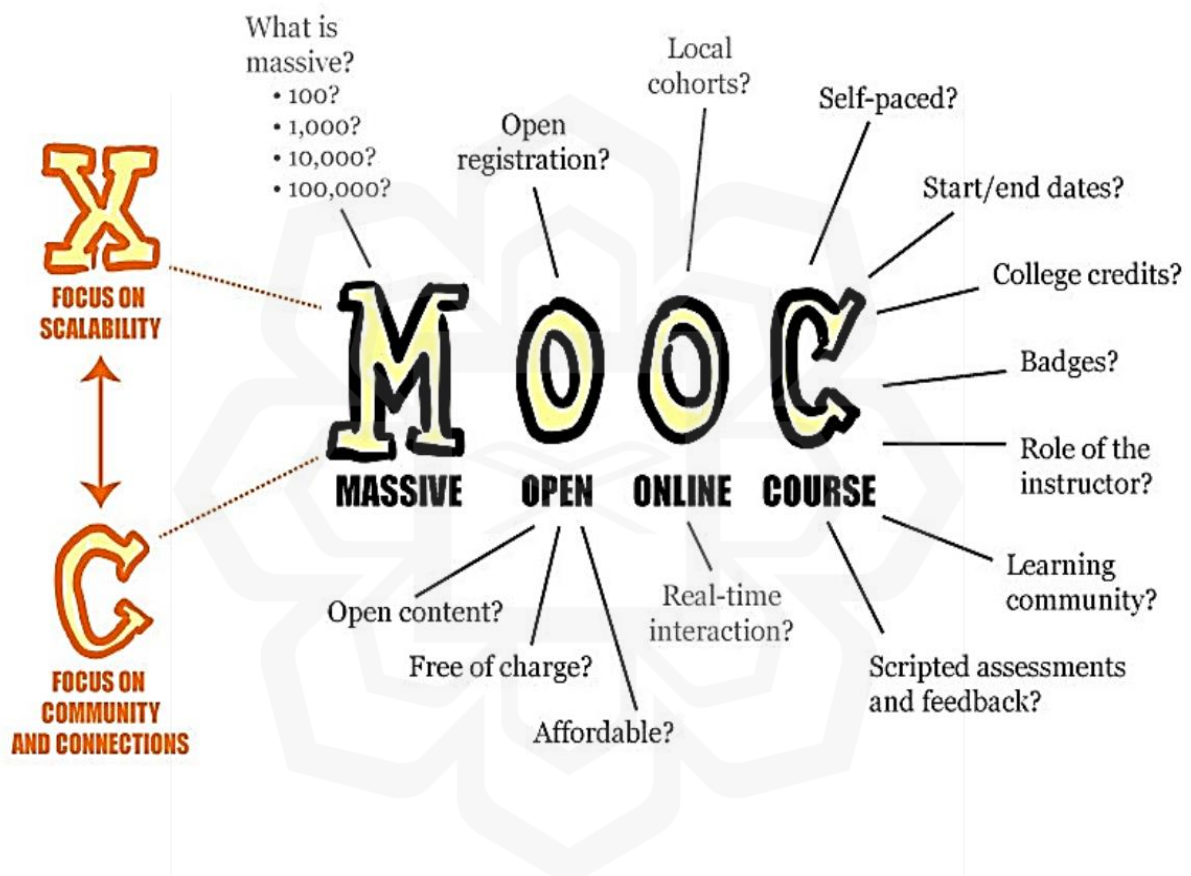


Figure 2.1. All aspects of MOOC (Voudoukis and Pagiatakis, 2022)

2.3 MOOCs SUCCESS

MOOCs prompt a discussion regarding their efficacy in achieving learning objectives. While MOOCs aim to communicate the intended learning outcomes, it is crucial for learners to attain more than just course certification (Otto et al., 2018). Success in MOOCs encompasses task completion, satisfactory grades from assessments, and certificate acquisition (Breslow et al., 2013). Evaluation of MOOCs should not solely rely on student success rates but also consider their contribution to specified learning outcomes (Otto et al., 2018). Various studies, including those by Amantha Kumar and Al-Samarraie (2019), El Khadiri et al. (2019), Bingöl et al. (2020), and Batdı et al. (2021), have explored factors influencing MOOC success.

A quantitative study involving 1000 undergraduates from Malaysian public universities revealed that system quality, attitude, and course quality significantly impact learner satisfaction and successful MOOC completion (Albelbisi, 2020). In a Turkish study by Bingöl et al. (2019), interviews with 32 participants identified three success categories: instructor effectiveness, course design, and personal factors, which include internal and external elements. Trending topics relevant to participants' fields and fulfilling course requirements were noted as crucial for success. The perceived reputation of MOOC providers influences user enrollment decisions (Alraimi et al., 2015).

Yang et al. (2017) highlighted factors affecting learners' decision to continue in a MOOC, such as system quality, course quality, service quality, ease of use, and perceived usefulness of the online system. Kizilcec and Schneider (2015) emphasized the importance of offering credits or recognition as a predictor of user participation and continuance. Creelman et al. (2014) discussed key areas in MOOC quality, including clear pre-course information, while Rosewell and Jansen (2014) outlined principles like openness and media-supported interaction.

Walker and Loch (2014) emphasized designing courses for massive enrollments and providing effective feedback. Stacey (2014) recommended promoting peer-to-peer pedagogies, openness of course resources, and openness to enrollments. Gamage et al. (2015) identified factors affecting MOOC quality, such as interactivity, collaborativeness, pedagogy, and technology. Challenges, such as information overload, require attention. Yepes-Baldó et al.

(2016) proposed a 14-dimension evaluation system for MOOC quality, considering aspects like content organization and customizable schedules.

2.4 Drop out issue in MOOCs

The swift development of massive open online courses (MOOCs) has garnered extensive media attention, highlighting the potential of traditional education approaches to be readily challenged by the delivery of free or affordable content (Chansanam et al., 2021). MOOCs have swiftly caused a transformation in the realm of education. Their attributes, such as being cost-free, diverse, covering various themes, and promoting lifelong learning, have entirely reshaped the landscape of instructional design. This transformation allows for the incorporation of new teaching and learning structures, as emphasized by Romero-Rodriguez et al. (2019). However, numerous research has highlighted elevated dropout rates, considering it a challenge in distance education programs (Ouyang *et al.*, 2020; Voudoukis and Pagiatakis, 2022). With regards to MOOCs, the literature similarly addresses two aspects: course completion and success. In MOOCs, course completion is typically defined as fulfilling the required course activities and assignments (Kizilcec, Piech, & Schneider, 2013; Morris, Finnegan, & Wu, 2005). Completion outcomes are generally classified into two categories: successful or unsuccessful, based on whether these requirements are met (Morris et al., 2005). According to Hosseindoost et al. (2022), one of the major challenges in MOOCs is the high risk of dropout, often linked to students missing assignment deadlines. This is frequently attributed to the absence of face to face interaction and the absence of a supportive peer environment that can provide reminders and encouragement. Downes (2016) pointed out that although MOOCs attract a large number of enrollees, the actual completion rates remain surprisingly low. As a result, researchers have increasingly focused on recognizing the factors that affect both student success and course completion in MOOCs. Existing studies consistently highlight a notable gap between enrollment and completion, revealing that only about 10% of those who register for MOOCs end up finishing them successfully (Jordan, 2014; Liyanagunawardena et al., 2013; Rai & Chunrao, 2016).

Completion rates in courses have been an essential metric in measuring success. Downes (2016) emphasizes the relevancy of determining the desired outcome of a successful Massive Open Online Course (MOOC) is to foster participants' autonomy, encourage diversity, promote

openness, and enhance interactivity. 'Autonomy' is important for participants being able to have the ability to pursue their individual objectives rather than strictly adhering to the goals outlined by the MOOC providers. 'Diversity' refers to the various approaches' MOOC participants have when engaged with MOOC's activities. They have become a source of digital content, which offer quality content to millions of people throughout the world, providing new opportunities to learn as well as making learners aware of their learning styles.

This factor allows MOOCs to cater to individuals with diverse learning styles, time zones, cultural backgrounds, access to technology, and other unique characteristics. The principle of "openness" emphasizes the unrestricted flow of people and information within the MOOC environment. This means that participants have the freedom to join and leave the platform at any time, access and retrieve existing content, and actively contribute their own resources and knowledge to the learning community. Furthermore, the concept of "interactivity" plays a crucial role in fostering new learning experiences within the network of MOOC participants, including both tutors and course providers. According to Rooij and Zirkle (2016), interactivity is vital for building relationships among participants, which serves as a catalyst for enhancing student engagement and collaboration. By promoting active participation and knowledge exchange, interactivity not only enriches the learning experience but also strengthens the sense of community within the MOOC environment.

Additionally, the effectiveness of this factor can be amplified through meaningful connections with fellow learners in the MOOC environment. Building relationships with peers can foster a sense of community and motivate active participation with course materials, as highlighted by Kizilcec & Schneider (2015). One method previously used to evaluate the success of MOOCs is the MOOC Success Factors Framework. This framework is grounded in Nagashima's (2014) classification of success factors in open education initiatives, which is divided into three key categories: organizational, pedagogical, and social aspects. These categories collectively address the structural management of the MOOC, the quality of instructional design, and the social dynamics that enhance collaboration and engagement among participants. In an effort to contribute to the growing body of research on MOOCs, the authors aim to identify a set of critical success factors that can influence participants' decisions to enroll, their persistence throughout the course, and their overall learning outcomes. By doing so, this study seeks to offer valuable insights into improving MOOC design and enhancing

learner experiences. Together, these categories address the structural management of the MOOC, the quality of instructional design, and the social dynamics that enhance collaboration and engagement among participants. Research has shown that both course quality and motivation significantly influence learners' retention intentions in MOOCs, further underscoring the importance of these factors (Zhou & Li, 2024). To contribute to the growing body of research on MOOCs, this study aims to identify critical success factors that influence participants' enrollment decisions, persistence, and overall learning outcomes. Through the examination of these factors, the authors seek to contribute valuable insights into improving MOOC design and enhancing learner experiences (Bozkurt & Sharma, 2024).

2.5 MOOCs in Malaysian context

Massive Open Online Courses (MOOCs) represent a series of educational materials delivered via the Internet, allowing access for a vast number of participants from diverse locations and time zones (Lee et al., 2021). MOOCs are a burgeoning practice in e-learning, providing an open platform for interested participants to attend courses and access materials typically free of charge. This approach attracts thousands of participants who register for MOOC courses daily (Haron et al., 2020). Over recent years, the concept of MOOCs has experienced rapid development and has been implemented in tertiary education in Malaysia. Regarded as a fusion of technology and innovation, MOOCs aim to offer learning opportunities to anyone with an internet connection (Woon, 2019). Recognizing the need to align with technological advancements in education, Malaysia has embraced the paradigm shift from traditional teaching methods, introducing MOOCs as an innovative educational approach in the country's higher education landscape (Wahab et al., 2019).

In late 2014, the Malaysian Ministry of Education launched the "Globalised Online Learning" blueprint to improve education quality and extend its reach through MOOCs (Wahab et al., 2019). The ninth strategic shift outlined in the Malaysia Education Blueprint 2015–2025, introduced by the Ministry of Higher Education (2015), placed strong emphasis on advancing e-learning initiatives in alignment with the objectives of the National e-Learning Policy (Dasar e-Pembelajaran Negara, or DePAN) (Ghazali et al., 2020). Central to this strategy was the development and dissemination of MOOCs through prominent global platforms such as EdX, Coursera, OpenLearning, and FutureLearn. This approach not only aimed to broaden access to

Malaysian higher education but also to elevate the country's profile within the global academic community, as reaffirmed in the updated Malaysian Education Blueprint 2021–2025 (Yue, 2022). The overarching goals include fostering international partnerships, promoting Malaysia's academic strengths in niche disciplines, and enabling local institutions to present their leading programs and research outputs to a global audience (Wahab et al., 2019).

In the early stages of Malaysia's MOOC development, OpenLearning Global (M) Sdn. Bhd. was responsible for managing the country's MOOC operations. It served as the official MOOC platform for all 20 public universities and 34 public polytechnics across the nation. Since its adoption in 2014, the OpenLearning platform has been utilized by over 3,050 educators and more than 900,000 students nationwide, delivering upwards of 880 courses under the Malaysia MOOC initiative. The platform's widespread use and strong participation figures have helped position MOOCs as a key avenue for self-directed learning, supported by open educational resources (Zalli et al., 2019).

Recognizing the potential of MOOCs to transform higher education, the Ministry of Higher Education selected OpenLearning as the primary platform for public institutions in Malaysia. The implementation of this initiative was supported by a robust team comprising subject matter experts, instructional designers, and facilitators, who ensured the development and delivery of high-quality MOOCs (Haron et al., 2019).

The initial rollout of the Malaysia MOOC initiative involved collaboration with four public universities: Universiti Putra Malaysia (UPM), Universiti Kebangsaan Malaysia (UKM), Universiti Teknologi Mara (UiTM), and Universiti Malaysia Sarawak (UNIMAS). Together, these institutions launched four compulsory core courses targeted at first-year undergraduate students. These foundational courses were designed to establish a strong academic base and foster early engagement with online learning. These courses are:

- Islamic and Asian Civilisations developed by UPM;
- Ethnic Relations developed by UKM;
- Entrepreneurship developed by UiTM; and
- ICT Competencies developed by UNIMAS (Albelbisi and Yusop, 2020)

The entirety of Malaysia's MOOC courses were hosted on the Open Learning platform, which was recognized as the official MOOC platform for all higher education public institutes in Malaysia (Albelbisi and Yusop, 2020).

2.6 MOOC and COVID 19

The globalised pandemic status of the coronavirus (COVID-19) was officially declared on March 12, 2020, leading to the implementation of social distancing measures in various locations to mitigate its impact (Fernando Ferri, 2020). Originating in Wuhan, Hubei Province, COVID-19 rapidly spread both nationally and internationally, taking advantage of its swift transmission and broad reach. According to the World Health Organization (WHO), the epidemic is considered a public health crisis of international concern (Ting Zhou, 2020). Online learning has become indispensable for teaching and learning systems, particularly amid the COVID-19 pandemic, whilst the world increasingly relies on electronic transactions across various domains, with education being no exception (Aljarrah et al., 2020). The global threat posed by The transmission of COVID-19 has resulted in the closure of numerous activities worldwide, including educational endeavors. To mitigate the spread of the virus, educational institutions have been required to shift to e-learning using available platforms, even though this rapid transition presented numerous challenges (Maatuk et al., 2022).

The worldwide decision to shut down educational institutions was a deliberate action intended to implement social distancing and mitigate the virus's spread. Certain nations promptly shifted to online learning, capitalizing on their pre-existing preparedness for such educational methodologies. (Mahyoob, 2020). Among the widely adopted technologies, massive open online courses (MOOCs) played a prominent role by providing substantial support to online learning. MOOCs contribute to the learning process by offering diverse content through various media, including text and video (Aljarrah et al., 2020).

Rajab et al. (2020) carried out a comprehensive evaluation of the effects brought about by the transition to online education amid the COVID-19 pandemic. Their research indicated that, in the initial weeks of the corona virus outbreak, 70.7% of participants indicated a higher level of confidence in the effectiveness of teaching and learning in an online environment. This suggests a notable shift in perception toward the viability of digital education. Figure 2

illustrates the participants' attitudes toward this transition, categorized according to their professional roles, offering deeper insight into how different groups perceived the change. Furthermore, a substantial proportion of respondents (76%) indicated a strong intention to integrate the digital competencies and tools they acquired during the pandemic into their future educational practices. These findings underscore the lasting influence of the pandemic on teaching and learning strategies, as highlighted by Rajab et al. (2020).

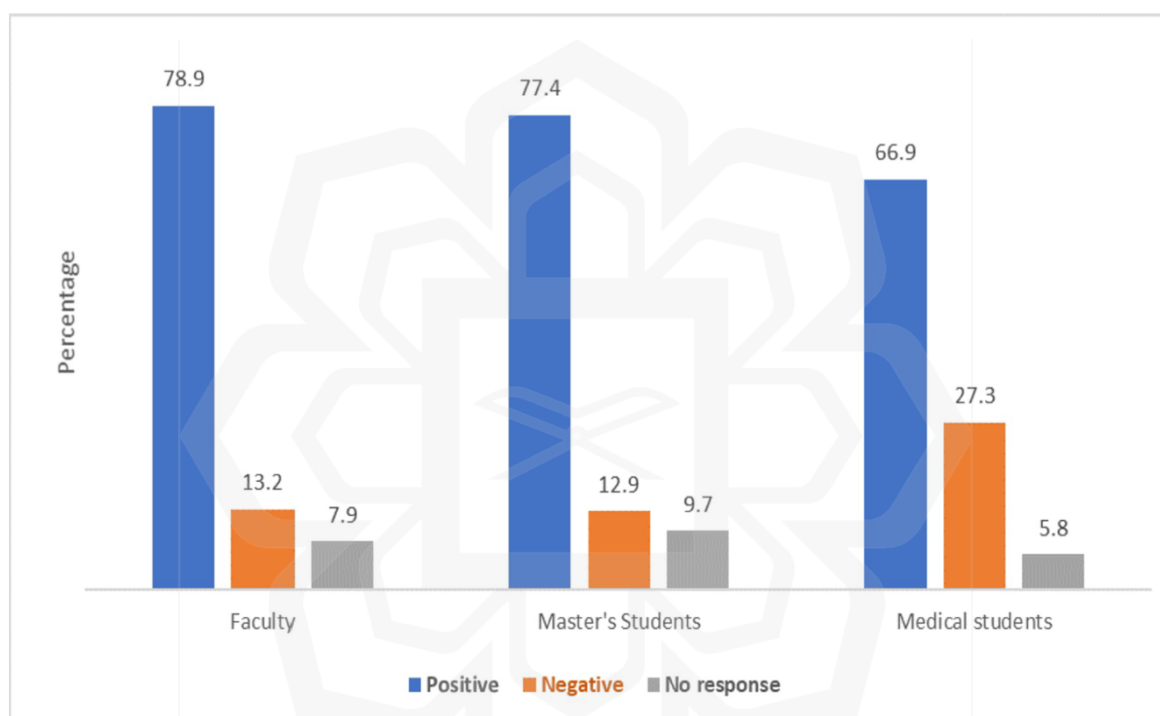


Figure 2.2 Impact of shift to online education during COVID-19 pandemic by position

(Rajab M H, Gazal A M, Alkattan K, 2020)

2.7 TEACHING AND LEARNING THROUGH MOOCS

Researchers from various countries have continuously explored the impact of Massive Open Online Courses (MOOCs) on the teaching and learning process. One prominent case study was conducted by DeWaard, Abajian, Gallagher, et al. (2011), which focused on analyzing data from a six-week MOOC titled MobiMOOC. The research team designed a comprehensive

survey that aimed to assess participants' levels of engagement with the course content, their prior experience with mobile technology, and their professional backgrounds. Additionally, the survey gathered demographic information, such as gender and other personal characteristics, to better understand how these factors influenced participants' learning experiences and interactions within the MOOC environment.

The results of the study revealed significant perspectives on the heterogeneous learning needs of learners engaged in MOOCs, emphasizing the pivotal role that technology plays in supporting and improving learning outcomes. Through an in-depth analysis of the interplay between learner engagement, familiarity with technological tools, and demographic factors such as age, educational background, and prior experience, the researchers were able to pinpoint several critical components that facilitate effective learning in open, digital educational environments. These insights contribute to a deeper understanding of how personalized and technology-enhanced approaches can better support diverse learners in online settings.

The MobiMOOC course was provided at no cost, with its content made available as open-source material. Spanning six weeks, each week focused on a different learning aspect. The course coordinator utilized Google Groups and Wikispaces to share updates, with discussions taking place on Google Groups and the syllabus accessible through the Wiki. To enhance content sharing, digital platforms like Facebook, YouTube, Twitter and Delicious were also integrated. This diverse use of social media allowed participants to engage with the material and collaborate effectively. Learners experienced a sense of empowerment as they applied self-organization strategies and developed their own mobile learning projects. This approach fostered knowledge creation and personalized learning experiences. Moreover, participants shared a common interest in educational technology, demonstrated a willingness to exchange ideas, and possessed the digital literacy skills necessary for active participation in the learning community.

Fini (2009) carried out a study aimed at evaluating how MOOCs influence learners by examining three key aspects: (a) promoting lifelong learning within the framework of open education, with a focus on effectively using digital tools; (b) enhancing personal knowledge management (PKM) skills; and (c) evaluating the usability and effectiveness of web-based learning platforms. As part of this research, the University of Manitoba offered an online course titled *Connectivism and Connective Knowledge*, available in both formal and informal formats. The course emphasized the use of various technological tools to support learning. While facilitators introduced some tools,

participants were also encouraged to suggest additional ones. Throughout the course, learners engaged with personal blogs, concept mapping tools, and a wide range of twelve digital resources. Additionally, platforms like Moodle and 3D virtual environments were integrated to enrich the learning experience. An open-source survey was conducted to collect data on participants' English proficiency, technological skills, views on certification, and preferences for the tools used in the course. The survey also explored the frequency of tool usage and the perceived relevance of these tools to the learning process. This study offered important insights into the role of MOOCs in promoting digital literacy, self-directed learning, and active participation in open education settings.

The survey announcement was distributed through LinkedIn, Facebook, and the author's personal blog, inviting individuals to view and participate. The results revealed that participants selected the course based on factors such as their learning styles, personal goals, and time availability. The choice of tools was influenced by their specific needs, objectives, and organizational abilities. Participants conveyed that the use of generic social networks was unnecessary, as they found effective networking through Moodle, participating in Elluminate sessions, and sharing information via blogs. The participants expressed strong endorsement for the integration of technology in education. Nevertheless, they voiced reservations regarding the feasibility of incorporating tools while instructing students with varying proficiency levels. To sum up, their responses underscored a significant interest among teachers in delivering online courses to their students.

2.8 LEARNING STYLES

Defining a learning style can be somewhat challenging. Learning styles are distinct and result from the combination of emotional, cognitive, and psychological characteristics (Zhao et al., 2020). Learning styles typically describe the unique methods individuals use to take in, comprehend, and remember information. They highlight the personal strategies or methods that people find most effective when engaging with new material or concepts (Stannard, 2003). In the context of this research, learning styles are conceptualized as the ways individuals perceive and process information, serving as crucial metrics for individual traits during the subsequent data collection phase.

There are several models that help us understand and assess how people prefer to learn. One well-known example is Kolb's model of experiential learning. In his 1984 framework, learning is seen as a cycle that moves through four stages: starting with a concrete experience, followed by reflecting on that experience, then forming abstract ideas, and finally testing those ideas through active experimentation. Kolb developed four distinct learning styles in 1974, grounded in this learning cycle: diverging, assimilating, converging, and accommodating. Each style reflects a unique way individuals take in and process information, offering insight into how they best learn through experience.

Another valuable approach is the Felder & Silverman model, which looks at learning preferences across several dimensions. It classifies individuals based on how they learn—whether they're more intuitive or sensitive, global or sequential, visual or verbal, inductive or deductive, and active or reflective in their learning (Felder & Silverman, 1988). Similarly, Stangl's theory takes a more straightforward route, describing learners as those who prefer doing, listening, reading, or observing. In this research, the focus will focus on exploring and applying the Felder-Silverman Learning Style Model to better understand individual learning preferences. This model is not only the most widely used in designing adaptive learning systems but also shares some similarities with cognitive style theories, facilitating the implementation of the research. The Felder & Silverman theory discusses five dimensions. The sensing and intuitive dimension distinguishes individuals based on how they perceive the world. Individuals with a sensing orientation collect information through their senses, whereas those with an intuitive orientation perceive the world through speculation and imagination. This leads to a preference among sensing individuals for data, facts, and experiments, while intuitive individuals are inclined towards theories and principles (Felder & Silverman, 1988). Visual and auditory learners differ in how they receive information. Visual learners favor pictures, diagrams, and demonstrations over texts, while auditory learners grasp information more effectively when presented verbally. Additionally, explaining concepts to others can be an effective learning method for auditory learners (Felder & Silverman, 1988).

Inductive and deductive are distinct forms of reasoning employed by individuals with different approaches. Inductive individuals move from specific observations to general theories, drawing principles from specific instances. Conversely, deductive individuals operate from broad generalizations to specific hypotheses, deducing consequences from overarching

principles (Felder & Silverman, 1988). This dimension is not only a part of individuals' learning styles but is also recognized as a component of scientific methods for reasoning.

Sequential learners approach information in a step-by-step manner, processing it sequentially and are adept at dealing with tasks even without a complete understanding. They excel in convergent thinking and analysis. In contrast, global learners require an overall understanding before delving into specific details. They process information in a non-linear fashion as well as demonstrate strength in divergent thinking and synthesis (Felder & Silverman, 1988). The active and reflective dimension delves into how individuals apply perceived information in practice. Active learners favor learning through doing, discussing, applying, and group work. On the other hand, reflective learners prefer learning through contemplation and independent work (Felder & Silverman, 1988).

Brusilovsky et al. noted that the majority of research on learning style adaptation has primarily focused on adapting content at the level of the content itself. Furthermore, significant correlations have been observed between students' learning styles and the formats of interfaces (2007).

2.8.1 Auditory (listening)

The auditory learning style depends on students' capacity to comprehend information through listening during their study sessions. This style prioritizes listening as the primary means of absorbing information or knowledge, encompassing activities like discussions, lectures, debates, or other forms of verbal presentations (De Porter, Reardon, and Singer-Nourie, 1999; Nilson, 2010). In essence, individuals with this learning style have to directly listen to the information source to remember and understand specific content. Typically, such individuals find it challenging to comprehend information conveyed in written format and may face difficulties in reading as well as writing. Characteristics of individuals with an auditory learning style include strong recall ability, a good knowledge of songs, talkative nature, weaker reading skills, difficulty remembering what has been read, limited writing/composing skills, and reduced attention to new elements in their surroundings.

2.8.2 Visual (Seeing)

Individuals who employ visual learning styles prioritize the clarity of vision, requiring tangible evidence to comprehend information. Visual learners rely on a heightened and consistent sense of sight to grasp information effectively. They prefer acquiring knowledge by reading content on a physical page or by studying visuals such as pictures, flowcharts, diagrams, illustrations, mind maps and concepts, graphic models, graphs and organisers as well as graphic metaphors (Gardner, Jewler, Barefoot, 2011; Nilson, 2010). Additionally, they possess a heightened sensitivity to colors and a substantial understanding of artistic elements. However, direct communication can be challenging for them as they tend to be overly responsive to sounds, leading to difficulty in following oral instructions and often misinterpreting words or speech. As per Nilson (2010), characteristics of those utilizing a visual learning style include paying close attention to one's lips during communication, incorporating body language when expressing thoughts, speaking less in front of groups and listening less to others, struggling to remember oral information, a preference for demonstrations over oral explanations, and the ability to sit quietly in the midst of a crowd.

2.8.3 Kinesthetic (Touching)

Individuals with a kinesthetic learning style typically rely on physical touch from others to remember information. This type of person often uses their hands as a tactile method to recall details (DePorter, Reardon, and Singer-Nourie, 1999; Gardner, Jewler, Barefoot, 2011). Instead of reading explanations, they absorb information by physically interacting with it. These individuals find it challenging to sit still to acquire information and prefer engaging in various physical activities. They excel in teamwork and have good control over body movements. Kinesthetic learners also have a tendency to absorb and understand information by associating it with images or words, learning to pronounce it, or comprehending the facts.

People with kinesthetic learning styles are inclined to touch objects frequently, engage in movement, use their hands for various activities, demonstrate good body coordination, and utilize all senses—sight, touch, taste, smell, and hearing—in the learning process. They benefit

most from experiential and inductive teaching methods (Gardner, Jewler, Barefoot, 2011; Nilson, 2010). However, they may encounter difficulty in studying abstract concepts.

Learning style is closely connected to how the brain takes in information (modalities) and organizes that information. The arrangement of information is associated with the brain's inclination to perceive something either in an abstract or concrete manner. In the context of information, individuals may organize it either sequentially or randomly.

2.9 LEARNING STYLES MODELS

Various learning style models have been developed to evaluate learning styles preferences cross different contexts and with varying areas of focuses. Plenty of learning style models have been developed by applying different psychological theories and appeared in some previous studies such as the Kolb's learning style model, Felder-Silverman learning styles model, Visual, Aural, Read/Write, and Kinesthetic learning styles (VARK) (Luangrungruang, T. and Kokaew, U., 2022). The VARK model finds broad applicability within the humanities, given the diverse range of subfields such as history, music, art, and literature. Its capacity to generalize learning styles makes it suitable for a wide audience. VARK can be effectively employed across various subject domains without excessive specificity, providing sufficient detail to suggest appropriate courses for users, as outlined by Fazuludeen et al. (2019). The visual representation of the model elements is depicted in Figure 3.

Learner Style	Description
Visual	Pictures, images, graphics and charts are used for memorization
Aural	Depends on the hearing and speaking
Read/Write	Remember things in reading and writing
Kinaesthetic	Depends on the hands-on experience

Figure 2. 3. VARK model (source: Fazuludeen *et al.*, 2019)

Various models have employed distinct criteria to categorize preferences in learning styles. Felder and Silverman characterize it as the method in which individuals process as well as receive information. In contrast, Kolb presents a different perspective, describing learning style as the way individuals create knowledge by transforming their experiences. Honey and Mumford defined learning style as “a description of the attitudes and behaviors which is an individual’s preferred way of learning.”

Over the past decade, numerous models of learning styles have emerged, and some of these have been deemed more suitable for online learning. Notable examples include the learning style models of Kolb, Honey and Mumford, as well as Felder and Silverman. Beaty (1986) emphasized the challenge teachers face in accurately identifying students' learning styles without the use of valid instruments. Additionally, Dunn and Dunn (1993) emphasized the importance of a reliable, accurate, and thorough tool for identifying the different learning style characteristics that influence individuals. This chapter explores several learning style models applicable to discerning effective learning styles in MOOCs.

2.9.1 Felder-Silverman learning styles model

The Felder-Silverman learning style model, developed by Richard Felder and Linda Silverman in 1988, focuses on delineating learning styles, particularly within the context of engineering students. This model provides a comprehensive representation of learning styles by categorizing each learner across four dimensions. Felder and Soloman created the Index of Learning Styles (ILS) as a tool for identifying learning styles based on this model. The Index of Learning Styles (ILS) is a 44-question survey designed to help learners better understand how they absorb and process information. Each of the four key learning dimensions includes 11 questions, and each item offers two choices option a or b reflecting different preferences. Based on their responses, learners receive scores ranging from +11 to -11 in each dimension, with steps of two points in either direction. These scores reveal how strongly someone leans toward a particular learning preference. A score between -3 and +3 suggests the person is “well balanced,” showing no strong preference in that area. Scores between ± 5 and ± 7 indicate a “moderate preference,” while scores from ± 9 to ± 11 suggest a “strong preference” for one side of the dimension (Graf & Kinshuk, 2007). The Felder-Silverman Learning Style Model

(FSLSM), which the ILS is based on, breaks down learning into four main dimensions. Each dimension is further explored in the table below, offering a clear and detailed profile of an individual's learning style.

Dimension	Learning Styles	Description	Learning objects
Dimension Perception The type of information the learner prefers to perceive.	Learning Styles	Description	Learning objects
	Sensory	Sensory learners prefer learning from tangible materials, such as examples.	Examples Exercises Quiz
Input The way in which learners prefer to receive external information.	Intuitive	Intuitive learners favor learning abstract material, such as theories.	Abstract learning object
	Visual	Visual learners learn best from what they see.	Recorded videos Images – graphics
Processing The way perceived information is converted into knowledge.	Verbal	Verbal learners like to acquire information through words, whether spoken or written.	Textual explanation documents audio Additional reading
	Active	Active learners prefer to learn by trying things and working with others	Forum access Forum post
Understanding The way learners progress towards understanding.	Reflective	Learner prefer to learn by thinking things through and working alone	Exercises Examples
	Sequential	Sequential learners tend to go through the course step by step in a linear way.	Leanear access for learning concepts Step by step exercises

Figure 2.4 Felder-Silverman learning styles model (Felder &Silverman, 1988)

2.9.2 VAK Model

The VAK learning style model focuses on three main sensory channels—Visual, Auditory, and Kinaesthetic, that can help identify how a person prefers to learn (Clark, 2008). According to Clark, the model stems from the principles of accelerated learning and is popular due to its straightforward and easy-to-understand framework. While some studies, like one from the University of Pennsylvania (2009), suggest a connection between sensory preferences and learning styles, there's still no solid proof that sticking to one's preferred style is the most effective way to learn. This may be because learning styles are more about individual comfort and preference rather than rigid or universally better ways of learning.

Clark explains that individuals utilize all three sensory modalities to process and integrate new information and experiences. However, according to VAK or modality theory, one or two of these modalities usually take precedence. This dominant modality determines the most effective way for an individual to absorb new information by filtering what is essential for learning. It is important to recognize that this preferred learning method can differ depending on the task, as learners may rely on one approach for a particular activity while using a combination of modalities for another (Clark, 2008).

Clark (2008) noted that traditional learning methods follow a sequential progression through different stages. In early education, from kindergarten to third grade, instruction is primarily kinesthetic. Between fourth and eighth grade, teaching methods shift toward visual presentations. From ninth grade onward, including higher education and professional settings, information is mainly conveyed through auditory methods, such as lectures. VAK theorists advocate for incorporating all three learning styles to enhance educational effectiveness.

This enables learners to engage actively, irrespective of their favored learning style (Clark, 2008). As a result, VAK theorists have established three primary categories, outlined as follows:

1. Learners with an auditory preference frequently engage in self-talk, may move their lips, and tend to read aloud. They may encounter challenges in tasks related to reading and writing. These individuals typically perform better when discussing with a peer or using a tape recorder to listen to the information spoken.

2. Visual learners encompass two sub-channels, namely linguistic and spatial. Those who fall under visual-linguistic prefer learning through written language, engaging in tasks like reading and writing. They retain information well when it's written down, even without repeated readings. They find it beneficial to jot down directions and are more attentive to lectures when accompanied by visuals. On the other hand, visual-spatial learners often face challenges with written language and thrive when presented with Graphs, illustrations, demonstrations, videos, and other visual tools. They excel at visualizing people and locations using their imagination, making it rare for them to become disoriented in unfamiliar surroundings.

3. Kinesthetic learners excel when they engage in touch and movement. Within this category, there are two sub-channels: kinesthetic (movement) and tactile (touch). These learners are prone to losing focus or attention in the absence of external stimulation or movement. During lectures, they may feel compelled to take notes as a means of incorporating hand movements. When reading, they prefer to initially scan the material before delving into the details to grasp the overall picture. They enhance their learning experience by using color highlighters and taking notes in the form of drawings, diagrams, or doodles.

2.9.3 Kolb's learning style model

The learning style model developed by David Kolb is widely recognized as one of the most effective frameworks for understanding learning styles (A. Kolb, 2014). This model describes learning as a transformative process that begins with reflection and culminates in experimentation. Professor David Kolb, a leading scholar in Organizational Behavior at Case Western Reserve University, significantly contributed to the popularization of learning style theories. Kolb acknowledges the diverse influences on his model, crediting thinkers such as John Dewey, Kurt Lewin, Carl Jung, Jean Piaget, and Lev Vygotsky for shaping its foundation (as cited in Azlinda, 2006, p. 29). His theory explains the cognitive processes involved in learning and highlights the essential role of critical reflection in knowledge acquisition.

Kolb's model (1984) outlines that successful learning encompasses four stages, detailed as follows:

1. Concrete Experience refers to instances where students relate to knowledge through direct practical experience, often described as "Apprehension" in Kolb's terminology.
2. Reflective Observation involves students who prefer to observe and learn by watching others, forming insights about their own experiences through careful observation.
3. Abstract Conceptualization is the stage where students start forming ideas or theories to make sense of what they've observed. It's when they step back, reflect, and try to understand the "why" behind what happened by connecting it to bigger concepts or frameworks.
4. Active Experimentation is the phase where students take what they've learned their ideas and theories, and put them into action to tackle real problems or make decisions. It's all about testing out their understanding in practical, hands-on ways (Kolb, 1984, as cited in Azlinda, 2006).

Richmond and Cummings (2005) examined the application of Kolb's theory in online distance learning, specifically among undergraduate Educational Psychology students at the University of Nevada-Reno. The study was conducted virtually, using questionnaires and interactive discussions via an online chat feature. Its primary objective was to assess the relevance of Kolb's theory within a virtual learning environment. The study highlighted that students' enjoyment of a class plays a crucial role in the learning process. Identifying the students' learning preferences allows instructors to adjust their teaching strategies to improve student engagement. The findings underscored the importance of designing courses that align with students' learning preferences, advocating for modifications to online course structures to accommodate different styles across four key learning environments: affective, symbolic, perceptual, and behavioral (Richmond & Cummings, 2005).

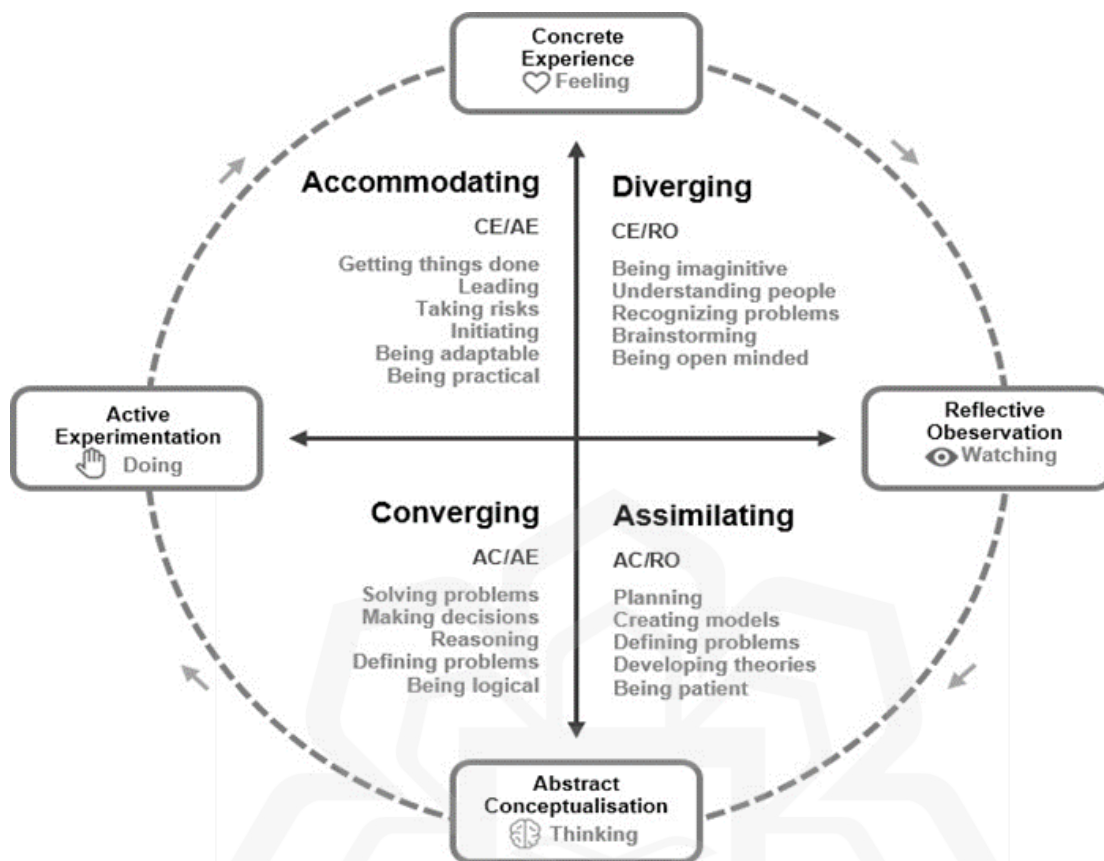


Figure 2.5 Kolb Learning Style Model (Kolb, 1984)

2.9.4 The Dunn and Dunn Learning Styles Model

The Dunn and Dunn model of learning styles (1993) introduces a clinical or diagnostic instructional framework. It is built on the foundational idea that students achieve optimal learning through diverse methods. Therefore, an effective teaching and learning approach should involve recognizing the modalities, preferences, and styles through which a student learns most efficiently. These results can then be utilized to formulate instructional approaches and structure learning environments that resonate with the students' learning styles or preferences. The model operates on the assumption that:

1. Identifying students' unique learning preferences is feasible.
2. Adapting teaching strategies and the classroom environment to align with students' individual preferences can significantly support their learning.

Moreover, Dunn, Dunn, and Price (1985) assert that students can achieve greater success when teachers align their instructional methods with students' learning styles. The model's principles or theoretical assumptions emphasize the commitment of teachers and administrators to:

1. The belief that with the right conditions, everyone can learn and grow.
2. Tailoring the learning environment, tools, and strategies to match each student's strengths.
3. Recognizing that each individual possesses strengths, however, these strengths vary among individuals.
4. Acknowledging the existence of unique individual learning styles that can be reliably measured.
5. The expectation that, with suitable environments, approaches, and resources, students will achieve higher achievement and attitude test scores when the treatment matches their learning style.
6. The belief that most teachers can learn to integrate learning styles into their instruction.
7. The belief that many learners can effectively use their dominant learning styles to approach new or demanding educational content. (Dunn and Dunn cited in Azlinda, 2006).

The Dunn and Dunn Learning Style Model has identified several fundamental principles or theoretical assumptions. Educators and school administrators should adhere to the following principles:

1. All individuals possess the potential to learn, given appropriate support and opportunities.
2. Instructional settings, materials, and methodologies should be designed to accommodate a range of learning style strengths.
3. Each individual has distinct strengths, which differ in nature and degree from one person to another.
4. Learners exhibit identifiable instructional preferences that can be assessed with consistency and reliability.

5. When instructional methods and environments align with students' learning preferences, research indicates significant improvements in both academic performance and attitudes toward learning.
6. With adequate training and support, the majority of educators can effectively integrate learning style considerations into their instructional practices.
7. Many students are capable of utilizing their individual learning style strengths to effectively engage with unfamiliar or demanding academic content (Dunn & Dunn, as cited in Azlinda, 2006).

Dunn, Dunn, and Price (1985) have asserted that students can achieve greater success when educators align their teaching methods with the students' learning styles. A meta-analysis, which included forty-two experimental studies utilizing the Dunn and Dunn model, was carried out. Conducted from 1980 to 1990, the study included 13 diverse higher education institutions in the United States. Findings indicated that students who had their learning characteristics accommodated exhibited a 75% greater achievement in language classes in comparison to those whose styles were not accommodated. This finding emphasizes the significance of teachers being aware of their students' learning styles, enabling them to customize their instructional approaches with various materials or activities that suit their students' needs.

The study, carried out between 1980 and 1990 across 13 diverse U.S. higher education institutions, found that students whose learning characteristics were addressed could anticipate achieving a 75% higher level of success in their language class performance compared to students whose styles were not accommodated. This outcome has significantly influenced educators, emphasizing the significance of teachers being mindful of their students' learning styles. This awareness allows teachers to adapt their instructional methods by incorporating a variety of materials or activities tailored to meet their students' individual needs.

2.9.5 Felder and Silverman Learning Style Inventory

Richard Felder and Linda Silverman conducted a study in 1988 on learning instruments targeting various dimensions of learning styles specifically among engineering students. According to Zywno (2003), "Three years later, a corresponding psychometric assessment instrument, the Felder-Soloman's Index of Learning Styles, was developed." Zywno (2003) significantly contributed to the validation and reliability of the Index of Learning Styles (ILS)

through research on this instrument. The Index of Learning Styles (ILS) was originally created to help understand how both teachers and students learn best in engineering and science settings. Over time, its usefulness has grown, and it's now used in many other areas too. For example, it's been applied in business education (Ng, Pinto, & Williams, 2008), software development (Bohlen & Ferratt, 1993), computer engineering (Zywno, 2002), agriculture (Cano, Garton, & Raven, 1992), computer-based training (Ford & Chen, 2001), construction management (Abdelhamid, 2003), and information technology (Kovacic, 2008).

In 1988, Richard Felder and Linda Silverman developed a learning styles model designed to emphasize the diverse learning preferences of engineering students. This model provides a framework for educators to modify their teaching methods to more effectively address students' varying needs (Felder, 1993; Felder & Silverman, 1988). It categorizes learners based on their tendencies across four key dimensions: Active-Reflective, Sensing-Intuitive, Visual-Verbal, and Sequential-Global.

1. Active-reflective: This pertains to distinctions in the learning process between gaining knowledge through hands-on experience and acquiring understanding through thoughtful reflection.
2. Sensing-Intuitive: This pertains to distinctions in the learning process between acquiring knowledge through memorizing facts or details and gaining understanding through comprehending relationships.
3. Visual -Verbal: This refers to variances in the learning experience, specifically contrasting the acquisition of knowledge through visual aids like pictures and figures with the traditional methods of reading and hearing.
4. Sequential - Global: This concerns the dichotomy between learning through systematic, logical steps and developing the ability to grasp the broader perspective.

Initially, Felder and Silverman's model from 1988 included dimensions like Inductive-Deductive, however the fifth dimension has since been excluded from the index. To enhance the practical application of the Felder and Silverman learning styles model, Felder and Soloman (2006) introduced an assessment tool known as the Index of Learning Styles (ILS). The ILS is a questionnaire containing 44 questions that pertain to the four dimensions outlined in the Felder and Silverman (1988) learning styles model. It is available in both online and paper-and-pencil formats. Felder et al. (2005) utilized the Cronbach's alpha statistical method to

assess the reliability of their instrument, obtaining scores between .56 and .77. In an unpublished study by Felder and Spurlin (2005), and in research conducted by Livesay and colleagues (2002) with 584 students at North Carolina State University, the reliability of the Index of Learning Styles was explored. They found that the Cronbach's alpha values, a measure of consistency ranged between .55 and .76, suggesting a moderate level of reliability across the different learning style dimensions.

The Felder-Soloman model distinguishes itself by incorporating specific dimensions. The Active-Reflective scale, for example, closely mirrors Kolb's learning style model, while the Sensing-Intuitive dimension draws inspiration from the Myers-Briggs Type Indicator (MBTI) and relates to Kolb's Concrete-Abstract continuum. The model also integrates ideas from information processing theory through its Active-Reflective and Visual-Verbal categories. Meanwhile, the Sequential-Global dimension reflects concepts tied to left-brain versus right-brain thinking (Felder & Spurlin, 2005; Larkin & Budny, 2005).

The Index of Learning Styles (ILS) is a 44-question tool designed to assess how people learn best. It covers four key dimensions of learning, with 11 questions dedicated to each one, helping to paint a clearer picture of an individual's learning preferences. The data range for each dimension is 0 to 11, indicating that the questions are designed to reveal respondents' preferences within the Felder and Soloman (2006) learning styles model. Learners' preferences on a given scale may vary in strength, mildness, or almost non-existence, and they are not limited to belonging to only one pole.

The Index of Learning Styles (ILS) is a 44-item assessment tool structured around four dimensions, with 11 questions assigned to each. Scores for each dimension range from 0 to 11, reflecting respondents' learning preferences within the Felder and Soloman (2006) model. These preferences can vary in intensity, ranging from strong to mild or even minimal, and individuals are not strictly confined to one specific category.

According to Felder and Spurlin (2005), the online version of the Index of Learning Styles is currently available at no cost for those using it in research. The instrument serves two main purposes. Firstly, instructors can use it to assess students' learning styles and tailor instructional plans to address various learning styles throughout the teaching process. Secondly, individuals can utilize the ILS to gain an understanding of their own strengths and weaknesses, as highlighted by Felder and Spurlin (2005).

Within the Index of Learning Styles (ILS), every dimension comprises two categories, each assigned a score between 1 and 11. Scores ranging from 1 to 3 suggest a mild or balanced inclination between two learning categories. Scores between 5 and 7 indicate a moderate preference, reflecting a tendency toward one category over another. In contrast, scores within the 9 to 11 range demonstrate a strong preference, which may lead to difficulties in environments that do not support the favored learning style, as noted by Felder and Spurlin (2005). Additionally, Felder and Spurlin (2005) reported that the Index of Learning Styles (ILS) achieves test-retest reliability coefficients between .73 and .87 over a four-week interval, and between .56 and .77 over a ten-week period, findings further supported by Litzinger, Lee, Wise, and Felder (2005). In terms of internal consistency, reliability values across the four learning dimensions vary, with the visual-verbal scale ranging from .51 to .69, and the sequential-global scale from .41 to .54. Factor analysis reveals an "orthogonal" relationship among the visual-verbal dimensions, sensing-intuitive and active- reflection, whereas the sensing – intuitive and sequential - global dimensions demonstrate a more "associated" relationship, as outlined by Felder and Spurlin (2005).

Numerous validation studies, such as those conducted by Livesay et al. (2002b) and Zywno (2003), have affirmed the Index of Learning Styles (ILS) as a suitable and effective psychometric tool for assessing learning style preferences among students in engineering and various other majors. However, Van Zwanenberg et al. (2000) expressed reservations about the internal reliability of ILS scales and frequently discussed its robustness and construct validity. The apparent contradiction in opinions can be reconciled by considering the varied perspectives on the ILS's application instead of the tangible outcomes. For example, Livesay et al. (2002) used the instrument to classify learning preferences according to the model's original design. In contrast, Van Zwanenberg et al. (2000) proposed that the ILS might forecast academic success or failure based on the model's theoretical foundations. Messick (1995) and Thompson and Vacha-Haase (2000) emphasized that evaluating the instrument's validity demands multiple studies supported by comprehensive sample data and detailed results.

Zywno (2003b) noted that surveys exceeding a duration of ten minutes tended to remain incomplete when assigned to students to support this observation, in the year 2000, when Zywno administered both Kolb's Index of Learning Styles (ILS) and Felder-Soloman ILS to students, they frequently sought clarification on the meaning of certain answer choices. The same pattern occurred in 2001, with some students opting for answers without fully

grasping the explanations provided. Zywno (2003a) attributed this situation to the students' difficulty in understanding certain words. However, the primary justifications for selecting this instrument are as follows:

- a. The validity of the Index of Learning Styles (ILS) has been examined in various studies, including those conducted by Felder and Spurlin (2005) and Zywno (2003a).
- b. ILS (Felder & Soloman, 2006) is a user-friendly tool equipped with explicit explanations of its dimensions and easily interpretable results for analysis.
- c. The outcomes of ILS can be effortlessly associated with appropriate environments (Paredes & Rodriguez, 2002).
- d. ILS incorporates learners' preferences for learning styles as well as provides insight into expanding teaching approaches based on students' individual learning style preferences (Kovacic, 2008).
- e. The abundant literature on ILS serves as a valuable resource, offering guidance in developing appropriate materials for each dimension of the Index of Learning Styles (Kovacic, 2008).

2.10 MOOC LEARNING THEORIES

This review highlights the importance of understanding learning theories, as emphasized by various researchers. Anderson (2004, p. 45) argues that theories provide a comprehensive perspective on educational practices and research. This suggests that when educators understand learning theories, they can better interpret how learning occurs in different educational contexts. Similarly, McLeod (2003, p. 35) stresses that creation of impactful learning experiences ought to be grounded in relevant theoretical frameworks. Incorporating these theories enhances focus, clarity, and direction in instructional design, enabling the development of well-structured and effective training programs.

Furthermore, Anderson (2004, p. 45) emphasizes that learning theories enable us to link our own practices with those of others, creating structured frameworks that deepen our understanding of what we do. More importantly, they allow us to apply what we've learned to new situations and environments. On the following page, Anderson (2004, p. 46) outlines several important roles of a strong learning theories: it enables educators to predict the most effective ways to facilitate learning, enhance communication, and improve access to

information. Additionally, it supports the efficient use of time and resources, helping to make educational practices more effective and strategic. Contrary to being perceived as obstacles, these theories are believed to have the potential to help instructors comprehend the rationale behind their teaching methods and disrupt established teaching patterns, prompting a reevaluation of their practices (Wilson and Peterson, 2006, p.14). Given the pivotal role of learning theory in each learning design, it is crucial to spotlight and deliberate on the theories applied within the context of this study, particularly in MOOCs. In this regard, the article "MOOCs and Applied Learning Theories" by Marsaglia et al. (2014a, p.3) raises pertinent questions such as: If MOOCs represent a significant shift in online learning, how have pedagogy and learning theories adapted to align with this transformation? Which learning theory best aligns with the MOOC model, and is there evidence of a new theory emerging as a result? Designing MOOCs is particularly challenging due to the diverse social contexts and locations of their learners, each bringing unique needs and interests. Research literature highlights learning theories applicable to MOOCs, including connectivism and social constructivism. These theories will be explored in this study to clarify the research objectives.

2.10.1 Connectivism Theory

The first MOOC, called Connectivism and Connective Knowledge (CCK08), was created in 2008 by Stephen Downes and George Siemens at the University of Manitoba in Canada. (Mackness et al., 2010). This groundbreaking course provided a novel framework for understanding how participants learn within massive open networks. These networks facilitated the sharing of knowledge, encouraged connectivity as well as diversity, and promoted learning autonomy

Mackness et al., 2010). Central to CCK08 was Siemens' theory of connectivism, a new learning theory tailored for the digital age (Mackness et al., 2010). Siemens (2005) argued that the integration of technology into learning over the past two decades necessitated the adaptation of traditional learning theories to better align with the realities of digital environments. In connectivism, learning is conceptualized as an open-ended process, uniquely experienced by each individual. This approach values contributing to a domain's ongoing global dialogue over simply consuming information (Marsaglia et al., 2014a). Unlike traditional online courses, connectivist learning places greater responsibility on learners to shape their own experiences,

while facilitators focus on fostering spaces that enable meaningful connections (Milligan et al., 2013).

Siemens (2005) also critiqued earlier learning theories—behaviorism, cognitivism, and constructivism—for being developed during a time when technology played a minimal role in education. These theories generally view knowledge as something to be constructed or internalized. In contrast, connectivism challenges this perspective, suggesting that knowledge in the digital age is distributed across networks, and the ability to locate and utilize this knowledge is more critical than memorizing facts (Marsaglia et al., 2014a, p.5).

Wheeler and Gerver (2015) expand on this by asserting that connectivism provides a fresh explanatory framework for understanding technology-supported learning in the digital era. They argue that its most significant contribution is the shift from memorizing declarative knowledge to knowing where and how to find information. Digital media, they contend, has expanded the distribution of knowledge, emphasizing the importance of navigating and accessing resources rather than internalizing content (Wheeler and Gerver, 2015, p.36-37).

In the context of MOOCs, connectivism forms the theoretical backbone of cMOOCs, which are informal, technology-driven platforms for lifelong learning. These courses encourage learners to take ownership of their education by selecting what and how they learn. Early cMOOCs aligned with connectivist principles by emphasizing the skills of “learning to learn” and prioritizing the sharing and repurposing of knowledge over its accumulation (Wheeler and Gerver, 2015, p.39).

Learners in cMOOCs participate in informal online communities, set their own pace, and choose their preferred methods of engagement and assessment. This self-directed and self-determined approach allows learners to tailor their experiences to their unique needs and goals, fostering a flexible and personalized model of education (Wheeler and Gerver, 2015, p.39).

2.10.2 Social Constructivism

Social constructivism posits that human development is rooted in social interactions, with knowledge constructed through engagement with others. Kim (2001) identifies three foundational assumptions in social constructivism that are critical to understanding learning models within this framework: reality, knowledge, and learning. From the perspective of social

constructivists, reality and knowledge are not static or universal but are socially and culturally formed as a result of human engagement, such as interpersonal interactions and environmental influences, to create meaning (Kim, 2001).

According to this theory, learning is inherently a social process aimed at creating meaningful understanding through active engagement in social activities (Kim, 2001). To achieve deep understanding, learners must actively construct knowledge for themselves by interacting with peers, the learning content, and their environment. Examples of such activities include collaborative teamwork on projects, engaging in thoughtful discussions, tackling case studies, solving problems, and reflecting on personal learning experiences.

Although teachers cannot predict the particular understanding that each learner develops, they can guide learners within a broad domain of knowledge (Vrasidas, 2000, p.9). Constructivist environments encourage learners to develop diverse perspectives and approaches, emphasizing that there is no single correct understanding or solution to a problem. Students are urged to explore multiple methods of problem-solving and justify their reasoning (Vrasidas, 2000, p.11-12). In the context of MOOCs, forums and interactive spaces allow learners to engage in social interactions, enabling them to interpret their learning experiences and enhance comprehension—an approach strongly aligned with social constructivist principles.

Given the open and diverse nature of MOOCs, which accommodate participants from varied backgrounds, social constructivism is particularly applicable to MOOC-based learning. However, it is essential to recognize that MOOCs vary significantly in their tools, goals, and learning activities, depending on the context and objectives. McLeod (2003, p.42) emphasizes that learning theory perspectives must account for the situational context, learning goals, and the characteristics of learners and their performance.

While the earliest MOOCs were closely linked to connectivism, the proliferation of MOOCs and the global development of platforms has prompted inquiries into how educational practices unfold within these communities. Because learning in MOOCs is dynamic—shaped by interactions between teachers, learners, and course materials—many researchers argue that social constructivism provides a useful lens to understand this process. However, further research is necessary to refine our understanding of MOOCs and their relationship to learning theories, ensuring these platforms maximize their potential and deliver optimal learning outcomes.

Additionally, it is possible that MOOCs could integrate multiple learning theories, such as connectivism, objectivism, and constructivism, to address the diverse needs of learners. This research is guided by the recognition that MOOCs support various approaches to sharing and constructing knowledge. By exploring how teaching and learning occur within the MOOC context, this study aims to shed light on the interplay of these theories and enhance the design and effectiveness of MOOCs.

2.11 LEARNER ENGAGEMENT IN MOOCS

Successful learning heavily depends on student engagement, which involves the commitment of time and effort to academic activities. In traditional face-to-face education, research consistently demonstrates that students learn more effectively when they actively engage with academic materials and establish meaningful connections with faculty and peers. This principle also applies to MOOCs, where engagement remains a significant challenge due to the massive scale of participants and the diverse range of learner needs.

MOOC providers face the ongoing task of designing courses that foster meaningful engagement. Key factors identified in the literature that promote student engagement in MOOCs include timely and constructive feedback, opportunities for peer interaction, a supportive learning environment, and appropriately challenging learning activities. These elements collectively contribute to creating a more immersive and effective learning experience. For example, discussion forums embedded within course modules encourage experiential learning, which Kolb and Kolb (2005) describe as an iterative process of learning through experience, rather than a static outcome. This process allows learners to reflect, experiment, and refine their understanding in collaboration with others.

Recent studies emphasize the role of social interaction in enhancing learner engagement within digital environments. Hung and Yuen (2010) found that social networking platforms foster positive perceptions of learning experiences among college students. Similarly, Zhang et al. (2022) highlight that peer interactions in online learning environments can increase motivation and improve comprehension by enabling students to share diverse perspectives. When integrated effectively into MOOCs, social features such as peer discussions, collaborative projects, and interactive activities can replicate some of the benefits observed in face-to-face education.

Despite these opportunities, maintaining high levels of engagement in MOOCs remains a challenge, particularly given their scale and the variability in learners' prior knowledge, goals, and levels of commitment. Recent research by Kizilcec et al. (2023) suggests that personalized feedback and adaptive learning pathways can significantly enhance student engagement in MOOCs. By tailoring course content and pacing to individual learner needs, providers can create a more customized and supportive experience that encourages sustained participation.

Furthermore, gamification and multimedia enhancements have emerged as effective strategies to promote engagement. Han et al. (2023) found that integrating gamified elements, such as leaderboards, achievement badges, and interactive quizzes, increases learner motivation and active participation. Similarly, immersive multimedia tools, such as virtual reality and interactive video content, provide opportunities for experiential learning that are more engaging and impactful.

In conclusion, while MOOCs present unique challenges to fostering student engagement, ongoing advancements in educational technology and pedagogy provide promising solutions. By leveraging social interaction, adaptive feedback, gamification, and experiential learning opportunities, MOOCs can create enriching environments where learners actively participate and achieve meaningful outcomes. However, further research is essential to refine these approaches and address the diverse needs of learners in MOOC environments.

2.12 THE LECTURER'S ROLE AND THE LEARNER'S ROLE

The role of the instructor is pivotal to the success of participants in MOOCs. Having well-known and highly skilled experts as instructors can significantly attract participants' attention and contribute to their success (Bingöl et al., 2020). Downes (2010) asserts that educators in MOOCs must adopt multiple roles, including facilitator, designer, supporter, moderator, technical assistant, and coach. These diverse roles highlight the multifaceted nature of teaching in an online learning environment.

However, the role of instructors in MOOCs has often been underemphasized in academic literature. Ross et al. (2014) identify three primary typologies of teachers in MOOCs. The first is the distant academic celebrity, an expert from an elite institution who delivers content but remains unavailable for interaction or dialogue with participants. The second is the automated

teacher, who provides feedback through pre-programmed quizzes or tasks tailored to students' previous performance. The third is the co-participator and facilitator, who engages with learners to facilitate discussions and activities while allowing more knowledgeable participants to assume teaching roles (McAuley et al., 2010).

In addition to these typologies, Ferguson and Whitlock (2014) emphasize the variety of roles a lecturer may adopt in MOOCs, such as setting the course trajectory, acting as a host and instructor, participating as a fellow learner, or even as an emotionally engaged enthusiast. Despite these identified roles, Ross et al. (2014) argue that current descriptions of teaching in MOOCs fail to capture the full complexity of the instructional context. They advocate for further research that draws on instructors' lived experiences to better understand how MOOCs can reach their full potential.

Teaching in MOOCs also requires learners to possess a high degree of self-direction (Kop et al., 2011). For example, Stacey (2014) highlights that the pedagogy of Udacity courses emphasizes self-study. Each course is structured with units comprising short instructional videos, supplementary materials, weekly quizzes, and homework, while providing opportunities for interaction through forums. This design encourages learners to take responsibility for their own learning, engaging with the content at their convenience and tailoring their learning paths according to their preferences.

As MOOCs are primarily informal, self-paced learning environments, they place the onus of learning on participants. Successful MOOC learners need to develop autonomy, effective time management, and technical proficiency to navigate the platform and resources effectively (Kop et al., 2011). This autonomy is increasingly vital in an era where individuals face time constraints and must quickly adapt to the rapid spreading of information over the internet (Tabias et al., 2015). For instance, engaging in discussion forums requires participants to synthesize information efficiently while contributing to the collective learning experience.

Ultimately, the dual responsibility of instructors and learners in MOOCs creates a unique dynamic. While instructors must adopt flexible and multifaceted roles to design engaging and supportive learning environments, participants must cultivate self-discipline and adaptability to thrive in these informal, technology-mediated courses. This interplay highlights the importance of further research into instructional strategies and learner behaviors to optimize the potential of MOOCs as a transformative educational platform.

2.13 THEORETICAL FRAMEWORK

Research on Massive Open Online Courses (MOOCs) is extensive as well as wide-ranging. Academics draw on dozens of intention-based models as theoretical frameworks or bases to deal with user attitudes, intentions, acceptance, and adoption (Siemens, 2005). The theoretical basis for this research comes from connectivism theory and social constructivism theory (Siemens, 2005). These theories will be used in this research to further explain how students with different learning styles learn in MOOCs.

According to connectivism theory, learners play a central role in their own learning journey. They have full autonomy to choose the strategies that best align with their individual learning styles. Additionally, they can build the ability to link various sources of information, allowing them to recognize and form meaningful patterns of knowledge (Siemens, 2005). Recent studies have further emphasized that the flexibility and autonomy offered by connectivism align with the diverse preferences and self-directed learning approaches of MOOC participants (Downes, 2019; Al-Samarraie et al., 2020). Moreover, advances in artificial intelligence and adaptive learning technologies are enhancing the application of connectivist principles by tailoring learning pathways to individual learners' needs (Kukulska-Hulme, 2021).

Wertsch (1997) explains that social constructivism supports the idea that learners shape their own understanding of truth, influenced by their cultural background, experiences, and worldview. It also highlights the vital role of social interaction, especially with more knowledgeable individuals. According to Wertsch, gaining an understanding of the social meaning behind key symbols and learning how to use them effectively relies heavily on these interactions with others. Recent research builds on this by highlighting how the collaborative features of MOOCs, such as discussion forums, peer assessments, and group projects foster social interactions that align with social constructivist principles (Zhu et al., 2020; Chaturvedi et al., 2021). Additionally, the integration of virtual reality and immersive environments in MOOCs offers novel ways for learners to interact socially and culturally, further enriching their learning experience through constructivist approaches (Wang et al., 2022).

This study seeks to build upon these foundations by examining how students with different learning styles utilize MOOCs, considering the interplay between the autonomy emphasized by connectivism and the collaborative engagement promoted by social constructivism. These theoretical insights will provide a robust framework to analyze the motivations, behaviors, and outcomes of learners in diverse MOOC environments. This research aims to better understand how these theories work in the MOOC environment, especially in meeting the needs of learners with different styles of learning.

Connectivism enables the researcher to look at how learners take control of their own learning, make use of flexibility, and connect various resources to create personalized learning experiences (Siemens, 2005). MOOCs naturally support these ideas by giving learners the freedom to explore content, choose their own paths, and use additional resources, making them ideal for Autonomous learning

Meanwhile, social constructivism helps the researcher study how MOOCs encourage collaboration and interaction. Features like discussion forums, group projects, and peer reviews allow learners to work together, share cultural insights, and build critical thinking skills (Wertsch, 1997). These tools create opportunities for meaningful interaction and help learners gain more from their experiences. The combination of connectivism and social constructivism provides a strong foundation for studying the motivations, behaviours, and outcomes of MOOC participants (Siemens, 2005; Wertsch, 1997). These frameworks help explain how learners with different learning styles engage with MOOCs. Connectivism emphasizes learner autonomy, where individuals take control of their learning by forming connections between various resources to create personalized pathways (Siemens, 2005). This aligns well with the flexibility and self-directed learning characteristic of MOOCs. On the other hand, social constructivism highlights the role of social interactions in learning, stressing the importance of collaborative tools like discussion forums, peer reviews, and group projects that foster cultural exchange and critical thinking (Wertsch, 1997). Together, these theories provide a robust lens for understanding how MOOCs accommodate diverse learners and can guide the development of interventions that enhance both engagement and retention. By applying these theoretical insights, this study seeks to explore how MOOCs can better address learners' varying needs and contribute to the broader understanding of MOOC success

2.14 OPTIMIZING MOOCS: ENGAGEMENT, DESIGN, AND COI FRAMEWORK

Massive Open Online Courses (MOOCs) have revolutionized education, making it accessible to individuals from varied age groups and educational backgrounds. These platforms provide an opportunity to bridge educational gaps, offering flexible, scalable, and often free learning opportunities to people worldwide. The transformative potential of MOOCs lies in their ability to democratize education and foster lifelong learning. However, despite their vast potential, MOOCs face significant challenges, including high dropout rates—often reaching up to 90%—and low learner motivation. Tackling these challenges is essential to ensure that MOOCs deliver on their potential to provide accessible and meaningful education.

The success of MOOCs depends on a multitude of factors, including course design, learner engagement, and instructor contributions. Scholars have emphasized the importance of gamification in MOOCs as a strategy to enhance learner engagement and motivation. Integrating quizzes, badges, and interactive activities has been shown to cater to diverse learning styles and sustain learner interest (Hew et al., 2020). Additionally, providing certificates of completion has emerged as a significant motivator, offering tangible recognition for learners' efforts (Jordan, 2022).

Effective course design is another critical factor in the success of MOOCs. Research highlights the need for clear learning objectives, relatable content, and avoiding cognitive overload to maintain learner interest (Shah, 2021). The inclusion of multimedia elements, such as videos and infographics, can also help address diverse learning preferences (Chen et al., 2023). Community building within MOOCs fosters a sense of connection among learners, enhancing satisfaction and promoting deeper engagement with course material (Veletsianos & Shepherdson, 2022).

Despite these strengths, MOOCs face persistent challenges. High dropout rates remain a significant issue, often attributed to the lack of timely feedback, feelings of isolation, and the diverse needs of learners (Kizilcec & Halawa, 2020). Asynchronous communication, while convenient, often limits opportunities for real-time interaction, leading to disengagement. Addressing these challenges requires innovative instructional strategies and personalized interventions (Zheng et al., 2023).

The Community of Inquiry (CoI) framework provides a comprehensive lens to analyze and enhance the success of MOOCs. Developed by Garrison, Anderson, and Archer (2000), the CoI framework identifies three interdependent elements essential for an effective online learning experience: teaching presence, cognitive presence, and social presence.

- **Teaching Presence:** Instructors play a crucial role in designing and delivering content, facilitating discussions, and providing feedback. Studies have found that active instructor engagement in discussion forums and timely feedback significantly enhance learner satisfaction and motivation (Richardson et al., 2021).
- **Cognitive Presence:** The extent to which learners construct and confirm meaning through reflection and discourse is pivotal. Structured activities, such as problem-solving tasks and reflective exercises, are effective in fostering cognitive presence (Arbaugh et al., 2022).
- **Social Presence:** Creating a supportive and collaborative environment helps reduce feelings of isolation and fosters a sense of community among learners. Peer interactions and group activities have been shown to enhance social presence and overall learner engagement (Kim et al., 2023).

Recent research has explored the application of the CoI framework in the context of MOOCs. For instance, Huang et al. (2023) examined the role of teaching presence in gamified MOOCs, finding that active instructor participation in gamified activities led to higher engagement and satisfaction levels. Similarly, Lin et al. (2022) investigated cognitive presence in MOOCs, emphasizing the importance of scaffolding and iterative feedback in promoting deeper learning. The integration of social presence into MOOCs has also garnered attention. Kuo and Belland (2023) highlighted the role of collaborative activities and peer feedback in fostering a sense of community. Their findings suggest that aligning social interactions with academic objectives can enhance the overall learning experience. This literature underscores the need for a balanced approach that integrates the principles of the CoI framework into MOOC design. Recommendations include the use of gamification, concept mapping, and hypertextual links to enhance teaching presence. To promote cognitive presence, structured reflective activities and iterative feedback mechanisms should be incorporated. Finally, fostering social presence through group discussions, peer feedback, and collaborative projects can help build a supportive learning community. Further research is needed to explore the long-term impact of these strategies on learner outcomes and the scalability of CoI principles in diverse MOOC

contexts. By addressing these challenges and leveraging the strengths of the CoI framework, MOOCs can continue to transform education and empower learners worldwide.

In conclusion, the success of MOOCs depends on a combination of engaging course design, gamification, community building, and effective instructor contributions. While MOOCs encounter obstacles like elevated rates of student attrition and diverse learner needs, addressing these issues through innovative strategies can enhance their impact. This study provides valuable insights into optimizing MOOCs, emphasizing the importance of integrating learner motivations and instructor practices to create inclusive and effective learning environments. Although MOOCs are still in their developmental stages in Malaysia, they hold significant potential to enhance education and improve lives by offering flexible, accessible learning opportunities to a wide audience. By addressing the challenges and leveraging their strengths, MOOCs can continue to transform education and empower learners worldwide.

2.15 CHALLENGES WITH MOOCs

Massive Open Online Courses (MOOCs) have garnered notable interest in recent times (Yang et al., 2022). Serving as an unconventional learning approach, MOOCs have opened up educational possibilities for individuals of all ages, accessible at any time. Nevertheless, MOOCs present several challenges, including issues such as low completion rates, diminished learner motivation, and perceived value that is comparatively lower than traditional methods (Sujatha and Kavitha, 2018). Among others, The major hindrance to the success of MOOCs is the significant occurrence of incomplete courses (Yang *et al.*, 2022). According to Voudoukis and Pagiatakis (2022), the dropout rate among students, with nearly 90% leaving before completing their studies, is exceptionally high. Consequently, the problem of students leaving MOOCs before completion has been a subject of conversation and concern among both educational researchers and practitioners for the past ten years (Chansanam et al., 2021; Chiappe and Castillo, 2021). The remarkably elevated dropout rates emphasize the necessity for increased endeavors to meet the authentic educational needs of students (Adamopoulos, 2021).

Various factors contribute to MOOC dropout, with some associated with learners and others tied to different facets of design and marketing (Kurtz et al., 2022). The study's results suggested that the vast scale of MOOCs, the diversity among learners, and asynchronous

communication between educators and participants contribute to delayed attention and timely feedback interventions, frequently resulting in learners becoming disengaged and eventually dropping out.

The primary component of online open courses is the learners, characterized by a substantial number and diverse groups of learners (Li, 2022). Therefore, comprehending the factors influencing the success of Massive Open Online Courses (MOOCs) has emerged as a crucial research challenge. Manuela Aparicio 2018 and scholars are attempting to decrease the dropout rates using various methods (Rajkumar and Ganapathy, 2020). However, there continues to be an absence of comprehensive research on the factors that impact the success of MOOCs and the retention of learners. Hence, it is essential to delve into the elements influencing learners' retention to facilitate the creation of an optimal learning environment (Pant et al., 2022).

One significant factor contributing to the elevated dropout rates in MOOCs is the diverse learning styles exhibited by the participants. The learning style plays a positive and significant role in shaping the behavior of students (Zhao et al., 2020). It's essential to remember that every learner is unique; some individuals have specific preferences for learning methods, also referred to as learning preferences or styles (Luangrungruang and Kokaew, 2022). Enhancing the effectiveness of learning in MOOCs can be greatly achieved by implementing personalised intervention strategies, which are based on the development of predictive models for student learning behaviors (Ding *et al.*, 2019). However, practical implementation remains a challenge, necessitating scalable solutions that effectively accommodate the demographic and motivational diversity of MOOC learners. To improve their effectiveness in online teaching, instructors should acquire a better understanding of the variations in learning and develop strategies to accommodate the diverse learning styles observed among their students. The results of a recent study by Kurtz *et al.* (2022) suggests that an instructor's acknowledgement and interest play an important role in increasing learners' commitment to learning in a MOOC. Instructors who possess knowledge about variations in learning styles are more adept at adjusting their teaching approaches and methods in the context of online education. This can aid in guaranteeing that their approaches, materials, and resources align with the learning preferences of their students, fostering an educational setting that maximizes the learning potential for each individual (Zapalska and Brozik, 2006). Despite the importance of instructors in the success of the MOOCs (Amantha Kumar and Al-Samarraie,

2019), there is scarcity of studies that investigate the role of instructors in MOOC success (Ahmad *et al.*, 2020).

Subsequently, this study aims to explore the current state of MOOC and factors that contributes to success of Malaysia's MOOCs which consequently lead to reducing drop out ratio. Additionally, the present research attempts to understand the instructors' role and effective learning styles that motivate the students to complete the course.

2.16 RESEARCH GAP

Research on MOOCs has predominantly focused on short-term metrics, such as enrollment rates and initial engagement, but less attention has been given to sustaining learner motivation and engagement over the long term (Jordan, 2014; Kizilcec, Piech, & Schneider, 2013). Although initial motivations for enrolling are often high, research by Wang and Baker (2018) indicates that long-term engagement remains a challenge, impacted by factors like time limitations, inadequate feedback, and reduced social interaction. This underscores a need for targeted strategies to maintain sustained engagement, particularly among diverse learner demographics. Furthermore, existing studies have primarily focused on the demographic and motivational factors influencing attrition (Sujatha & Kavitha, 2018). However, there is limited exploration of how course design, learner heterogeneity, and pedagogical strategies impact engagement and completion. Pant et al. (2022) noted that while learner motivation is a critical factor, the mechanisms to sustain this motivation across diverse populations remain underexplored

An emerging area of interest is personalized learning, especially as adaptive learning technologies become more common in MOOCs (Azevedo & Aleven, 2013). Personalized pathways that adapt to a learner's pace and understanding are believed to improve retention and completion rates (Xu & Jaggars, 2014). However, empirical evidence on the effectiveness of personalized approaches in MOOC settings, particularly across different learner groups, remains scarce. While personalization shows potential, further research is necessary to assess its effectiveness and scalability in fostering long-term engagement (Fischer et al., 2020). There is also a significant gap in comparative studies on learning outcomes in MOOCs versus traditional classrooms. While some studies, such as Alraimi, Zo, and Ciganek (2015), suggest MOOCs may yield outcomes comparable to traditional methods, findings are mixed. Some

evidence points to potential advantages of MOOCs (Colvin et al., 2014), while other studies cite drawbacks, such as limited instructor interaction and passive content delivery (Guo, Kim, & Rubin, 2014). Comprehensive studies are essential to clarify how MOOCs measure up to traditional education and identify effective methods to match or exceed classroom-based outcomes.

Additionally, while assessment and feedback are vital for learning, adapting these components to MOOCs' scale and diverse audience is underexplored. Traditional assessment techniques may not suit MOOCs due to their large scale (Wang, 2014), indicating a need for innovative assessment approaches that provide timely, meaningful feedback to enhance the learning experience (Pilli & Admiraal, 2017). While research has begun exploring peer assessments, automated grading, and formative feedback in MOOCs, further development is needed.

Instructor presence is another factor that has shown to impact learner satisfaction as well as success in online settings (Richardson et al., 2017), yet its role in MOOCs is less understood. Research indicates that instructor interaction significantly influences outcomes (Breslow et al., 2013), but traditional interaction methods are challenging to scale in MOOCs. Exploring scalable approaches—such as video content, automated feedback, or structured peer interaction—could offer valuable insights for maintaining instructor presence at scale.

Finally, there is limited empirical research on the effectiveness of specific pedagogical strategies in MOOCs. While collaborative learning, gamification, and other strategies have shown promise for improving engagement in online learning environments (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2014), their effectiveness in MOOCs requires further validation. Investigating and validating pedagogical models that effectively engage diverse learners in a massive online setting is crucial for optimizing MOOC outcomes.

2.17 SUMMARY

Massive Open Online Courses (MOOCs) have sparked extensive debate within the research community regarding their transformative influence on online education. Since their inception, MOOCs have significantly contributed to the expansion of online learning, offering distinct advantages such as mass accessibility, openness, and the democratization of education (Bejaoui, 2016). These attributes enable learners worldwide to access high-quality educational

resources, often at no cost, breaking down traditional barriers to learning such as geographical constraints and financial limitations. Given the growing significance of MOOCs and the challenges identified in Chapter One, this chapter provides a comprehensive review of the literature to explore their impact and potential. It delves into key areas, including the importance of MOOCs in the contemporary educational landscape, critical success factors for their effective implementation, diverse learning styles they accommodate, and the multifaceted role of instructors in fostering meaningful learning experiences. By examining these aspects, the chapter aims to shed light on how MOOCs can address pressing educational needs while also overcoming limitations. The review underscores the potential of MOOCs to bridge educational gaps, offering innovative solutions for lifelong learning, professional development, and skill enhancement. Furthermore, it considers the diverse strategies required to support learner engagement and retention in these large-scale online environments. As MOOCs continue to evolve, understanding their dynamics through these lenses provides valuable insights into their strengths and limitations. This chapter seeks to inform future research and practice, ensuring that MOOCs remain a powerful tool for expanding access to education while maintaining quality and inclusivity.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter is aimed at outlining the research methodology adopted for this study. It begins with a discussion of the research paradigm and the overarching methodological framework guiding the investigation. Following this, the chapter provides a comprehensive explanation of both the qualitative and quantitative phases of the research, addressing each phase individually to highlight their distinct processes and purposes. The chapter also includes a thorough description of the target population, the sampling strategy employed, and the rationale behind the chosen sample size. Finally, it details the procedures followed for data collection and the techniques used for analysing the gathered data.

3.2 Research paradigm

Research paradigm refers to the fundamental belief system and practices that guide actions (Guba and Yvonnas Lincoln, 1994). According to Creswell (2014), the research philosophy reveals the general philosophical orientation of the research about the world and the nature of research. There are three different research paradigms including Positivism, Interpretivism, and Pragmatism. Generally, positivism is based on quantitative method (Sale *et al.*, 2002). A positivist essentially aims to make a generalization, which is in fact a deductive approach. Based on this approach, first, the researcher needs to choose a theory and then test it using empirical instruments (Limpanitgul, 2009). In contrary, the constructivist paradigm is related to verbatim or words. It is mostly used by qualitative researchers. The main task is to interact with subjects, document their opinions, and describe the study topic. It gives subjective meanings to research questions. Observations, semi-structured interviews, and document analysis techniques are generally used for data collection (Clark and Creswell, 2015). In other hand, if the researcher adopts both positivist and constructivist paradigms, it is called

pragmatism with mixed method approach. Pragmatism approach belongs to the situation that the researcher focuses on the problem rather than method (Creswell, 2014), hence, to gain a clearer insight into the problem the strength of the both approaches are combined (Morgan, 1998). The other elements of the research philosophy include ontology and epistemology (Guba and Yvonnas Lincoln, 1994; Saunders *et al.*, 2009). Ontology refers to the nature of “reality,” while epistemology concerns how the researcher understands and relates to that reality. (Sobh and Perry, 2006). In positivist approach, the reality is single while constructivist The world exists, but individuals interpret it in diverse ways, leading to the existence of multiple realities. Table 3.1 explains different research paradigms.

Table 3.1. Research paradigm

Element	Positivist	constructivist	Pragmatism
Philosophical basis (ontology)	Reality is real and single	Multiple realities	External, multiple
Epistemology	Investigator and research are independent	Investigator is a part of research	Mixture of roles
The role of research	Generalization	To reveal interpretation of the world as made by certain individuals	Mixture of roles
Methodology	Quantitative methods such as: survey, experiments, and verification of hypotheses	Interviews, observation, action research, and grounded theory research	Mixed method
Theoretical approach	Rational, deductive	Subjective, inductive	

Adapted from Sobh and Perry (2006) and Walliman (2010) and Saunders *et al.* (2009)

In order to address the research questions and fulfill the study's objectives, this study follows the pragmatism paradigm. This paradigm is suitable for the context of this study since the questions need to be addressed with a mixture of quantitative and qualitative. The quantitative component focuses on analyzing large datasets from MOOCs to identify trends, such as dropout rates, learner engagement, and completion statistics, using SPSS. The qualitative component involves semi-structured interviews with instructors to explore their experiences, motivations, and perceptions. This provides deeper insights into the nuances of learning styles and social interactions within MOOCs. Combining these methods enables a comprehensive understanding of the factors influencing MOOC success and allows for the development of evidence-based strategies to help address the challenges of learner retention and engagement.

3.3 Mixed method

Before delving into the concept of mixed methods, it is important to differentiate between "method" and "methodology." Methodology typically refers to the overarching research approach tied to a specific paradigm or theoretical framework, whereas a method encompasses the systematic techniques, methods and instruments employed for data collection and analysis (Mackenzie and Knipe, 2006). Clark and Creswell (2014) describe mixed methods research as an integration of deductive and inductive approaches aimed at addressing a research problem comprehensively. This approach assumes that researchers collect evidence based on the nature of the research question and the theoretical framework guiding their inquiry. Quantitative methods, which are primarily deductive, are well-suited for measuring the prevalence of known phenomena and identifying central patterns of association. In contrast, qualitative methods, which are largely inductive, excel at uncovering previously unrecognized processes and providing insights into the reasons and mechanisms behind observed phenomena (Meissner et al., 2011). The differences between qualitative, quantitative and mixed methods are explained in Table 3.2.

Table 3.2 Differences between qualitative, quantitative and mixed methods (Creswell, 2014)

Quantitative Methods	Mixed Methods	Qualitative Methods
Pre-determined	Both predetermined and emerging methods	Emerging methods
Instrument based questions	Both open- and closed-ended questions	Open-ended questions
Performance data, attitude data, observational data, and census data	Multiple forms of data drawing on all possibilities	Interview data, observation data, document data, and audiovisual data
Statistical analysis	Statistical and text analysis	Text and image analysis
Statistical interpretation	Across databases interpretation	Themes, patterns interpretation

This study applies mixed method for the following reasons. First, the mixed methods approach is useful to provide a fuller depiction of the social world emerges when examined through multiple viewpoints and interpretive frameworks for data collection and analysis (Mackenzie and Knipe, 2006). Second, combining quantitative and qualitative data leverages the strengths of each while mitigating their respective limitations (Meissner et al., 2011). Third, utilizing mixed-method research enhances and enriches educational studies by employing qualitative and quantitative approaches in a complementary manner (Mackenzie and Knipe, 2006).

3.3.1 Mixed method research process

In this study, in order to fulfill the research objectives, the mixed method approach has been applied by supporting survey data and interviews. Concerning the research process, the researcher initially identified research problem and defined research objectives through reviewing literatures relating to the MOOCs. Then, quantitative data was collected through survey then, the data was analyzed with SPSS. In the qualitative phase, the researcher focused on understanding success factors and effective learning styles through conducting the interviews with instructors who experience MOOC. Lastly, qualitative and quantitative findings were integrated to answer research questions. The research process is shown in Figure 3.1.

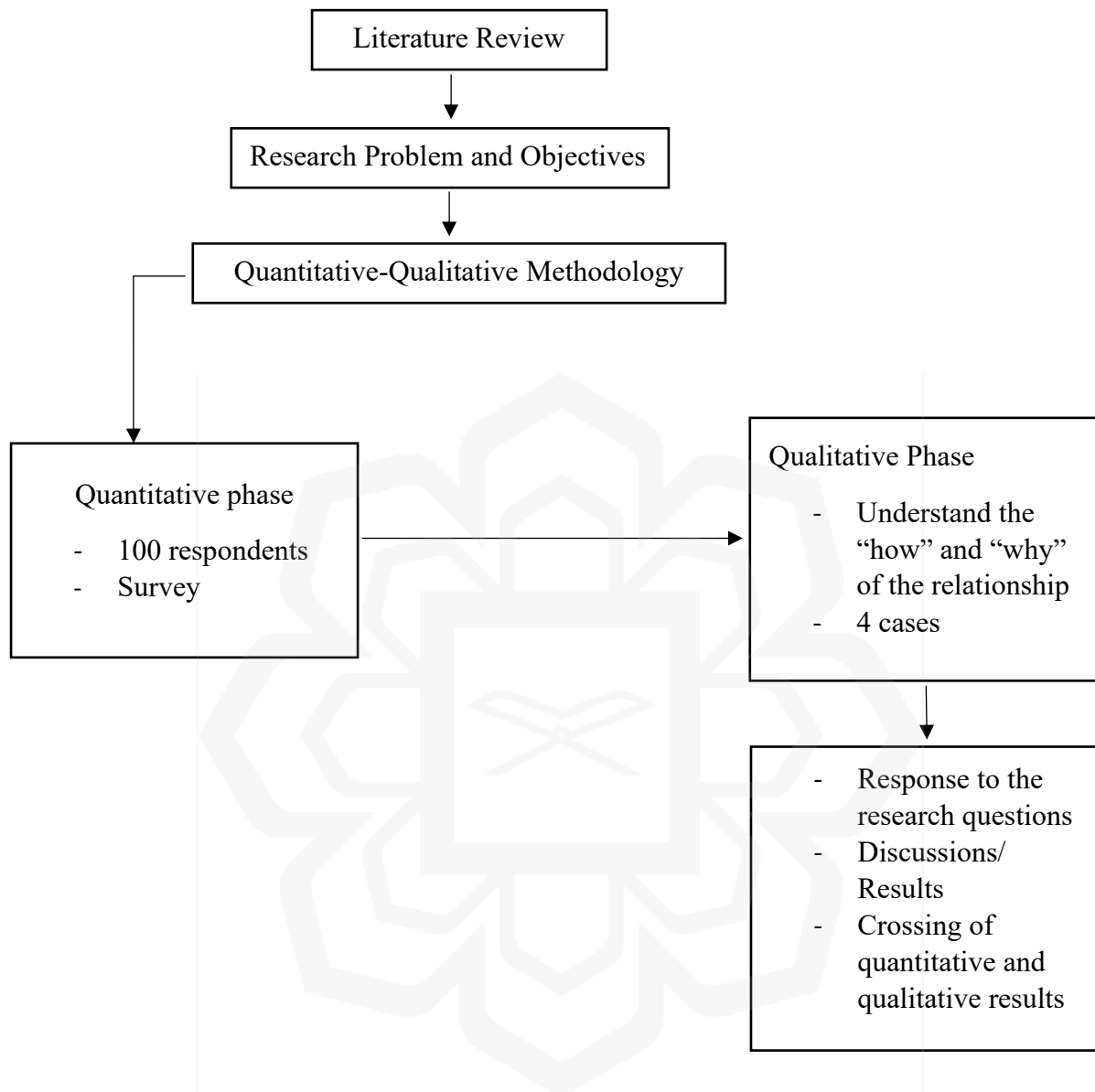


Figure 3.1 Illustration of the research process (adapted from Jabbour *et al.*, 2014)

The flowchart illustrates a mixed-method research framework that integrates quantitative and qualitative methodologies to address a research problem comprehensively. The research process begins with the literature review. This involves examining existing studies to understand what has already been explored about MOOCs, such as factors influencing their success, learner engagement, completion rates, instructional design, and challenges faced by

learners or educators. Through this review, the researcher can identify gaps in the current knowledge and refine the focus of your study.

Following the literature review, the research problem and objectives are defined. This research aims to investigate the factors contributing to the success of MOOCs, explore how learner engagement and satisfaction impact completion rates, or analyze the effectiveness of specific instructional strategies used in MOOCs. These objectives provide a clear direction for the study and inform the selection of methods.

A mixed-method approach is adopted, integrating quantitative and qualitative methodologies. The quantitative phase involves collecting data from a broad sample to identify trends or correlations. The survey employed 100 MOOC participants to gather information on demographics, course completion rates, satisfaction levels, and perceived value. This phase provides numerical data to quantify the success factors of MOOCs and uncover patterns, such as the relationship between learner engagement and course completion.

The qualitative phase delves deeper into the findings from the quantitative phase, focusing on understanding the "how" and "why" behind the observed trends. This involves conducting in-depth interviews with four MOOC instructors. Through interviews, the research explores the instructor's personal experiences, motivations, challenges, and perceptions of success in MOOCs. The qualitative data adds depth to the study by revealing nuanced insights that cannot be captured through surveys alone.

The final stage involves integrating the findings from both phases. The results from the quantitative phase are combined with the qualitative insights to provide a comprehensive response to the research questions. This integration allows you to discuss the findings in detail, drawing connections between numerical trends and individual experiences. For example, if the survey data shows that interactive content leads to higher satisfaction, the qualitative phase might explain why learners find interactive content more engaging. The crossing of quantitative and qualitative results provides a richer understanding and supports evidence-based recommendations for enhancing the success of MOOCs. This approach ensures that the study captures both the breadth and depth of the factors influencing MOOC success.

3.3.2 Data Collection Method

The primary aim of this research is to investigate the key factors that influence the success of Massive Open Online Courses (MOOCs), with particular attention to enrolment rates, sustained engagement, and learning outcomes among participants. To thoroughly examine these aspects, the study adopts a mixed-methods research design, integrating both quantitative and qualitative methodologies. Data is gathered through structured surveys and semi-structured interviews to ensure a comprehensive understanding. The survey component incorporates the Felder and Silverman Learning Style Inventory (ILS) to evaluate the learning preferences of participants, providing valuable insights into how individual differences may impact MOOC success. In parallel, semi-structured interviews are conducted with MOOC facilitators from various universities. These interviews are designed to enrich the findings by offering practical, context-specific perspectives and to serve as a means of triangulating the survey data. An overview of the study's guiding research questions, along with the associated methodologies and data sources used to address each question, is presented in Table 3.3.

Table 3.3 Data collection method based on each research question

Research Question	Methods	Data Source
RQ1. What is the current state of MOOCs?	Survey	Survey for students
RQ2. What factors contribute to the success of MOOCs?	- Semi-structured interviews - Qualitative research	Semi-structured interviews with teachers.
RQ3: What are the effective learning styles through MOOCs?	- Semi-structured interviews - Qualitative research	Semi-structured interviews with teachers.

RQ4. How are the current MOOCs offered in higher education institutes able to cater for the different learning styles of learners?	- Semi-structured interviews - Qualitative research	Semi-structured interviews with teachers.
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3.4 Quantitative Phase

Frazer and Lawley (2000) define research design as the framework or plan for gathering data to achieve the study's objectives. It serves as a comprehensive strategy that logically and cohesively integrates various aspects of the research, ensuring the research problem is effectively addressed. This design acts as a blueprint for measuring, collecting, and analyzing data.

The figure 3.2 represents a structured approach to a quantitative research study focused on the success of MOOCs, conducted in the context of Malaysia. The study uses a quantitative research method, emphasizing numerical data to identify and analyze patterns, relationships, or trends. The research is specifically set in Malaysia, indicating that the findings are contextualized within this geographical and cultural framework, which could influence factors such as technology adoption, educational practices, or user behavior in MOOCs.

The sampling strategy employed is purposive sampling, a non-probability technique where participants are selected based on predefined criteria relevant to the research objectives. For this study, the target population consists of MOOC participants, meaning individuals who have experience engaging in such courses. This ensures the data collected is specific to those who are directly involved in the phenomenon being studied. The unit of analysis is at the individual level, meaning that each participant's data is treated independently, allowing for the analysis of personal behaviors, experiences, or opinions about MOOCs.

The sample size for the study is 100 participants, which is a manageable yet sufficient number to provide insights into trends and patterns. Data collection is carried out through a

questionnaire. The questionnaire includes questions about participants' experiences, satisfaction, engagement levels, and perceptions of the factors contributing to the success of MOOCs. The survey design is cross-sectional, meaning the data is collected at a single point in time rather than over an extended period. This provides a snapshot of the participants' views during the study period, which is useful for identifying current trends and challenges.

The data analysis method is descriptive, focusing on summarizing and interpreting the data to highlight its main features. Descriptive analysis involves using measures such as averages, frequencies, and percentages to understand trends and patterns in the participants' responses. To process and analyze the data efficiently, the study uses SPSS (Statistical Package for the Social Sciences), a software tool well-suited for statistical analysis and visualization. This ensures that the findings are accurate and presented in a clear and organized manner.

Overall, the figure outlines a well-defined research framework that systematically investigates the success of MOOCs in Malaysia by combining a carefully selected sample, a robust data collection instrument, and an appropriate analysis method. This approach ensures the study can provide valuable insights into the factors influencing MOOC success while maintaining a clear and logical methodological structure. This section covers methods of data collection, unit of analysis, sampling design, and data analysis. Figure 3.2 depicts the research design of this study.

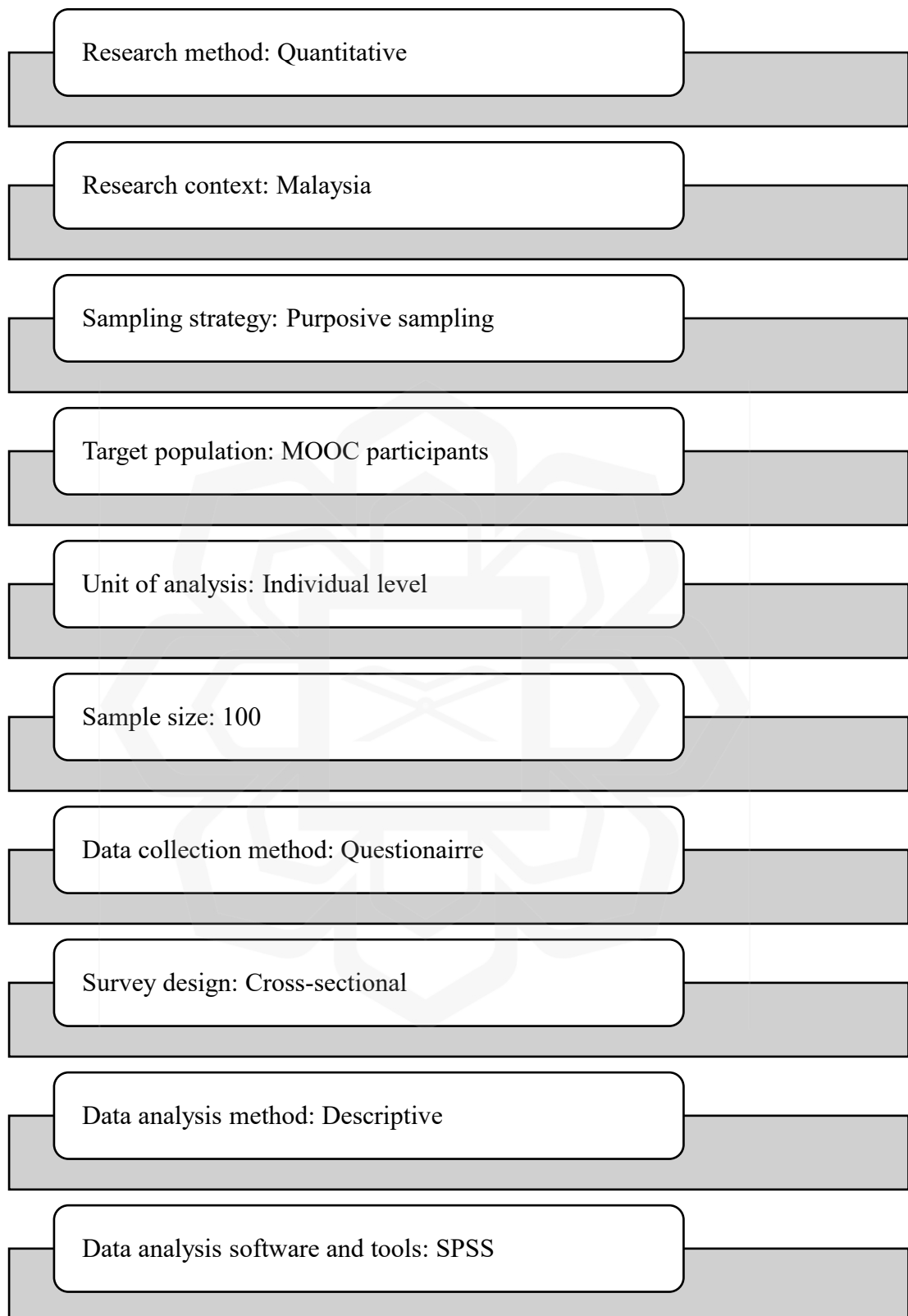


Figure 3.2 Overview of the research design

In quantitative phase, data were collected from students in Malaysia. This study has a cross-sectional nature as data is collected at one specific point in time. Regarding the sampling, purposive sampling strategy is applied. Data are analyzed through SPSS.

3.4.1 Data Collection Method

Data collection in quantitative phase include distribution of survey among students who experienced MOOC in their life. The respondents include male and female, undergraduate and postgraduate students. They come from several universities including UKM, UTM and UTeM. These universities were selected due to the experience they had with participants involved in learning via MOOC. Data has been collected through interviews and a demographic survey. The purpose of the survey is to understand the current state of MOOCs through the lens of different participant as well as determine the motivational factors to participate and complete MOOCs.

The researcher utilized Google Forms, a feature of Google Sheets commonly employed in educational settings, to design the survey questions. The survey comprised fifteen questions focused on learners' motivation and success within the context of MOOCs. It was distributed to participants via email, either by embedding it on a webpage or by sharing a link to the survey URL. After participants completed the survey, their responses were analyzed using the core functionalities available in Google Sheets.

3.4.2 Unit of Analysis

Determining the unit of analysis is a crucial step that need to be taken into consideration. Unit of analysis refers to the entity that is being analyzed in academic research. Unit of analysis is classified into individual, group or organizational level (Dolma, 2010). In this study, unit of analysis is individual because the focus of study is to investigate the participants' perception about MOOC.

3.4.3 Sampling Design

The study's target demographic consists of 100 students from various universities who enrolled in any MOOC. As for sampling strategy, this study follows a purposive sampling method. Purposive sampling is commonly employed to select respondents based on their experience and other predefined criteria (Lewis & Sheppard, 2006). This approach is particularly effective when the researcher needs to target specific individuals within a population who are most likely to provide valuable insights for the study. In contrast to random sampling, which seeks to capture a broad representation of ages, backgrounds, and cultures, purposive sampling targets individuals who possess particular characteristics, or expertise that align with the research objectives, ensuring more relevant and meaningful data collection. The rationale for using purposive sampling in this study is because the researcher only invited those students who experienced enrollment and attendance in MOOCs at least one time in the context of Malaysia. Purposive sampling is visualized in Figure 3.3.

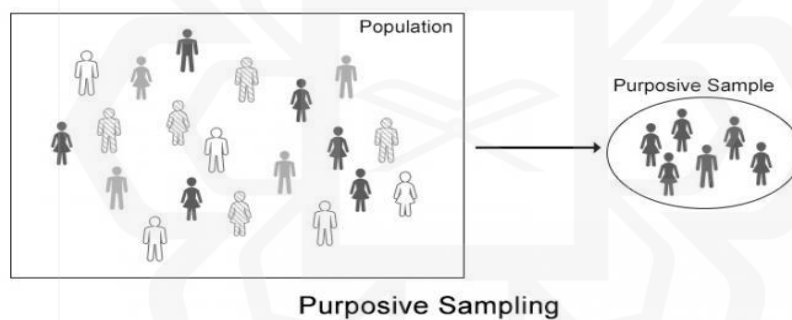


Figure 3.3 Purposive Sampling

The decision to use a sample size of 100 for the quantitative phase of this study is supported by practical, research-related, and methodological considerations, including the use of purposive sampling. The study follows a mixed-methods approach, with the survey designed to uncover general patterns and trends in learners' experiences with MOOCs, such as engagement levels, satisfaction, and perceived outcomes. A sample of 100 is sufficiently large to provide reliable statistical insights while remaining feasible within the study's scope. It allows for meaningful analysis of relationships between factors, such as demographics and engagement, and has adequate statistical power to identify moderate trends. This sample size is also in line with research standards, especially for studies exploring topics like what helps students succeed in MOOCs. Purposive sampling was used to ensure the inclusion of

participants who could provide relevant and meaningful data. Students were intentionally selected from several universities known for their active MOOC programs and diverse student populations. This sampling approach ensures a balanced representation of undergraduate and postgraduate students with varying academic backgrounds and MOOC experiences. This enables the study to capture insights from learners in contexts where MOOCs have demonstrated significant engagement and success, enhancing the findings' applicability to similar educational settings.

The diversity of participants strengthens the reliability and representativeness of the results. Including students with different experiences ensures that the findings reflect a range of perspectives, reducing the risk of results being skewed by the practices or culture of a single institution. This enhances the generalizability of the findings to broader educational contexts.

Additionally, the qualitative phase of the study, involving in-depth interviews, complements the quantitative data and mitigates limitations of the moderate sample size. The interviews provide rich, detailed insights into learners' motivations, challenges, and perceptions, offering a richer comprehension of the trends identified in the survey. This mixed-methods approach ensures a comprehensive and robust analysis of the factors influencing MOOC success. From a practical standpoint, a sample size of 100 strikes a balance between collecting sufficient data to identify meaningful trends and keeping the research manageable within time and resource constraints. A larger sample might have diluted the focus on integrating quantitative and qualitative findings. Overall, the combination of purposive sampling and this sample size supports the study's goal of providing a clear, reliable, and actionable understanding of what helps students succeed in MOOCs.

3.4.4 Questionnaire Design

The questionnaire is made up the following questions:

Table 3.4 Questionnaire questions

Questionnaire Question	Purpose
1. Education level	This question determines the educational background of participants, which could influence their motivation, engagement, and success in MOOCs. Understanding the level (undergraduate or postgraduate) helps segment the audience and identify patterns in how different groups interact with MOOCs.
2. Gender	This question examines the gender distribution among MOOC participants and whether gender plays a role in learning preferences, participation rates, or success within the courses.
3. Institute your attending now.	This question gathers information about the type of institutions learners come from, helping to understand how institutional affiliation (e.g., universities, colleges) might impact learners' engagement and motivation.
4. How would you rate your familiarity with MOOCs?	This measures prior exposure and knowledge of MOOCs. Familiarity levels can significantly influence the learning experience, ease of adaptation, and success rate within the courses.
5. Which MOOCs platform have you used?	This question identifies the platforms learners have experience with. Understanding the platforms used helps researchers analyze differences in engagement or success based on platform design, tools, or content delivery.

6. Which of the following did you use during the MOOCs you participated in?	This question assesses the reasons learners enroll in MOOCs, such as career advancement, personal development, or interest in the topic. Understanding motivation is crucial for identifying factors that drive success and retention.
7. What was your motivation for joining the course?	This question assesses the reasons learners enroll in MOOCs, such as career advancement, personal development, or interest in the topic. Understanding motivation is crucial for identifying factors that drive success and retention.
8. What features of MOOCs would you like to have in a course to complete activities easier?	This explores learner preferences for features that enhance accessibility and ease of completing coursework. Insights from this question can inform platform improvements and curriculum design.
9. What features of MOOCs would make the course more successful?	This question identifies features that participants believe contribute to overall course success. Responses can help prioritize design elements that improve engagement, satisfaction, and outcomes.
10. How will you use the knowledge learned during the MOOCs course?	This explores the practical application of knowledge gained, whether for personal, academic, or professional development. It helps gauge the perceived value and impact of MOOCs on participants' lives.
11. I feel that I would be able to stay motivated even when the instructor is not online.	This evaluates self-motivation and independence in online learning environments. Motivation is a key factor in determining success in MOOCs.
12. I feel that I will be able to complete my work even when there are distractions.	This measures learners' ability to stay focused and disciplined, which is critical for succeeding in self-paced, online learning settings.
13. I feel that prior knowledge of technologies will impact my success in MOOCs.	This assesses the importance of technical proficiency as a factor in learners' performance. Prior knowledge of technology could influence how effectively participants navigate and utilize MOOC platforms.

14. How many MOOCs have you enrolled in as a learner?	This quantifies learners' prior experience with MOOCs. Greater experience may correlate with higher familiarity, motivation, and success.
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3.5 Qualitative Phase

3.5.1 Data Collection

MOOC instructors were initially invited to participate in the study through an email outlining the purpose of the interviews. A total of four instructors agreed to take part. Upon expressing their willingness, the interviews were conducted between April and June 2022. At the start of each interview, the instructors were provided with an overview of the research and briefed on the interview structure, including the key areas of focus. They were reminded of the study's objectives and asked to confirm their consent for the interviews to be audio-recorded. All participants were asked a standardized set of questions, with slight adjustments made to accommodate their specific courses and roles. After addressing each set of questions, the researcher summarized the instructors' responses to ensure accurate understanding. Each interview lasted between 20 and 30 minutes and was audio-recorded for analysis.

3.5.2 Interview Protocol

The purpose of the interview is to understand the factors which facilitate effective teaching through MOOCs from the perspective MOOC facilitators. The interviews were conducted with lecturers from various universities who had successfully utilized MOOCs and attracted a significant number of participants to their courses. The interview questions were designed to explore teaching strategies for addressing diverse learning styles through the MOOC platform. Interviews were transcribed fully by the researcher by rifting down every single word in the recording. Afterwards, the interviews were transcribed and imported to Atlas software for thematic analysis. Interview questions are described in Table 3.5

Table 3.5 Interview protocol

Interview questions	Purpose
1. What learning styles do you think are the most effective when learning in MOOC course?	This question seeks to identify which learning methods (e.g., visual, auditory, kinesthetic, or reading/writing) resonate most with students in MOOCs. Understanding effective learning styles helps in designing courses that accommodate diverse learner preferences, thereby enhancing student engagement and success.
2. In your opinion how can we design a curriculum for a MOOC course that can cater for individual's learning style?	This explores strategies for creating flexible and inclusive curricula. It aims to gather ideas for incorporating multiple teaching modalities (e.g., videos, interactive tasks, readings) to ensure MOOCs meet the varied needs of a diverse audience.
3. Assuming the same number and caliber of students enrolled, how would you personally be able to engage with them online to the same degree you do in a classroom?	This question examines engagement strategies that instructors can adopt to foster meaningful interaction in an online setting. The goal is to identify methods to replicate or improve the level of student-instructor interaction seen in traditional classrooms.
4. Some online courses integrate online elements typically found in MOOCs, such as video lectures, online quizzes, and forum discussions, into their learning activities. From the instructor's perspective, how do these elements help or hurt the learning experience of each participant?	This question evaluates the impact of key MOOC components on students' learning experiences. It aims to understand how these tools enhance or hinder knowledge acquisition, collaboration, and participation, as perceived by instructors.
5. How do you think students will be able to get a proper education by being participants of a MOOC course?	This seeks to gauge the effectiveness of MOOCs in providing quality education. It investigates whether MOOCs can meet the standards of traditional education and what factors contribute to their success or limitations.

6. What do think can be done to increase student enthusiasm towards course work and interest levels in relation to MOOCs?	This question focuses on strategies to enhance student motivation and engagement, which are critical for course completion and success. Insights could include gamification, personalized feedback, or real-world applications of learning.
7. In the midst of the Covid 19 pandemic, what do you think the future of MOOCs would be?	This addresses how MOOCs might evolve post-pandemic. It explores their potential role in the broader educational landscape as a flexible, scalable solution for remote learning.
8. As a MOOC instructor, what features do you think should be made available in the MOOCs platform to help contribute to a more engaging learning environment?	This question gathers input on platform design improvements, such as interactive tools, AI-driven personalization, or enhanced communication features, to make MOOCs more engaging and effective.
9. How do you keep your students motivated throughout the online course?	This investigates strategies instructors use to maintain student motivation. It could highlight the importance of timely feedback, clear goals, or community-building in sustaining student interest.
10. What do you think could be added to make education or learning more fun in a MOOC course?	This seeks creative ideas for making MOOCs enjoyable and engaging. Suggestions might include gamification, multimedia enhancements, or collaborative activities that make learning feel less like a chore.
11. The online nature of a MOOC gives its students a certain degree of anonymity, which encourages both constructive questioning and less constructive comments that students might be intimidated to articulate in a face-to-face classroom environment. How do you think this affects the teacher to student relationship in MOOC course?	This question examines the impact of anonymity on interaction quality, trust, and communication in MOOCs. It explores whether anonymity fosters open dialogue or creates challenges in forming meaningful relationships.

3.5.4 Thematic Analysis

The research uses thematic analysis for this research as the most suitable method for examining data collected from interviews with MOOC facilitators. Thematic analysis allows for uncovering the lived experiences and perspectives of the interviewees. According to Braun and Clarke (2006: 6), it is “a method for identifying, analysing, and reporting patterns (themes) within data.” By using this approach, the researcher was able to thoroughly explore the data set, identify recurring patterns, systematically code the data, and extract meaningful themes.

After transcribing the interviews, the researcher carefully reviewed the transcripts to identify meaningful patterns and insights within the data. The next step involved generating an initial set of codes that represented these patterns and meanings. By rereading the transcripts, the researcher was able to identify relevant excerpts and apply the same code to excerpts that conveyed similar meanings. One of the primary goals of thematic analysis is to define themes that highlight the most significant aspects of the data, which are crucial for supporting the research findings (Maguire and Delahunt, 2017). The advantages of thematic analysis are presented in Table 3.5

Table 3.5: Advantages of thematic analysis (Braun and Clarke, 2006: 97)

1	Flexibility
2	Relatively quick and easy method of learning and practising.
3	Accessible to researchers with little or no experience of qualitative research.
4	Results are generally accessible to educated general public.
5	Useful method for working within participatory research paradigm, with participants as collaborators.
6	Can usefully summarise key features of a large body of data, and/or offer a “thick description” of the data set.
7	Can highlight similarities and differences across the data set.
8	Can generate unanticipated insights.
9	Allows for social as well as psychological interpretations of data.
10	Can be useful for producing qualitative analyses suited to informing policy development.

3.5.6 CODING AND ANALYSIS OF INTERVIEWS

To analyze the interview data, the researcher employed a modified version of the coding procedure outlined by Miles, Huberman, and Saldaña (2014), tailored specifically for qualitative interview analysis. In the initial stage of the coding process, the researcher developed a set of codes using a deductive approach. Predetermined codes were drawn from the Community of Inquiry (CoI) framework, which provided a structured lens for interpreting the data. This approach not only supported a consistent analytical process but also helped in weaving a coherent narrative around MOOC instructors' roles and contributions within discussion forums. The Community of Inquiry framework, which centers on the collaborative construction of knowledge in online learning environments, served as a guiding theoretical foundation. It emphasizes how learners and instructors interact meaningfully through dialogue and reflection, ultimately shaping the learning experience. The CoI model comprises three interrelated elements: teaching presence (instructor facilitation and instructional design), cognitive presence (the extent to which participants construct and confirm meaning through sustained reflection and discourse), and social presence (the ability of participants to present themselves as real people and connect socially within the learning environment). By aligning the coding process with these dimensions, the researcher aimed to better capture the nature of instructor engagement and how it supports the learning community within MOOCs.

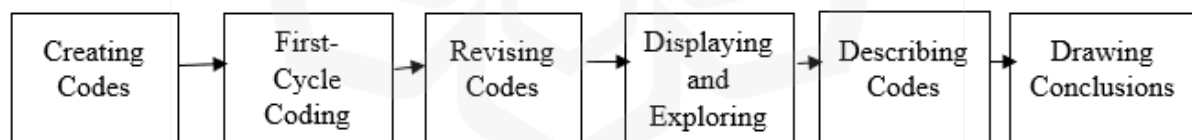


Figure 3.5: Coding process based on Miles, Huberman and Saldana's (2014) model

At the next phase, which involved first-cycle coding, qualitative codes were assigned to the instructors' responses. This systematic process categorizes excerpts from qualitative data to identify themes and patterns. By applying this method, the semi-structured data from the interviews were transformed into organized themes and patterns for further analysis. After coding all interview transcripts, the data within each code (code revision) are reviewed to ensure conceptual consistency and verify the effectiveness of the codes. During this phase of

analysis, Community of Inquiry (CoI) indicators that did not correspond to any instructor responses were excluded from the coding framework. Additionally, data initially placed under a general "other" category were reexamined and recoded, leading to the development of new, more precise codes. This refinement process contributed to a more accurate and nuanced interpretation of the data. Given that the CoI coding structure is inherently hierarchical—organized into three levels: presences, categories, and indicators—traditional second-cycle coding, which often involves condensing or reorganizing codes into broader themes, was largely unnecessary.

However, second-cycle coding was selectively employed to identify themes that extended beyond the CoI framework, specifically in two areas: determining instructors' contextual priorities for participating in discussions, and clarifying the criteria instructors used when deciding to engage with learners. These additional codes helped capture unique elements of instructor behavior not fully addressed by the CoI model. Once the coding process was complete, the data were mapped back to the first research question. This enabled the researcher to identify recurring patterns and assess how many instructors shared similar perspectives. When a particular view or behavior was mentioned by multiple instructors, it was recorded quantitatively for future reference. This tabulation also facilitated comparisons across different instructor roles, highlighting both shared practices and role-specific differences.

3.6 Parallel Study

This study employed a parallel mixed-methods approach to explore students' experiences with MOOCs, combining quantitative surveys and qualitative interviews to achieve a thorough understanding of the topic. Each method contributed uniquely to the research, with their findings complementing one another to provide a holistic view. In the qualitative phase of the study, data collection was conducted through semi-structured interviews with students who had prior experience with MOOCs. The interview respondents included a diverse range of participants, encompassing both male and female students at the undergraduate and postgraduate levels. The participants were drawn from several universities, including UKM, UTM, and UTeM, which were chosen due to their significant success with MOOC implementations and student engagement.

The interviews aimed to gather in-depth insights into the experiences, perceptions, and challenges students faced when engaging with MOOCs. The objective was to complement the quantitative survey findings by gaining a richer understanding of students' motivations, barriers, and learning outcomes from their own perspectives. The interviews provided an opportunity to explore personal reflections on MOOC participation, factors that influenced their commitment, and the perceived value of the courses in both academic and personal development contexts.

Each interview lasted approximately 30 to 40 minutes and was conducted via Google Meet. The interviews were transcribed manually using Microsoft Word and later analyzed using thematic analysis techniques. The data was processed using ATLAS.ti software, which facilitated the identification of themes and sub-themes related to the motivational and success factors in MOOCs. This qualitative phase helped to cross-validate the survey results, providing a holistic understanding of the factors influencing students' experiences and success in MOOCs.

The quantitative phase involved surveys designed to collect broad, numerical data on students' experiences, perceptions, and outcomes related to MOOCs. This approach aimed to identify general patterns and trends across a large sample, such as levels of engagement, satisfaction, and perceived benefits. However, while effective in revealing statistical relationships, this phase lacked the depth to uncover the reasons behind students' feelings or behaviours.

3.6 Summary

This chapter provides a comprehensive overview of the research methods employed in this study. It begins by examining the underlying research paradigm, serves as the foundational framework guiding the investigation, along with the research approaches and methodologies considered. The chapter then offers a detailed explanation of the selected qualitative and quantitative methods, focusing on how these were designed and implemented to gather and analyse data effectively. Following this, the chapter presents a thorough account of the qualitative and quantitative methods selected, emphasizing how each was carefully designed and implemented to ensure the effective collection and analysis of data. The study utilizes a mixed-methods approach, integrating both qualitative and quantitative techniques to offer a

holistic perspective on the research topic. This methodological choice was made to ensure the generation of robust, well-rounded, and credible findings concerning the role and impact of Massive Open Online Courses (MOOCs) in the context of higher education. The rationale for adopting a mixed-methods strategy lies in its capacity to bridge the research gap identified in prior literature, maintain alignment with the stated problem, and offer a well-supported response to the core research question. By combining diverse data sources and analytical perspectives, the approach enhances the depth and reliability of the study's conclusions



CHAPTER FOUR

RESULTS AND RESEARCH FINDINGS

4.1 Introduction

This chapter analyses the data obtained from the quantitative and qualitative phase addressing the success of MOOCs., effective learning styles and contribution of instructors to MOOC. This chapter presents the results of the survey distributed among MOOC participants. Next, the findings obtained from the interviews are depicted in this chapter.

4.2 Demographic Profile of Respondents for Quantitative Phase

This section presents the demographic profiles of the survey respondents, focusing on gender, age, and educational level. After data collection, the initial step was to organize and simplify the data to provide a general overview of the results using frequency distributions. The survey was administered via Google Forms, and the responses were collected in an Excel spreadsheet before being imported into SPSS for analysis.

Table 4.1 Demographic Profile of the Survey Respondents

PROFILE OF RESPONDENTS		FREQUENCY	PERCENTAGE
LEVEL OF STUDY	UNDERGRADUATE	48	53
	POSTGRADUATE	34	37
	OTHER	9	10
	TOTAL	91	100
GENDER	MALE	29	32
	FEMALE	62	68
	TOTAL	91	100
AGE GROUP	20 - 30	62	65
	31 - 40	20	23

	41 - 50	9	12
	TOTAL	91	100

Table 4.1 reveals that the majority of survey respondents were undergraduate students, comprising 33 females and 15 males. A smaller portion of the sample consisted of postgraduate students, with 21 female and 11 male participants. Additionally, a group of respondents did not belong to any higher education institution; instead, they were independent learners participating in MOOCs purely for personal or professional development. The cumulative percentage—used as an alternative way to represent the frequency distribution—illustrates the proportion of participants within each category. Specifically, the cumulative frequency recorded was 48 for undergraduate students, 34 for postgraduates, and 9 for non-affiliated learners. Most participants were enrolled in either public or private higher education institutions across Malaysia. A significant number of them reported having completed at least one MOOC, often as a means of supplementing their academic studies and improving their future career opportunities.

4.3 Demographic profile of the interviewees for qualitative phase

In order to protect the confidentiality and anonymity of the interviewees, each participant has been assigned a unique code: P 1, P 2, P 3, and P 4. The letter "P" denotes "Participant" to maintain consistency and clarity throughout the analysis. As illustrated in Table 5.1, two of the interviewees are female, while the other two are male. All interviews were conducted virtually via Google Meet, ensuring flexibility and accessibility for participants from diverse locations. The selection process aimed to incorporate individuals from various professional backgrounds and areas of expertise, thereby enriching the data and providing a comprehensive understanding of the subject matter. The coding system not only safeguards the participants' identities but also allows for seamless referencing and comparison throughout the analysis.

Table 4.2 Demographic Profile of Interview Participants

Participants	Gender	Position/Area of expertise	Interview Platform
P 1	Female	Lecturer at the English Language Teaching Centre at the Ministry of Education Malaysia	Google Meets
P 2	Female	Deputy Dean of Academics at the faculty of Engineering at University Putra Malaysia (UPM)	Google Meets
P 3	Male	Professor at the Department of Mechanical and Manufacturing Engineering, UKM	Google Meets
P 4	Male	Education Manager	Google Meets

4.4 Quantitative Data Analysis

4.4.1 RQ1: What is the current state of MOOC among students?

4.4.1.1. MOOC Platform

As it is shown in Figure 4.1, MOOCs are offered through a range of digital platforms that allow learners worldwide to access high-quality courses led by renowned instructors from prestigious universities. Although each platform brings its own distinct philosophy and method to delivering online education, they all share core features that support effective learning. These typically include well-organized course structures with regular assignments, assessments, and deadlines, alongside interactive features that foster engagement with large, diverse communities of fellow learners. Among the various platforms available, OpenLearning is the most widely recognized and used by participants, followed closely by Khan Academy and Coursera.

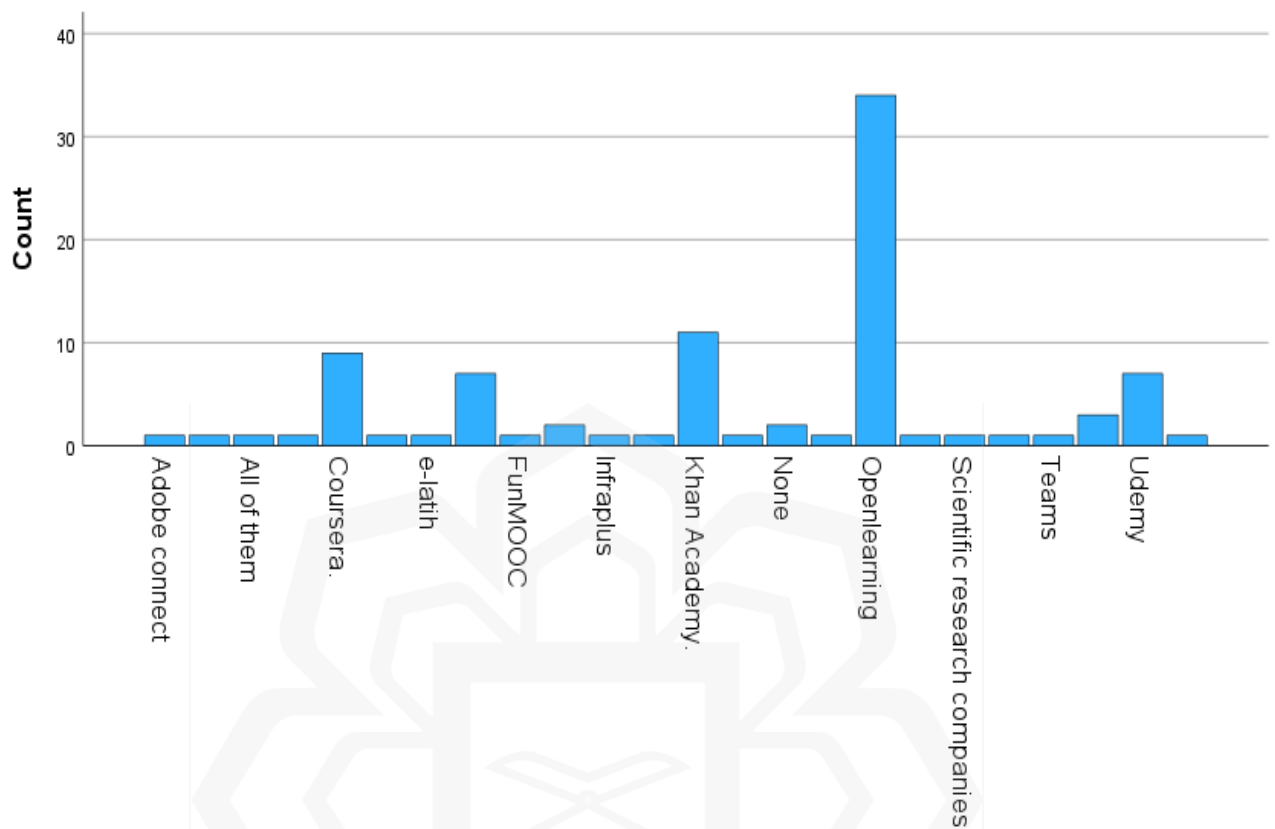


Figure 4.1 MOOCs Platforms

4.4.1.2 MOOCs Formats

Figure 4.3 illustrates the various formats used to deliver MOOC courses, and respondents were asked to indicate their preferred format. These formats enhance the learning experience by making the lectures more engaging and enabling students to absorb information more effectively. Each learner can choose formats that align with their individual learning style. The formats presented were based on the standard options typically offered by MOOCs. The most commonly used formats among the respondents are discussion forums, pre-recorded video lectures followed by discussion forums, continuous feedback from course facilitators and tokens of achievements such as digital badges.

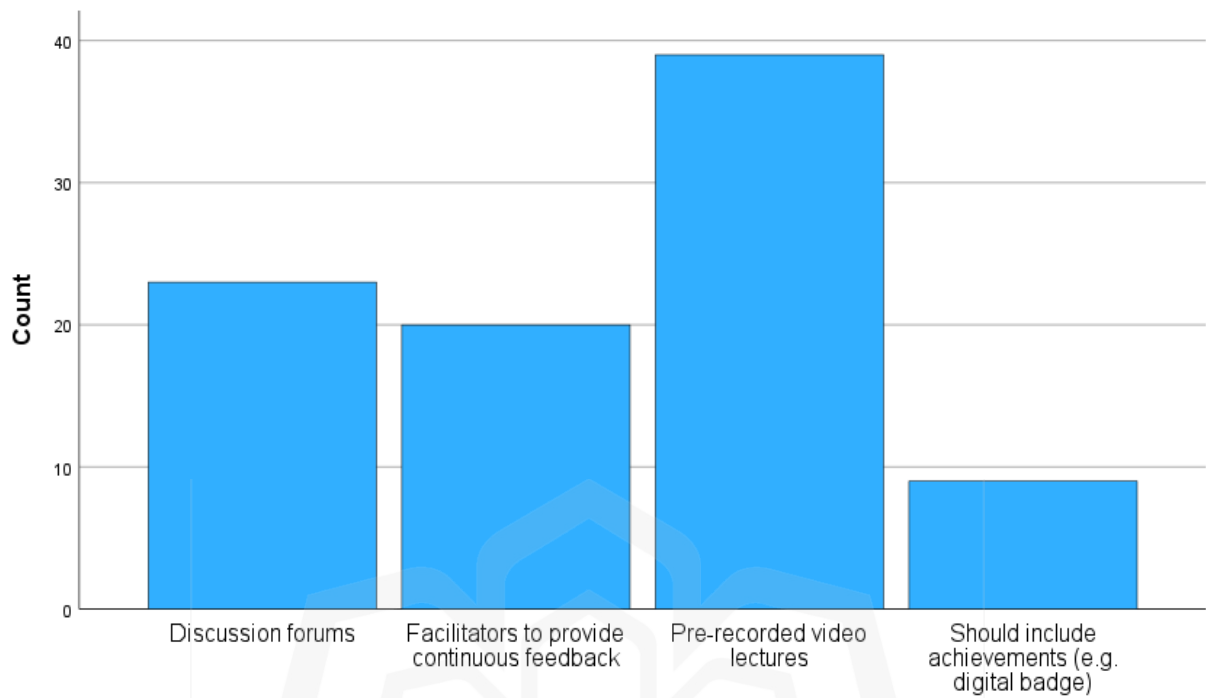


Figure 4.2 MOOCs formats

4.4.1.3 MOOC Learner's Motivation

As it is depicted in Figure 4.2, the findings revealed that students are motivated to take part in MOOC due to the following reasons respectively:

1. To gain or refresh the knowledge
2. Free courses
3. Improving career prospect
4. Interest in the topic
5. Easy access to the course materials
6. Flexible timing
7. Offering attractive MOOC courses
8. Offering courses by world class universities
9. No obligation to complete the course
10. Others

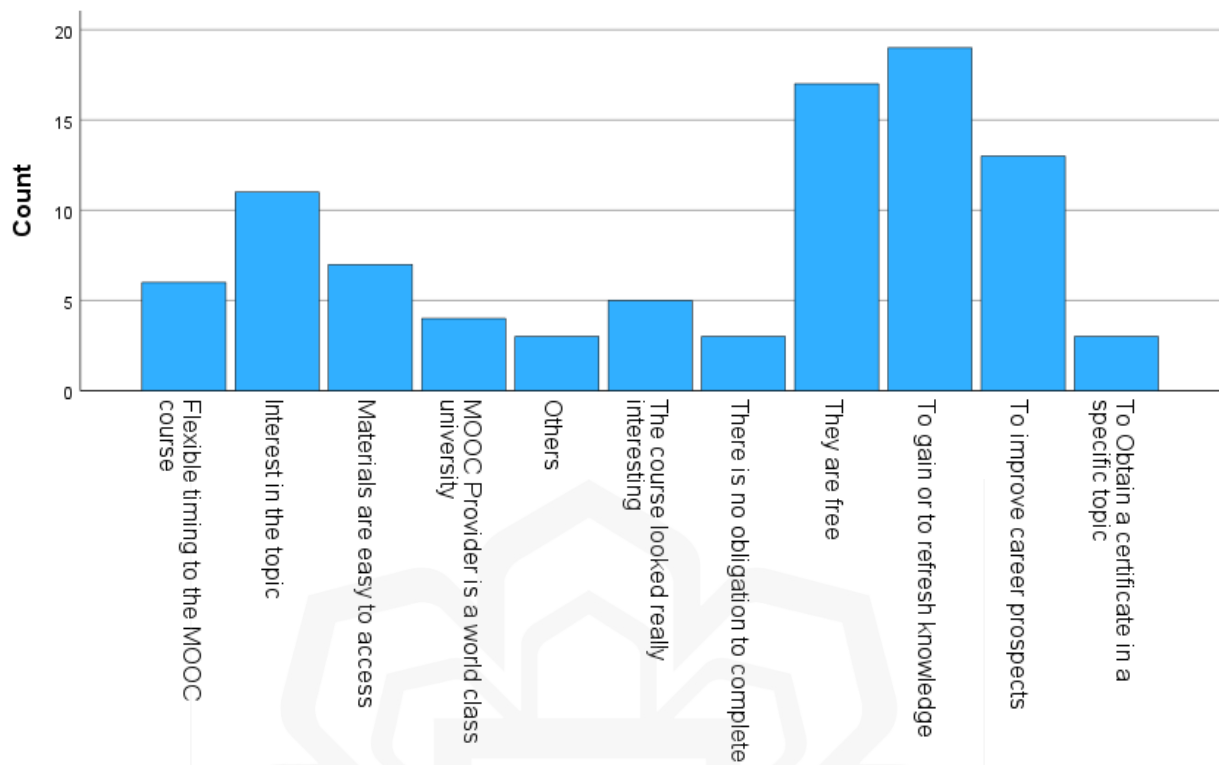


Figure 4.3 MOOC Learner's Motivation

Figure 4.2 show the various reasons that motivated the participants to complete the MOOCs. Several factors influenced both the students' initial motivation to begin learning and their overall motivation throughout the learning process, among these the most important factors is that participants wanted gain knowledge from the course or they just wanted to refresh their knowledge on a particular subject. The second significant motivating factor was free access to the courses. Additionally, the students are motivated to improve their career prospects which consequently enable them to better meet future job requirements as well as responsibilities.

4.4.1.4 MOOCs Perceived Benefits

The findings demonstrated that students regard personal development as the most significant advantage of taking part in MOOCs. Many of the respondents highlighted that MOOCs help them with personal development which consequently led to increasing their self-awareness, skills, as well as fulfilling their aspirations. Many also stated that MOOC benefit them by gaining a better understanding of their exams. The other important perceived benefit is professional development, followed by preparation for future job, success in personal projects, enhancing the CV and changing career plans. The findings are visualized in Figure 4.4.

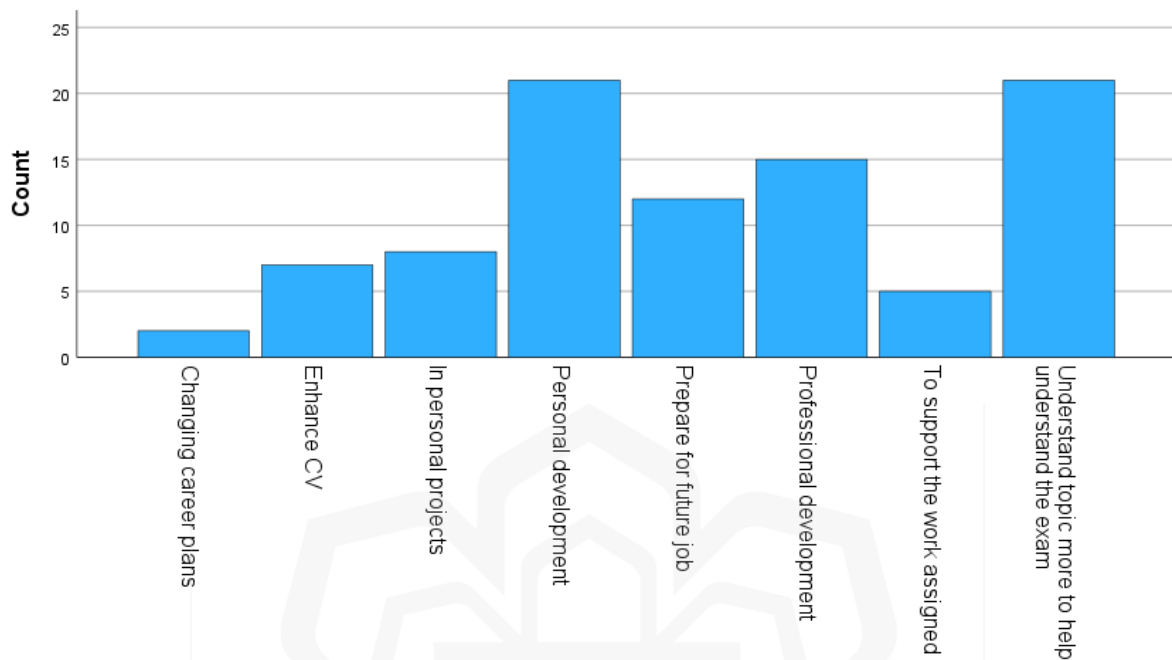


Figure 4.4 MOOCs Benefits

The study employs a quantitative research approach, utilizing numerical data to identify and analyse patterns, relationships, and trends among MOOC participants in Malaysia. This contextual setting provides insights into how geographical and cultural factors, such as technology adoption and educational practices, influence MOOC engagement. The research adopts a purposive sampling strategy, choosing participants guided by criteria that directly support the study's purpose. The target population comprises individuals with direct experience in MOOCs, ensuring the data collected reflects their behaviours, experiences, and opinions. The study's unit of analysis is individual-level data, offering insights into personal motivations and perceptions.

With a sample size of 100 participants, data collection is conducted through a cross-sectional questionnaire, capturing participants' experiences, satisfaction levels, engagement, and factors contributing to MOOC success. Descriptive analysis is used to summarize and interpret the data, with SPSS employed to ensure efficient and accurate statistical analysis.

The findings reveal that the most commonly used formats among respondents include discussion forums, pre-recorded video lectures combined with discussions, continuous feedback from facilitators, and tokens of achievement such as digital badges. Participants identified several reasons for engaging in MOOCs, with gaining or refreshing knowledge being the most cited motivation, followed by free access to courses, improving career prospects, interest in the topic, easy access to course materials, flexible timing, attractive course offerings, courses provided by world-class universities, and the lack of obligation to complete the course. Free access to courses emerged as a particularly significant motivating factor, along with the desire to enhance career prospects and better meet future job requirements.

The study also found that participants highly value MOOCs for personal development, which was identified as the most important benefit. Many respondents noted that MOOCs increased their self-awareness, enhanced their skills, and helped fulfill personal aspirations. Other perceived benefits include professional development, improved preparation for future jobs, success in personal projects, enhanced resumes, and support for career changes. Additionally, respondents mentioned that MOOCs assist in exam preparation and provide valuable insights for personal projects. These findings demonstrate the significant role of MOOCs in fostering personal and professional growth while offering flexible and accessible learning opportunities tailored to diverse learner needs.

4.5 Qualitative Data Analysis

The analysis of the interview transcripts revealed some themes that were discussed by all participants. Then, in each theme, several categories and sub-themes were developed. The themes thereupon are those pertaining to providing answers to the research question 2, 3 and 4. Thematic analysis was employed in this research. Thematic analysis is a process that involves examining texts to transform varied data into detailed and meaningful insights. Recognized as one of the most effective and widely used qualitative analysis methods (Braun & Clarke, 2014), it is employed to categorize, analyze, and identify patterns within qualitative data. It is also a prevalent form of content analysis, where coding schemes are developed to capture key themes present in the text (Albelbisi, Yusop, & Salleh, 2018). Accordingly, this study utilized thematic analysis to classify factors influencing the adoption of MOOCs across multiple dimensions.

To gather data, interviews were conducted with MOOC facilitators, and the recordings were manually transcribed using Microsoft Word. Participants' identities were anonymized by assigning pseudonyms when their statements were quoted in the analysis. Each interview session lasted approximately 30 to 40 minutes.

ATLAS.ti was employed for qualitative data analysis, offering essential support for tasks such as text analysis, interpretation, coding, annotation, and comparison of significant segments. The development of themes followed a three-step process. Firstly, a review of the literature was conducted to extract general and foundational concepts related to MOOCs. Subsequently, new and more specific concepts were identified. ATLAS.ti facilitated grouping these items based on conceptual similarities.

Secondly, the researcher identified concepts through personal understanding, supplemented by expert opinions and established guidelines. These concepts were then categorized into themes and sub-themes, ensuring comprehensive allocation. This step relied on a deep understanding of the research domain and referenced existing MOOC classifications from Abdel-Maksoud (2019) and Ma and Lee (2019) to validate reliability. For example, Abdel-Maksoud (2019) categorized factors influencing MOOC adoption into benefits and barriers. Benefits included the value of MOOC materials, flexibility in MOOC structures, and the enhancement of technological skills. Barriers included a lack of proficiency with MOOC tools and insufficient instructor support.

Finally, the themes and sub-themes underwent multiple rounds of refinement, with adjustments such as combining, separating, adding, or removing elements. This iterative process continued until the thematic network structure was finalized.

4.5.1 INTERVIEW ANALYSIS

4.5.1. RQ2. What factors contribute to the success of MOOCs?

While exploring the factors that contribute to the success of MOOCs, the emerged themes are gamification, provision of the certificates, creating learning community and course design.

4.5.1.1 Gamification

Learning styles vary widely, and addressing them is essential. Many students view MOOCs as a source of free and engaging content, using them as educational entertainment to enjoy during their leisure time. Such participants often limit their involvement to watching lecture videos, avoiding quizzes or assignments. Incorporating gamification into MOOCs fosters an interactive learning environment where students can actively engage, develop skills, and prepare for real-world challenges in a safe and supportive setting.

“Online quizzes in open learning have been improved and are no longer about just multiple-choice questions or subjective questions but now include a game element to it [...] there are some elements that are being encouraged in MOOCs such as gamification or rewards to help reduce the dropout rates ”(P 1)

Teachers can motivate students by enhancing their professional skills and integrating diverse elements into their lessons using MOOCs. To ensure effective delivery of information, educators employ various formats such as text, audio, video, and gamification within MOOC platforms. Incorporating gamification is particularly important in e-learning or MOOCs, as it stimulates student motivation and engagement. Additionally, course materials should be presented in multiple formats rather than relying on a single method to cater to different learning preferences. (P 3)”.

The following participants also stated that adding multi-dimensional graphs and animation is a contributing factor to MOOC success by making the education more joyful experience.

“I think that the platforms should include some integration of 3-dimensional or 4-dimensional graphics into the classroom to make education more fun ” (P 4)

I think lectures need to produce good digital content, these can be done by producing videos or adding animation to their content.(P 3)

4.5.1.2 Provision of the rewards and certificates

The findings of this study also revealed that provision of rewards and certificate for delivered courses will contribute to the success of MOOC because it will empower the student and increase enthusiasm. P 1 and P 2 highlighted:

“There also some MOOC platforms that offer certifications which might make students feel empowered when receiving a certificate from a reputable institution. These factors will contribute to students’ enthusiasm” (P 1)

“Creating a digital badge reward system [...] Some courses offer certification is which is a productive way ” (P 2)

P 1 stated that reward system may help to increase the engagement of students with the course.

“The current trend when it comes to MOOCs is the availability of various types of courses. Right now, there are micro-courses. As an instructor, rather than overwhelming the students, you can take one of the topics as a nano- course or a micro-course. Instructors should also implement the reward system in their course and be aware of the student’s needs in order to make the course more popular. Therefore, it is important for MOOC instructors to create a course that is going to be helpful for students, to encourage their students by giving rewards and not overwhelm them by incorporating too many topics in one MOOCs” (P 1)

4.5.1.3 Course design

Another factor that may also contribute to success of MOOC is course design. One interviewee referred to the course design as a contributing factor. The course design should be in a way that is not draining regarding the content and duration.

“The first factor is the development of the course or course design. The instructor should ensure that the course is not too draining because some students aren’t able to spend too much time on their computer. Another factor to consider is the duration of the course” (P 1).

The instructors can help increase enthusiasm by connecting the course with the student’s life to encourage engagement and keep their interest throughout the course. They should try to ask

questions related to the student's daily activities as people love to see themselves in something else as they get to answer the instructor's questions based on their perspective.

“Making sure whatever you teach is somehow related to the students themselves, their lives or their country for example if you're focusing on economy, you should ask what they think of the economy of the country. By relating the questions to topics that are of interest to them, you can increase their enthusiasm towards the course because people love to see themselves in something else as they get to answer based on their perspective.” (P4)

4.5.1.4 Creating learning community

Additionally, the instructor can help create a communication network between participants to help them connect with each other by encouraging peer support learning whereby students are able to collaborate on certain tasks or have discussions with one another. Based on the analysis, having a learning community is one way to keep students motivated.

“The introduction of the course has to be in the form of active learning in such that it entices students to want to learn share their ideas, relax and get to know one another by building a learning community. In terms of interest levels, the instructors need to be able to get their students to create their own learning community. They need to talk to each other before talking to the instructor. The instructor can do this by creating a welcoming activity that encourages the students to interact with each other rather than just interacting with the instructor alone. This will surely increase the student's enthusiasm not just because of the course but also because of the network they can benefit from.” (P 2)

4.5.1.5 The Role of Instructors

4.5.1.5.1 Motivating the participants and increasing the enthusiasm

Instructors can lead to success of MOOC by motivating the students with various methods. P 1 highlighted:

“The instructor can keep the students motivated by encouraging them, monitoring them or supervising them. The second is by encouraging peer support learning whereby students are able to collaborate on certain tasks or have discussions with one another.” (P 1)

He added sustaining the enthusiasm of students is a crucial factor for decreasing the drop out rate in MOOC. One of the main issues in MOOCs is sustaining the enthusiasm of participants. There are so many available MOOC courses, so the drop-out rate is quite high and the students are not forced to complete the course. (P 1)

4.5.1.5.2 Increasing engagement and Interactive teaching style

A contributing factor to the high dropout rates in MOOCs is the student's inability to commit to one course as there are a variety of options for them to choose from. However, instructors can contribute to student enthusiasm towards the course. Therefore, one of the distinct factors to success of MOOC is the role of instructor. P 3 stated that instructors must create an interactive learning environment in MOOC. Students should be allowed interact and actively engage throughout the course.

"Asking them questions throughout and allowing them to speak. If it is asynchronous, the teacher must ask constructive questions. It must be interactive" (P 3)

The following participant stated that instructor must play an active role throughout the course and ensure about the engagement of students which consequently lead to success of MOOC.

"MOOCs itself is a whole ecosystem; you need to have a good checklist from the development of the course up to the supporting staff. The instructors must make sure the participants are being engaged from the early stages until the end of the course." (P 4)

Instructors also can use various techniques to increase the engagement of students. P 3 stated using some tools that allows better contribution of the students to discussions.

"There are many, for example I am using an iPad, I can write, read, scribble and also allow students to contribute to the discussion and make suggestions. They can use digital sticky notes or various apps that promote collaboration" (P 3)

4.5.2 RQ 3. What are the effective learning styles through MOOCs?

4.5.2.1 Heutagogy (self-determined)

The interview analysis revealed that heutagogy (self-determined), visual and auditory learning styles are the most effective learning styles. The participants agreed that the term effective is subjective and is perceived differently by MOOC participants. They believed that each student learns differently and has their own learning style therefore MOOCs should be designed in a way that is able to cater to each individual participant's learning styles. In this regard, P 3 mentioned:

"A MOOCs can be offered anywhere and at any time, and the students will benefit from it if they have the proper mindset. If they are willing to learn, they will benefit from it. Learning is now mixed or hybrid, the students who are dynamic and willing to adapt and learn will benefit." (P3).

P1 stated that heutagogy (self-determined) method is most effective method. Heutagogy is suitable for MOOCs as it emphasis on the development of autonomy, capacity and capability. With this strategy the student gets to determine how much they want to allocate on learning.

"Nowadays because most of the education experiences or learning are taking place at home, the learning style that is best is heutagogy (self-determined) method. This is a student motivated learning which means that students get to decide how much learning they want to invest their time in. This method encourages students to become active participants as they decide how much they want to learn as they have to take charge. They have to want to help themselves. " (P1)

4.5.2.2 Visual and auditory

P 2 believed that visual learning is the most effective learning style due to unique features of MOOC.

"When developing a MOOC, you might want to cater to as many learning styles as possible. MOOCs is actually considered a buffet of learning materials which show cater to many learning styles. However, I believe that visual learning styles would be the most effective. " (P2)

The following statements from P 2 highlight the important role of videos in delivering the courses in MOOC.

“One thing that I found out during my time in developing MOOCs under the initiative of Malaysia MOOCs is that “students love videos” and they demand that videos be present however, having videos present only is very minimal in terms delivery of the content. I would suggest that there be a feature that can add interactivity in the video. That would be a good way to increase the level of interactivity and also active learning. There are applications that allow you to do so, where a question will pop up within 2 – 3 minutes of the video. It would be great if the platform could do this otherwise it will have to be developed outside the platform. ” (P2)

Another interviewee referred to visual and auditory learning style as the best methods since the MOOC requires more focus on-screen time.

‘There is no one learning style in MOOCs because you have massive participants. We should really look at the future generation, some people say the future generation will focus more on-screen time. There should be more videos and audio. I would say that visual and auditory are the best learning styles for MOOCs.’ (P 4)

Each student possesses unique qualities and grasps knowledge through varied approaches, resulting in different learning styles. Some students are Visual Learners, understanding through observation, some are Auditory Learners, absorbing information through listening, and others are Kinesthetic Learners, who learn by doing. Interviewees expressed the belief that MOOCs (Massive Open Online Courses) can cater to the diverse needs of all learners. However, they also stated that since the future generation will focus more on-screen time, there should be more videos and audio and thus visual and auditory might be the best learning styles for MOOCs in the future. Participants also stated that MOOCs could cater to individuals learning style by providing them with various methods of learning for example through discussions, quizzes or allowing them to create their own materials (P 1). This will show how the students have developed in the course and it is also a way to give students the freedom to use their creativity by using the tools given to them. This shows how the students translate the curriculum that is given to them and see each individual’s learning style.

2.5.2.3 kinesthetic learning style

P 4 also referred to kinesthetic learning style as an effective method. He highlighted that if MOOC participants have the opportunity to feel, touch and practically experience the course material, it will contribute to the higher engagement.

“People will learn best if they can touch things, if they can feel and see the impact of what they are learning. If we have the technology, I really recommend some sort of 4-dimensional integration present in the platform because I believe that if the learners had the ability to feel and touch as well as really see the effect of the things that they learn, it will contribute to their engagement.” (P 4)

4.5.3 RQ4: How the current MOOCs offered in higher education institutes are able to cater to the learners’ different learning styles?

Video lectures, online quizzes, and forum discussions are tools that contribute to the learning process. They can be helpful when used correctly at the right place and time. There intended to help the students otherwise instructors would go through the trouble of including them. However, too much of these can be hurtful as well. We have actually conducted a survey regarding these elements and found out our learners love videos even though they can sometimes be boring. The learners still find videos beneficial as they can pause, forward or rewind it. But having too many quizzes and form discussion with questions posted without replies could be hurtful. Sometimes we tend to overdo things for examples instructors might include all these tools which might defeat the purpose. They have be included in the right amount to be helpful. (P 2)

4.5.3.1 Video lectures, online quizzes, and forum discussions

The findings of this study revealed that although videos are useful tools in MOOC, they are not using properly currently. Video lecture is an effective tool if it is applied properly. Additionally, online quizzes improved and they are not limited to multiple choice questions. Regarding the discussion forums, the instructors found it as an effective tool in increasing the engagement of participants.

“One of issues present in some MOOCs is that videos are taken from other people although the topic is yours, the most important when you are creating MOOC is understanding the needs of the participants. Online quizzes in open learning have been improved and are no longer about just multiple-choice questions or subjective questions but now include a game element to it. An important thing to remember when it comes to online quizzes is how they help us in assessing the students. They need to have a clear objective. The benefit of having Forum discussions is that a lot of people can contribute, they can agree or disagree on certain topics and sometimes there is going to be a plateau. As an instructor you have to act as a moderator during these discussions and help promote a positive learning experience. You want to encourage students to bring forth new ideas and assist them in voicing out their opinions without going overboard” (P 1).

The following participant stated that although video lecture, online quizzes and discussion forums are effective tools, they must be used properly, at right time and place.

“Video lectures, online quizzes, and forum discussions are tools that contribute to the learning process. They can be helpful when used correctly at the right place and time. There intended to help the students otherwise instructors would go through the trouble of including them. However, too much of these can be hurtful as well. We have conducted a survey regarding these elements and found out our learners love videos even though they can sometimes be boring. The learners still find videos beneficial as they can pause, forward or rewind it. But having too many quizzes and form discussion with questions posted without replies could be hurtful. Sometimes we tend to overdo things for examples instructors might include all these tools which might defeat the purpose. They have been included in the right amount to be helpful.” (P 2).

P 4 highlighted the important role of online quizzes and discussion forums; however, videos must be used with considering participants’ engagement because using long videos might lead to less engagement.

“The duration of the video mustn’t be too lengthy in order to keep students engaged so you must have a good instructional team to ensure that the video is in high quality. In the case of online quizzes and forums, they are something that are compulsory.” (P 4)

4.5.3.2 MOOCs vs Traditional Classrooms

The participants stated that interaction and engagement in MOOCs is quite different than in conventional classrooms. Although it might be difficult to completely imitate the atmosphere and student dynamic present in conventional classes, it is possible to replicate the rapport and support between students and their instructors to a certain degree through monitoring and engaging into peer assisted learning since participants are able to post questions after the class thus it can be synchronous or asynchronous allowing a multi-dynamics communication between the teachers as well as the students (P1)".

"Teachers are able to engage with their students beyond the classroom hours as well as classroom boundaries (P 1)."

Even though the interaction in MOOCs is from person to person (Student - Teacher), the course design can be entirely different. Course facilitators need to find a way to ensure that students keep returning. Unlike in conventional classrooms, it is much more difficult to maintain student engagement due to a difference in time as well as space (P 2)". This is where instructional designs are effective as they ensure students learn efficiently by creating high quality learning materials that consider the strengths and weaknesses of students.

"You need to have a digital pedagogy for example a lesson in Moodle consists of a step-by-step process that shows how students learn constructively, although the lecture isn't always present, learning still takes place. I believe that MOOCs may replace traditional teaching and learning" (P 3).

The participants also mention that having a course facilitator who has experience in using online platforms present as it will determine how successful your course is going to be.

4.5.3.3 Curriculum Design in MOOCs

Curriculum design is very important in MOOCs and must focus on the content of the course and its connection to the learning objective. An element that is present in a MOOC

course is setting the individual's pace which means that the students will determine how fast they want to go from one topic to another.

“This is a crucial question that people ask because curriculum is actually a group of high-level documents. Normally we design the curriculum in such a way that it focuses on the content rather than focusing on the delivery.” (P 2)

The delivery method has to be clear therefore there is a certain criterion that we should put in our curriculum in terms of delivery because curriculum is not just content but it is also delivery. Some curriculums mention blended learning which only caters generally for online courses plus face-to-face classrooms but in blended learning under the category of online learning, it has to be set up in which some of the marks, assessments, activities and content should come from MOOCs. The main purpose of MOOCs for our students is to make them mingle with other students from other countries. (P 2). The activities have to be defined

“MOOCs are like a buffet of content whereby participants get to choose what they like. In order for you to have a buffet of content, you need to have many content developers as well as instructional designs. If you have the money, time and technology, you will be able to design a curriculum for a MOOC course that can cater for individual's learning style.” (P 4)

4.5.3.4 Teaching Presence

Teaching presence relates to the instructor's role in the course for example what the instructors does when they plan what participants learn, provide resources and guide the participants learning through the activities and assignments provided throughout the course, according to the instructors, having a certain degree of anonymity in MOOCs may have a positive and negative impact on participants. Some students have a fear of being judged when answering questions and are more reluctant to participate in a classroom setting, however since there is a certain degree of anonymity in MOOCs, these students will be more confident to participate as oppose to in face-to-face classes as they feel less inhibited. However, although there is a certain degree of anonymity in MOOCs, the relationship between student and teacher in MOOCs also depends on the demographic of participants since MOOCs are open to everyone, acquiring the demographical data of participants is helpful as it will aid the instructor in structure their lessons in a way that will keep the students engaged.

“It is good to have some degree of anonymity but it really depends on the way you approach things and the way you approach the demographic of participants because some students really want that deep engagement with their instructors in order for them to stay motivated till the end of the course whereas some prefer to study on their own. That’s why I believe this research will be interesting on seeing how the different learning styles, preferences or the demographic of learners can really affect the quality of engagement between learners and facilitators (P 4).”

4.5.3.4 The Future of MOOCs in light of Covid-19

The participants believed that Covid-19 accelerated the progress and development of the MOOCs. The future MOOCs is very bright because a lot of institutes are now creating their own MOOC courses thus giving MOOCs a good opportunity to progress in the future. MOOCs especially gained popularity during the covid 19 pandemic even though they have been around for decades. People are now turning to online learning and are noticing that online learning is not as easy as it looks. There are lot of learning designs involved. Most participants also stated that MOOCs has a good future as people are now more receptive to online and with the current situation people will flock to it. The following participants highlighted that:

“Online learning has taken a paramount importance during the pandemic everywhere. In this sense the future of MOOCs is very bright because now a lot institutions are also creating their own MOOC courses. This is the reason why MOOCs has very good development opportunities and is now being explored by various educators as well as instructors.” (P 1)

“I think MOOCs have a bright future, they have been around for the past decade, although they have been slow in Asian countries because there has been no urgent need for it as it is meant to cater for adult learners. When I first started with MOOCs four years ago, people had this perception that online learning is not as good as face-to-face learning. We introduced blended learning before MOOCs and it had the same challenges. In the midst of the pandemic, people are now turning to online learning but they are also noticing that online learning is not as easy as it looks there are lot of learning designs involved. MOOCs has a good future as

people are now more receptive to online and with then current situation people will flock to it.” (P 2)

However, P 4 stated that an issue with MOOCs is that they aren't marketed properly and many people are unaware of their existence. Another issue stated by the participants is that many people still don't believe that the accreditation acquired from a MOOC course holds any value and prefer to acquire a traditional degree.

“It depends on marketing. Online learning has been the trend since 2000, but its 2021 now and no one has really pushed forward on how to market online learning as how Apple markets their products. I don't know if people really believe or have faith in online learning for example some people want to learn through MOOCs but don't want their certificate to state that they are a participant of MOOCs, they prefer to have a conventional degree. It really depends on how good the marketing is and the policy of the country whether they are accredited in MOOCs. I believe the future of MOOCs is bright but it really depends on the marketing team.” (P 4)

The following participant highlighted that although at the beginning of the pandemic it was uneasy to adopt to online education, eventually, it led to popularity of the MOOC.

“Everyone was shocked when Covid-19 occurred and they didn't know how to handle it. MOOCs weren't used by everyone before but they gained more popularity in the midst of the pandemic” (P 3)

This study utilized a parallel mixed-methods approach to examine students' experiences with MOOCs, integrating quantitative surveys and qualitative interviews to gain a comprehensive understanding. Each method contributed distinct yet complementary insights, enabling a holistic exploration of the topic. The qualitative component involved semi-structured interviews with a diverse range of students who had prior experience with MOOCs. Participants included male and female students at both undergraduate and postgraduate levels, drawn from UKM, UTM, and UTeM, universities selected for their notable success in MOOC implementations and student engagement.

The interviews sought to delve into students' experiences, perceptions, and challenges in engaging with MOOCs. By capturing personal reflections, the research aimed to uncover motivations, barriers, and learning outcomes from the participants' perspectives. These insights complemented the quantitative survey findings by providing a nuanced understanding of factors influencing student commitment and the perceived value of MOOCs in academic and personal development contexts. Conducted over Google Meet, each interview lasted 30 to 40 minutes. They were manually transcribed in Microsoft Word and analyzed using thematic analysis techniques with ATLAS.ti software, which enabled the identification of themes and sub-themes related to motivational and success factors. This qualitative phase also served to cross-validate the survey data, enriching the overall analysis.

The quantitative phase utilized surveys to collect broad numerical data on students' experiences, perceptions, and outcomes related to MOOCs. This phase aimed to identify patterns and trends across a large sample, such as levels of engagement, satisfaction, and perceived benefits. While effective in highlighting statistical relationships, the quantitative approach lacked the depth necessary to uncover the underlying reasons for students' attitudes or behaviours. Together, these methods offered a thorough exploration of the factors shaping students' experiences and success in MOOCs, ensuring a well-rounded understanding of the phenomenon.

4.8 SUMMARY

The purpose of this chapter is to present the results through data collection for the purpose to answering the research questions and objectives. The findings of quantitative phase showed that Open Learning, Khan Academy and Coursera are the most well-known MOOC platforms in among students in Malaysia. Regarding the learner's motivation to participate in MOOC, it is found that motivational factors are gaining or refreshing the knowledge, free courses, improving career prospect, interest in the topic, easy access to the course materials, flexible timing, offering attractive MOOC courses, offering courses by world class universities, no obligation to complete the course. When the researcher investigated the perceived benefits, the findings indicated that personal development, gaining a better understanding of their exams, professional development, preparation for future job, success in personal projects, enhancing the CV and changing career plans are perceived benefits of MOOCs among students. Several themes emerged from qualitative analysis.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 INTRODUCTION

MOOCs have played an important part in influencing students' interests, particularly in preparing for college, with a notable focus on motivation for MOOC learning. These platforms provide a more convenient and inclusive way for learners to investigate different majors or fields of study. One possible outcome is that some institutions might purposefully create MOOC-based introductory courses aimed at high school students, helping to ease their progression into college-level education (Milligan and Littlejohn, 2017). In addressing current educational needs, MOOCs could potentially evolve into a reliable medium for assisting individuals in enhancing their professional knowledge. Unlike more traditional options such as self-learning through books or hiring a tutor, MOOCs present several alternatives for professional development (Milligan and Littlejohn, 2017).

MOOCs have proven to be instrumental in fostering connections and interactions among individuals. An intriguing revelation was the recognition of the desire for social interaction as an integral aspect of learning in MOOC (Milligan and Littlejohn, 2017). For certain learners, their main source of motivation comes from building connections with others instead of focusing on the acquisition of specific content. This preference could be attributed to the significant value that learning-oriented social interactions hold for certain individuals (Margaryan, Bianco, & Littlejohn, A, 2014).

The common motivations for students to participate in MOOCs include a desire to enhance their knowledge on specific subjects and to pursue professional development. This engagement is often fueled by universal academic curiosity. Through MOOC discussion forums, students can interact with individuals from countries characterized by diverse political and socioeconomic conditions, as highlighted by Heller, R.F. (2014). There is potential for educational discourse to transcend conflicts and contribute to the unity of citizens from states with historically strained relationships, as suggested by Milligan and Littlejohn (2017).

Chapter five aims to explore the factors contributing to success in Massive Open Online Courses (MOOCs), covering aspects from initiation to completion, along with the strategies employed by instructors to motivate student engagement with MOOCs. The discussion will encompass the study's limitations and the implications of its findings for both theory and practical applications.

5.2 DISCUSSION

In this research, various learning motivations have been identified, innovative approaches taken by students in MOOCs are outlined, and the numerous factors influencing motivation during online learning, which can be viewed as either opportunities or threats, are detailed. Although Massive Open Online Courses (MOOCs) are still in the developmental stages in Malaysia, their educational contributions hold significant potential to enhance people's lives (Fadzil & Latif, 2015). As previously mentioned, MOOCs can assist students in exploring their interests, facilitate the realization of ambitious goals with minimal financial investment, and offer educational entertainment products that contribute to individuals' well-being (Fadzil & Latif, 2015). Instead of being solely perceived as educational resources, MOOCs ought to be seen as a dynamic combination of educational content, technological resources, and the collaborative engagement of both instructors and learners.

A significant factor behind the high dropout rates in MOOCs is the variation in learners' individual learning styles, which may affect how they prefer to interact with MOOC content (Chang, Hung & Fu Lin, 2015). The current open learning model has been critiqued for its shortcomings, particularly its lack of personalization (Graf, Shuk, and Liu, 2008). In this context, personalized learning refers to allowing students to take control over not only what they learn but also when and how they engage with the material, tailoring their experiences to suit their unique preferences and needs (Prain et al., 2013). The absence of personalization in learning implies that learners may struggle to acquire knowledge aligned with their unique learning styles.

An additional factor influencing the success of MOOCs pertains to the level of instructor involvement in MOOC discussions. Despite the increasing prevalence of MOOCs,

there has been a delayed exploration of certain aspects related to these courses (Siemens, Gašević, and Dawson, 2015). Between 2014 and 2016, a number of research studies and systematic reviews pointed to a notable gap in MOOC scholarship: the limited attention paid to instructors, despite their crucial role in facilitating learning (Castrillo de Larretta-Azelain, 2014; Ross et al., 2014; Stephens-Martinez, Hearst, & Fox, 2014; Hockly, 2015; Bayne, 2016). Although instructors are central to shaping the learning experience (Kozan, 2016; Cohen & Holstein, 2018; Hew, 2018), their presence and pedagogical practices have often been sidelined in favor of learner-focused analyses. A systematic review by Raffaghelli, Cucchiara, and Persico (2015), which surveyed 60 MOOC-related articles published between 2008 and 2014, revealed that only four studies gave substantive attention to instructors' teaching strategies and approaches. This trend has persisted over time. Even years later, systematic reviews continue to report a scarcity of research centered on the instructor's role in MOOCs. For example, Blackmon (2018), employing a phenomenographic approach, justified her focus on instructors by emphasizing the persistent neglect of their perspectives in the literature. In her earlier 2016 work, she argued for the necessity of incorporating instructors' voices and methods alongside analyses of learner behavior to gain a more holistic understanding of the MOOC environment. Similarly, Bayne and Ross (2014) critiqued the broader MOOC research community for often overlooking the embodied presence and pedagogical influence of instructors. Knox (2013) attributes this marginalization to the design philosophy of many MOOCs, which emphasizes scalable content and self-directed learning, often at the expense of active teaching. Bayne (2016) later reinforced the need to re-center the role of the teacher within the evolving MOOC landscape. Supporting this perspective, Evans and Myrick (2015) contend that directing scholarly attention to instructors is critical for a more comprehensive understanding of how learning occurs in these large-scale digital environments. In light of this, it becomes increasingly important to investigate instructors' practices, especially within interactive spaces such as discussion forums, where meaningful engagement with learners can directly influence the learning experience.

This study seeks to enhance understanding of learners' needs and motivations, utilizing this insight to identify the elements that prompt students to participate in Massive Open Online Courses (MOOCs) and contribute to their success. Additionally, the study aims to explore how instructors inspire student enrollment and completion in these courses, along with understanding how MOOCs can accommodate the diverse learning styles of participants.

Previous literature either does not focus learning styles or addresses them in a broad manner without thorough examination of the underlying reasons, creating challenges in deriving design implications. This research endeavors to deconstruct the overarching concept of learning styles into the varied rationales embraced by diverse student types. This study also looks into Learner's motivation which can be categorized into four main types these include: fulfilling future needs, preparing for the future, satisfying curiosity and connecting with people.

5.3 THE CHARACTERISTICS OF INSTRUCTOR CONVERSATIONS WITH LEARNERS

This chapter is organized into discussions based on four key findings. Findings 1, 2, and 3 pertain to the fourth research question, while Finding 4 relates to the third research question. The initial part of this chapter concludes with an assessment of the CoI framework's applicability in MOOCs. The latter section of this study delves into contributions, implications, and limitations. The findings indicate that the majority of interactions between learners and instructors are brief, often comprising only two comments, where the instructor responds to the learner, and further dialogue is limited. Tubman, Benachour, and Oztok (2018) classify these interactions in their social taxonomy of MOOC conversations, highlighting that these exchanges typically take the form of Q&A and involve mainly two participants. This corresponds with Chua et al.'s (2017) claim that many MOOC discussions result in initiating posts receiving only one reply. Several factors may contribute to the limited continuation of conversation after the instructor's input. The content of the instructor's contribution and the learners' engagement with it could be another factor, although no causation can be assumed. A considerable portion of instructor contributions in this research were identified as social. After analyzing how learners reacted to instructors, it was observed that participants showed less engagement with social contributions and responded more to comments emphasizing teaching

presence or a blend of teaching and social presences. This tendency could be attributed to the fact that social contributions may not sufficiently address learners' content-related requirements (Hofmann and Mercer, 2016). Moreover, as emphasized by Garrison (2016), although social contributions have a socio-emotional orientation, they need to align with a common academic objective.

5.3.1 Most learner-instructor conversations

In interviews, many instructors emphasized the significance of the social aspect in their communications for refining the course and engaging learners in the MOOC. However, it seems that they are prioritizing these social elements at the expense of more in-depth and extensive conversations. Instructors can improve the effectiveness of their social contributions by aligning them with academic objectives, group identity or professional goals. Another factor that has an impact is the subject matter of the course (Danish, Cayzer, and Madden, 2017; Li et al., 2018), as certain disciplines are information-oriented and may not naturally lead to prolonged discussions. However, the brevity of conversations between learners and instructors in the examined MOOCs is surprising, given that all courses belong to disciplines that typically encourage discourse. According to some instructors interviewed, the concise nature of discussions could be attributed to discussion prompts or lead-ins overly focused on promoting and encouraging discussions. Therefore, recognizing the potential influence of an instructor's input on an initial post, instructors might consider engaging in a few exchanges before actively participating in a conversation. This involves reviewing discussion tasks and questions as well as reevaluating the substance of their social contributions.

5.3.2 The type of instructors' contributions

The active engagement of instructors in discussion areas underscores that most of their contributions involve social aspects, followed by teaching and cognitive elements. These results align with the observations made by Watson et al. (2016, 2017) within the MOOC context and corroborate the findings reported by Richardson et al. (2015) in online courses with restricted access. The similarity between the findings of this study and those of traditional

online courses suggests that the scale and openness of MOOCs have not significantly altered the nature of instructor involvement. Notably, given that instructors devote a substantial portion of their discussion time to establishing and maintaining social presence indicates a pronounced social focus in MOOC discussions. This focus is likely influenced by three factors: first, the design of the MOOC course places emphasis on social learning; second, many learner contributions are also social, often requiring a social response; and third, the selective engagement of learners with MOOCs (Kaul, Aksela, and Wu, 2018) as well as the flexibility to join or leave discussions and courses at any time (Zhang, Skryabin, and Song, 2016) mean that new participants can enter discussions at any point, prompting instructors to invest time in building connections with newcomers. The considerable amount of social contributions made by instructors indicates a relatively diminished emphasis on pedagogical responses, specifically teaching presence. The analysis also explores the specific aspects of instructors' teaching presence in MOOCs, offering insight into their teaching methods and responsibilities while emphasizing differences in their engagement levels during MOOC discussions.

5.4 PRACTICAL IMPLICATIONS

On a practical level, the research outcomes offer a valuable comprehension of the factors influencing student success in MOOC courses, identifying the gaps in existing MOOC literature concerning participant motivations and perceptions of success and completion. Insights gained from interviews with MOOC instructors contribute to a research-informed decision-making process for instructors regarding their engagement in discussion areas. These results provide a benchmark for both existing and potential MOOC instructors to assess the equilibrium of their contributions., taking into account the types of presences that have a stronger impact on learners. A more profound comprehension of how learners engage with instructor contributions highlights that specific instructor activities are more captivating, prompting a reassessment of others to cultivate a more enriching learning discourse. Consequently, these results will assist MOOC instructors in using their time more effectively, fostering learning, and encouraging increased engagement in discussion areas.

Moreover, the adoption of MOOCs remains constrained by the conventional culture prevalent in numerous universities. Consequently, there is a necessity to overcome this gap and

foster an organizational culture conducive to quality innovation. Universities should actively promote this shift toward educational innovation by increasing staff awareness about the significance of embracing new technologies. Consequently, the adoption of MOOCs will rise, fostering an atmosphere conducive to improving their quality. Also, another issue is that the MOOCs being provided in higher education institutes do not cater to the different learning styles of participants. Based on the literature reviewed, several solutions have been proposed (Grunewald, Meinel, Totschnig & Willems, 2013):

- 1) Learning materials can be enhanced by incorporating concept maps and hypertextual links, facilitating diverse paths that learners can define for themselves.
- 2) Engaging in hands-on exercises enables learners to actively experiment and connect with the problem domain on a personal level, gaining a deeper understanding of the intricate relationships to their own tangible experiences.
- 3) Encouraging group discussions that foster awareness and recognize contributions will empower learners to take responsibility, collectively enhance the learning process, and offer diverse perspectives for reflective observation.

5.5 CONTRIBUTIONS OF THE STUDY

This research seeks to enhance our understanding of instructors' roles, involvement, and contributions within the discussion spaces of Massive Open Online Courses (MOOCs). While MOOCs have been celebrated for their ability to democratize education and provide flexible, cost-effective learning opportunities to a global audience, the success of MOOCs often hinges on a variety of factors. Among these, the role of the instructor is critical yet insufficiently explored in key areas, particularly in terms of their activities and interactions within discussion forums. These forums are central to fostering collaboration, engagement, and deeper learning in MOOCs, making it imperative to understand how instructors participate and influence the learning experience in such settings.

Previous research on MOOC instructors has primarily concentrated on a range of themes, including their roles and demographic profiles (Ferguson & Whitelock, 2014; Nacu et al., 2014), their motivations for participating in MOOC teaching (Hew & Cheung, 2014;

Lowenthal, Snelson, & Perkins, 2018; Zhu, Bonk, & Sari, 2019), their experiences and the challenges encountered in designing and delivering courses (Zheng et al., 2016; Stöhr et al., 2017; Lin & Cantoni, 2018), as well as their own learning and professional development as educators within these environments (Papathoma, 2019). While these studies have significantly enriched our understanding of various aspects of MOOC instruction, they have paid relatively little attention to how instructors engage in one of the most dynamic and learner-focused areas of MOOCs: the discussion forums. These forums often serve as a critical space for interaction, feedback, and community-building. To address this overlooked dimension, the present study seeks to explore how instructors participate in MOOC discussion forums, examining both the nature and tone of their contributions, and how learners perceive and respond to these interactions. In addition to exploring instructor roles in discussion spaces, this study examines how instructors accommodate the diverse learning styles and preferences of MOOC participants. MOOCs attract a heterogeneous group of learners from various educational, cultural, and professional backgrounds, each bringing unique learning goals, motivations, and challenges. Understanding how instructors adapt their strategies to meet the needs of such a diverse audience is crucial for enhancing the effectiveness of MOOCs. By examining these interactions and strategies, this research seeks to provide a more nuanced understanding of the instructor's role in contributing to the overall success of MOOCs.

This study represents one of the first attempts to systematically explore these underexamined aspects of MOOC instruction. It investigates the extent of instructors' participation in discussion forums, the types of contributions they make (e.g., clarifying concepts, offering feedback, fostering discussions, or addressing individual learner concerns), and the ways in which learners respond and engage with these contributions. In doing so, it provides valuable insights into the dynamics of learner-instructor interactions, highlighting the role these interactions play in enhancing learner engagement, satisfaction, and overall course outcomes.

The findings from this research contribute to a broader understanding of the factors that drive the success of MOOCs. They reveal that instructor involvement in discussion forums is a critical determinant of learner engagement, with certain types of contributions having a more pronounced impact than others. For instance, personalized feedback, timely responses to learner queries, and efforts to encourage peer-to-peer interactions were identified as particularly effective in fostering a supportive and collaborative learning environment. These insights underscore the importance of an active instructor presence in ensuring the success of

MOOCs, particularly in creating meaningful and engaging learning experiences for participants.

Moreover, the study sheds light on the broader pedagogical implications of instructor engagement in MOOCs. By identifying the types of contributions and roles that exert the most significant influence on learners, the research provides practical recommendations for optimizing the use of instructor time and efforts in discussion forums. These include strategies for balancing the demands of large-scale course management with the need for personalized interaction, as well as approaches to leveraging discussion forums as a platform for deeper learning and collaboration.

By bridging the existing research gap, this study offers a novel perspective on the role of instructors in the success of MOOCs. It highlights the critical importance of fostering dynamic and meaningful interactions between learners and instructors, particularly in discussion spaces, and provides actionable insights for improving the design and delivery of MOOCs. These findings have significant implications for the future of online education, particularly in informing the development of more effective and learner-centered approaches to MOOC instruction. Ultimately, this research contributes to the broader conversation about how MOOCs can continue to evolve as a transformative force in education, offering accessible and high-quality learning experiences to a global audience.

5.6 LIMITATIONS

This research presented findings from a sample that was not randomly selected. For random sampling to work effectively, a large population group must be available to create a robust sampling frame. The effectiveness of random sampling lies in its ability to generalize findings across a broad population. However, the demographic for this research was not large enough to support the application of random sampling. As a result, purposive sampling was employed, allowing the researcher to select individuals who fit the specific criteria of the study. Participants in the sample were university students and academic staff from five local universities.

While the findings offered valuable insights into learners' perspectives of the MOOC experience, several limitations of this research must be acknowledged. One notable limitation is the small sample size of 100 respondents. This limited sample may result in a narrow understanding of the learners' experiences with MOOCs, particularly regarding the diversity

of learners in terms of education level, background, geographic location, age, and experience. A small sample size restricts the study's ability to capture the full spectrum of perspectives, potentially overlooking significant variations in learners' experiences and engagement.

Moreover, the voluntary nature of participation introduces potential bias. Participants who opted to take part and provide demographic details via an online survey may differ in key ways from those who chose not to participate. This self-selection bias could mean that the sample disproportionately represents individuals with positive or motivated attitudes toward MOOCs, thereby skewing the findings. Additionally, there is a possibility that some participants provided inaccurate information about themselves, either intentionally or unintentionally, further complicating the reliability of the data.

An interesting avenue for future research would involve exploring the perspectives of a more diverse and larger participant pool. Investigating the experiences of individuals with varied educational backgrounds, levels of digital literacy, and cultural contexts could provide richer and more generalizable insights. For instance, examining how different learner demographics perceive success and completion in MOOCs, compared to traditional metrics employed in higher education, might uncover nuances in engagement and learning outcomes. Such studies could help identify whether engagement in MOOCs fundamentally reshapes learners' definitions of success and achievement, contributing to the evolution of online education models.

In summary, while this research contributes valuable insights into the MOOC experience, its findings should be interpreted within the context of its methodological limitations. Addressing these limitations in future studies by including larger and more diverse samples could significantly enhance our understanding of MOOCs and their impact on diverse learner populations.

CHAPTER SIX

CONCLUSIONS

6.1 SUMMARY OF RESEARCH FINDINGS

Massive Open Online Courses (MOOCs) have transformed the landscape of education, making it accessible to individuals from varied age groups and educational backgrounds. These platforms provide an opportunity to bridge educational gaps, offering flexible, scalable, and often free learning opportunities to people worldwide. The transformative potential of MOOCs lies in their ability to democratize education and foster lifelong learning. However, Although MOOCs have immense potential, they encounter major challenges, such as high dropout rates—often reaching up to 90%—and low learner motivation. Addressing these challenges is crucial for ensuring that MOOCs fulfill their promise of accessible and impactful education.

The high dropout rates in MOOCs can be attributed to several factors, including the diversity of the participant base, asynchronous communication, and the difficulty of addressing varied learning styles. MOOCs attract learners with different educational backgrounds, motivations, and levels of preparedness, which complicates efforts to design courses that meet everyone's needs. Asynchronous communication, while convenient, limits the immediacy of feedback and interaction, which can leave learners feeling disconnected. Moreover, the struggle to accommodate diverse learning preferences further compounds the issue. These challenges necessitate innovative strategies to enhance learner engagement and satisfaction.

Instructors play a pivotal role in shaping the success of MOOCs, yet their contributions remain underexplored. Effective teaching practices, including timely feedback, engaging course design, and fostering peer interactions, are critical to improving learner experiences. However, many instructors face challenges in balancing social and academic support, often prioritizing one over the other. Addressing these issues requires a nuanced understanding of the dynamics between instructor contributions and learner engagement.

This study adopts a mixed-methods approach to investigate the success factors of MOOCs in Malaysia, focusing on learner motivations, engagement, and instructor contributions. The quantitative phase involved 100 purposively sampled participants from

prominent Malaysian universities with active MOOC programs, ensuring diverse academic representation. Data was collected using a cross-sectional questionnaire with 15 questions designed to capture insights into learner motivations, satisfaction, and engagement. The responses were analyzed using SPSS and Google Sheets to identify patterns. Additionally, qualitative interviews were conducted with four experienced MOOC instructors to explore their practices and perspectives. These interviews were analyzed thematically through the Community of Inquiry (CoI) framework, emphasizing teaching presence, cognitive presence, and social presence.

Findings from this study revealed that gamification, effective course design, and community building are critical to enhancing learner engagement and satisfaction. Gamification emerged as an effective strategy, integrating quizzes, videos, and interactive activities that cater to diverse learning styles while making the learning process enjoyable. For many participants, the inclusion of certificates of completion served as a strong motivator, providing tangible recognition of their achievements and incentivizing continued participation. Effective course design was also identified as a key factor in maintaining learner interest. Courses that emphasized relatable content, clear objectives, and avoided cognitive overload were more successful in keeping learners engaged.

Community building played a vital role in fostering a sense of connection and shared purpose among learners. Peer collaboration, discussion forums, and mutual support helped learners feel less isolated, particularly in the asynchronous learning environment of MOOCs. These interactions not only enhanced learner satisfaction but also encouraged deeper engagement with the course material. Instructor contributions were particularly significant in shaping learner experiences. Engaging in discussion forums, providing timely feedback, and fostering peer interactions created a supportive environment that boosted learner motivation. However, the study highlighted disparities in balancing social and academic support. While social interactions are important, aligning them with academic objectives can enhance their impact and foster meaningful engagement.

Despite these strengths, MOOCs face persistent challenges, including disengagement caused by asynchronous communication and the diverse needs of participants. Personalized interventions and predictive models of learning behavior were identified as potential solutions to these issues. Enhanced marketing strategies, greater trust in MOOC accreditation, and

improved instructional design were also recommended to address these challenges. For instance, leveraging data analytics to follow learner's development and offer individualized feedback could help reduce dropout rates and enhance learner satisfaction.

The COVID-19 pandemic accelerated the adoption of MOOCs, highlighting their potential to replace or complement traditional classrooms. The participants of this study conveyed optimism about the future of MOOCs, recognizing the importance of designing courses that cater to diverse learning preferences. Instructors were found to play a crucial role in community building, creating engaging and supportive environments that facilitated learning. Suggestions for further improvement included incorporating relatable questions, diverse learning activities, and practical exercises to enhance learner engagement.

This study also explored the nature of instructor-learner conversations within MOOCs. Most interactions were brief, often limited to a single exchange, with instructors prioritizing social contributions over teaching presence. While social interactions are valuable for building a sense of community, aligning them with academic objectives can enhance their impact on learning outcomes. The study revealed that certain disciplines encourage more prolonged and meaningful discussions, suggesting that course design and content play a significant role in fostering engagement.

The practical implications of this study are manifold. Providing MOOC instructors with insights into effective engagement strategies can help improve learner satisfaction and retention. Recommendations include incorporating concept maps and hypertextual links to facilitate understanding, encouraging hands-on exercises and group discussions to cater to diverse learning styles, and fostering an organizational culture that embraces educational innovation. These strategies can help enhance the adoption and quality of MOOCs in higher education.

In conclusion, the success of MOOCs depends on a combination of engaging course design, gamification, community building, and effective instructor contributions. While MOOCs face challenges such as high dropout rates and diverse learner needs, addressing these issues through innovative strategies can enhance their impact. This study provides valuable insights into

optimizing MOOCs, emphasizing the importance of integrating learner motivations and instructor practices to create inclusive and effective learning environments. Although MOOCs are still in their developmental stages in Malaysia, they hold significant potential to enhance education and improve lives by offering flexible, accessible learning opportunities to a wide audience. By addressing the challenges and leveraging their strengths, MOOCs can continue to transform education and empower learners worldwide.

6.2 RECOMMENDATIONS

The results of this study carry important implications for instructors in MOOCs or those teaching in scaled, open, or informal settings online. Derived from the survey and interviews with instructors, the following recommendations are suggested to improve instructor engagement in MOOC discussion areas:

1. A significant finding is that instructors demonstrate greater social presence than teaching presence. This imbalance implies that learners may not be receiving adequate support for academic needs to navigate the inquiry process. Instructors are encouraged to aim for a more balanced presence that caters to both the academic and social requirements of learners. The study emphasizes that teaching presence primarily centers on facilitation, suggesting that the cognitive process of learners is supported but not adequately challenged. To promote elevated levels of cognitive presence, MOOC instructors should prioritize achieving a balance between direct instruction and facilitation.
2. Another noteworthy finding emphasizes instructors' preference for individualized communication over group interactions, potentially hindering community development. To strengthen group bonds and foster a sense of community, it is recommended that instructors incorporate group references more frequently.
3. Learners appear to show reduced engagement with instructors' social contributions, possibly because these contributions are more focused on socio-emotional aspects and may not align with learners' academic or content-related requirements. Instructors should redirect their social contributions to better align with learners' academic or professional objectives, ensuring greater relevance to the learning process.

4. The research indicates that learners are most involved with contributions that combine both social and teaching presences. In order to boost learner engagement, instructors should aim to deliver a well-balanced blend of teaching and social presences in their contributions.

5. In numerous instances, an instructor's contribution often serves as a cue that the discussion is concluding, which can inadvertently reduce opportunities for turn-taking and collaborative engagement among participants. This premature intervention may disrupt the natural flow of conversation, limiting the depth and richness of the discussion. To promote a more interactive and dynamic exchange, instructors are encouraged to carefully consider the timing of their input. By allowing multiple exchanges to take place before stepping in, they can help sustain the dialogue, encourage diverse perspectives, and create a more engaging and participatory learning environment.

Despite of the study's findings additional research is necessary to gain a more profound insight into the factors influencing success and course completion in MOOCs. To begin with, it is advisable to conduct survey-based research that examines the emerging factors highlighted in this study. Additionally, further investigations can delve into factors stemming from cultural differences among international and local learners and their impact on success and completion in MOOCs. Finally, additional research can explore the perspectives of different stakeholders, including MOOC administrators and instructors, regarding the factors influencing success and completion. Isa Bingöl, 2020.

6.3 FUTURE WORK

The final section of this study is designed to guide students and fellow researchers in identifying and shaping potential directions for future inquiry. This research focused on uncovering the motivational factors that distinguish learners who successfully completed a MOOC, as well as the reasons behind their sustained engagement. While course completion emerged as a key area of interest, it is crucial to recognize that it represents only one facet of learner persistence and success in the broader context of MOOCs.

This study aims to contribute to a more nuanced understanding of what success looks like in MOOCs by advocating for its integration with established measures of student motivation, such as those gathered through traditional survey tools. It acknowledges that MOOCs, as a relatively new and evolving educational medium, offer unique learning

opportunities that often extend beyond the scope of conventional classroom experiences (Deboer, 2014; Whitmer, 2014). For instance, many learners engage in meaningful academic interactions outside the official course environment through private online communities, email conversations, or even in-person meetups, which adds further depth to their learning experience.

One of the key findings highlights that a student's specific interest in the course content is a stronger predictor of course completion than a general enthusiasm for MOOCs as a platform. This insight reinforces the importance of aligning course topics with learners' intrinsic interests.

That said, the study's findings are based on a particular MOOC format, which may limit the scope of their applicability. Therefore, future research should aim to gather data across a wider range of MOOCs, spanning different subjects, institutions, and platforms, to better understand how broadly these patterns hold. Additionally, to explore the influence of cultural and national contexts, researchers are encouraged to examine learner differences within a single MOOC that attracts a diverse global audience, and to compare outcomes across similar MOOCs delivered in various languages. Follow-up interviews with participants could also offer deeper insights and enrich the interpretations of the current findings.

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APPENDIX I: GLOSSARY OF DEFINITIONS

Term	Definition
cMOOC	cMOOCs function on the idea that learning takes place within a network, where participants engage with content, learning communities, and peers through digital platforms such as blogs, wikis, and social media, promoting knowledge development and collaboration.
Connectivism	Connectivism, a learning theory introduced by Stephen Downes and George Siemens, emphasizes the role of networks and digital technology in the learning process., explains how complex learning takes place in today's rapidly evolving digital and social world. In this networked and technologically driven environment, educators should draw inspiration from the ideas of Siemens and Downes.
Gamification	Gamification involves presenting information in an engaging and entertaining way to boost interaction and make learning more accessible. While gamification is valuable in any learning context, it holds particular significance for MOOCs, as the technology used in MOOCs creates unique opportunities for gamifying content that traditional classrooms cannot provide.
edX	Among the various MOOC platforms, edX stands out as an online learning platform offering MOOCs. Founded in 2012 as a non-profit initiative by MIT and Harvard University, edX uses open-source software and hosts numerous free online university courses. It also collects and analyzes user data to advance research on learning mechanisms and improve MOOC effectiveness.
xMOOC	xMOOCs follow a more conventional classroom approach, combining pre-recorded video lectures with quizzes, tests, and other assessments to structure the learning process.

APPENDIX II: QUESTIONNAIRE SURVEY

MOOCs Survey

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This survey is part of a research to identify the success of Massive Open Online Courses (MOOCs). To fulfil the requirements of my research I am looking into the current MOOCs offered in higher education institutes and how they are catering to the different learning styles of student as well as their effectiveness of MOOCs.

1. Current level of study
 - Undergraduate
 - Postgraduate
2. Gender
 - Male
 - Female
3. Institute your attending now
4. How would you rate your familiarity with MOOCs?

Extremely familiar  Extremely unfamiliar

5. Which MOOCs platform have you used?

- iversity.
- Cognitive Class.
- Kadenze.
- Coursera.
- Khan Academy.
- edX.
- Udacity.
- noVoEd
- Futurelearn
- other

6. Which of the following did you use during the MOOCs you participated in?

- Indicate your activities?
- Blog
- Online videos
- Opensource tools/ materials
- In-MOOCs forums
- External forums
- Twitter
- Facebook
- Google +
- Skype
- Others

7. What was your motivation for joining the course?

- They are free
- Interest in the topic
- The course looked really interesting
- Provider is a world class university
- Materials are easy to access
- To improve career prospects
- There is no obligation to complete
- Fitting study time around your life
- To refresh knowledge

6.

8. Which of the following did you use during the MOOCs you participated in?

- Indicate your activities?
- Blog
- Online videos
- Opensource tools/ materials
- In-MOOCs forums
- External forums
- Twitter
- Facebook
- Google +
- Skype
- Others

9. What was your motivation for joining the course?

- They are free
- Interest in the topic
- The course looked really interesting
- Provider is a world class university
- Materials are easy to access
- To improve career prospects
- There is no obligation to complete
- Fitting study time around your life
- To refresh knowledge

10. What features of MOOCs would you like to have in a course to be able to complete course activities easier?

- Openness
- Low cost
- Courses delivered by top tier universities
- Collaborative Learning
- Time Limit
- Other

11. How will you use the knowledge learned during the MOOCs course?

- In personal projects
- University exams
- Personal development
- Work
- Enhance my CV
- Professional development

- Entering job market
- Changing career plans
- Other

12. I feel that I would be able to stay motivated even when the instructor is no online?

Strongly agree —————> Strongly disagree

13. I feel that I will be able to complete my work even when there are distractions?

14. Strongly agree —————> Strongly disagree

15. I feel that prior knowledge of technologies will impact my success in MOOCs

Strongly agree —————> Strongly disagree

16. How many MOOCs have you enrolled in as a learner?

- 1-2
- 3-4
- 4-5
- 5-6
- other

APPENDIX III: INTERVIEW TRANSCRIPT

Interview 1

Name: P1

1. How do you think students will be able to get a proper education by being participants of a MOOC course?

When we look at proper education, we need to look at how an individual can optimize this from the MOOC that is being offered because as we know there are various MOOC platforms that are global such as edX and Coursera, and we also have the local initiatives such as Malaysian MOOCs, as well as the MOOCs developed in other countries such as the Euro MOOCs. It all depends on the how the individual gets the proper education. One of the main advantages is that they are able to have access to wider topics based on their interest as well as what they are studying at the moment whereas before the students were obligated to enroll only in courses decided by the university or the institution they are associated with. Now the students are empowered to enroll in any MOOCs they like which enhances their education experience.

2. The online nature of a MOOC gives its students a certain degree of anonymity, which encourages both constructive questioning and less constructive comments that students might be intimidated to articulate in a face-to-face classroom environment. How do you think this affects the teacher to student relationship in MOOC course? Instructor / learner

When we talk about the relationship or communication between the instructor and students, we have to look at how the MOOC platform operates, we need look at how it being managed because when we look from the context of university-based MOOCs for example IIUM, UTM and UM, the students have their specific questions and are still known to the instructor as oppose to MOOCs that are offered globally such as edX or Coursera, where anonymity is more present. Therefore, students will have less inhibitions because they feel like they are not being restricted by the classroom boundaries and thus feel less shy when posing questions because they feel like they are not being judged. Anonymity helps students become more active to some extent and could have both a negative or positive outcome depending on the student's nature and how they perceive the anonymity in learning.

3. Assuming the same number and caliber of students enrolled, how would you personally be able to engage with them online to the same degree you do in a classroom?

When we talk about MOOCs, we have to understand that one of the distinct factors between MOOCs and the conventional courses is the size of the classes. It is impossible to fully mimic the ambience and student dynamic present in conventional classes however the rapport and support between students and their instructors can be replicated to some extent through monitoring and engaging into peer assisted learning because the students are able to post questions afterwards so it can be synchronous or asynchronous which gives a multi-dynamics communication between the teachers as well as the students. Teachers are able to engage with their students beyond the classroom hours as well as classroom boundaries.

4. What do think can be done to increase student enthusiasm towards course work and interest levels in relation to MOOCs?

One of the main issues in MOOCs is sustaining the enthusiasm of participants. There are so many available MOOC courses, so the drop-out rate is quite high and the students are not forced to complete the course. In my opinion there are several factors that could influence the student's enthusiasm. The first factor is the development of the course. The instructor should ensure that the course is not too draining because some students aren't able to spend too much time on their computer. Another factor to consider is the duration of the course. However, there are some elements that are being encouraged in MOOCs such as gamification or rewards to help reduce the dropout rates. There also some MOOC platforms that offer certifications which might make students feel empowered when receiving a certificate from a reputable institution. These factors will contribute to students' enthusiasm.

5. How do you keep your students motivated throughout the online course?

One way to keep the students motivated is by applying various motivation mechanisms the first is from instructor to students whereby the instructor can keep the students motivated by encouraging them, monitoring them or supervising them. The second is by encouraging peer support learning whereby students are able to collaborate on certain tasks or have discussions with one another.

6. As a MOOC instructor, what features do you think should be made available in the MOOCs platform to help contribute to a more engaging learning environment?

The current trend when it comes to MOOCs is the availability of various types of courses. Right now, there are micro-courses. As an instructor, rather than overwhelming the students, you can take one of the topics as a nano- course or a micro-course. Instructors should also Implement the reward system in their course and be aware of the student's needs in order to make the course more popular. Therefore, it is important for MOOC instructors to create a course that is going to be helpful for students, to encourage their students by giving rewards and not overwhelm them by incorporating too many topics in one MOOCs.

7. What do you think could be added to make education or learning more fun in a MOOC course?

Learning does not have to be one continuous long experience; it can be bite-size. This is one of the main features of MOOCs, it is bite-size, you can choose and fit it to your needs for example if you are a computer science major, does not mean you can't take courses in education. Having this cross-discipline is one way to make the learning ecosystem a lot better. It is a lot like Lego in which you can take, fit in and build without having any restrictions in your learning.

8. Some online courses integrate online elements typically found in MOOCs, such as video lectures, online quizzes, and forum discussions, into their learning activities. From the instructor's perspective, how do these elements help or hurt the learning experience of each participant?

One of issues present in some MOOCs is that videos are taken from other people although the topic is yours, the most important when you are creating MOOC is understanding the

needs of the participants. Online quizzes in open learning have been improved and are no longer about just multiple-choice questions or subjective questions but now include a game element to it. An important thing to remember when it comes to online quizzes is how they help us in assessing the students. They need to have a clear objective. The benefit of having Forum discussions is that a lot of people can contribute, they can agree or disagree on certain topics and sometimes there is going to be a plateau. As an instructor you have to act as a moderator during these discussions and help promote a positive learning experience. You want to encourage students to bring forth new ideas and assist them in voicing out their opinions without going overboard.

9. In the midst of the Covid 19 pandemic, what do you think the future of MOOCs would be?

Online learning has taken a paramount importance during the pandemic everywhere. In this sense the future of MOOCs is very bright because now a lot institutions are also creating their own MOOC courses. This is the reason why MOOCs has very good development opportunities and is now being explored by various educators as well as instructors.

10. What learning styles do you think are the most effective when learning in MOOC course?

There are several learning styles that are effective in MOOCs. Hybrid learning is also another thing to look at. It is when you have the conventional as well as a combination between face to face and online learning, but nowadays because most of the education experiences or learning are taking place at home, the learning style that is best is heutagogy method. This is a student motivated learning which means that students

get to decide how much learning they want to invest their time in. This method encourages students to become active participants as they decide how much they want to learn as they have to take charge. They have to want to help themselves.

11. In your opinion how can we design a curriculum for a MOOC course that can cater for individual's learning style?

One of the elements that is present in a MOOC course is setting the individual's pace meaning the students will decide how fast they want to go from one topic to another. Another way to cater to individuals learning style is by providing them with various methods for example through discussions, quizzes or allowing them to create their own materials. This will show how the students have developed in the course and it is also a way to give students the freedom to use their creativity by using the tools given to them. From here you can see how the students translate the curriculum that is given to them and see each individual's learning style.

Interview 2

Name: P2

1. How do you think students will be able to get a proper education by being participants of a MOOC course?

Firstly, we have to look at what proper education means, as people perceive proper education differently. MOOCs are based on pedagogy which mean that the students learn independently most of the time thus proper education should mean that the MOOCs should be designed in a way that it caters to the number of needs from all

type of learners. Students might be able to fully benefit from MOOCs if they know what they want because MOOCs are based on a self-learning methodology.

2. The online nature of a MOOC gives its students a certain degree of anonymity, which encourages both constructive questioning and less constructive comments that students might be intimidated to articulate in a face-to-face classroom environment. How do you think this affects the teacher to student relationship in MOOC course?

It relates to perception on both sides for example in a conventional classroom setting both the lecture and the students are able to interact with one another and understand each's personalities whereas in a MOOC environment, it's open, so they don't get that perception of each other which might be beneficial to both learners and instructors. Some students are afraid to be judged when answering questions face to face or when people know who they are which makes them feel more confident online. Instructors can also benefit from an online setting as they can find a wide range of creative ways to deliver their lesson as oppose to traditional classrooms.

3. Assuming the same number and caliber of students enrolled, how would you personally be able to engage with them online to the same degree you do in a classroom?

Interaction and engagement in MOOCs are an entirely different story when compared to a tradition classroom. Even though we are still talking about interaction from human to human but the design of the course is pretty much different. One thing that we learned from offering MOOCS is how to make sure the students are actually keeping coming back to the course. It's easier to keep students engaged in a tradition

classroom setting whereas in MOOCs it is much harder to maintain students in engagement as it is different in terms of space as well time. This is where instructional design will come in to play to ensure that the students always keep coming back for more.

4. What do think can be done to increase student enthusiasm towards course work and interest levels in relation to MOOCs?

The introduction of the course has to be in the form of active learning in such that it entices students to want to learn share their ideas, relax and get to know one another by building a learning community. In terms of interest levels, the instructors need to be able to get their students to create their own learning community. They need to talk to each other before talking to the instructor. The instructor can do this by creating a welcoming activity that encourages the students to interact with each other rather than just interacting with the instructor alone. This will surely increase the students enthusiasm not just because of the course but also because of the network they can benefit from.

5. How do you keep your students motivated throughout the online course?

Having a learning community is one way to keep students motivated, but motivation can come in many ways for example creating a digital badge reward system is also a great to motivate students. Some courses offer certification is also a productive way.

6. As a MOOC instructor, what features do you think should be made available in the MOOCs platform to help contribute to a more engaging learning environment?

One thing that I found out during my time in developing MOOCs under the initiative of Malaysia MOOCs is that “students love videos” and they demand that videos be present however, having videos present only is very minimal in terms delivery of the content. I would suggest that there be a feature that can add interactivity in the video. That would be a good way to increase the level of interactivity and also active learning. There are applications that allow you to do so, where a question will pop up within 2 – 3 minutes of the video. It would be great if the platform could do this otherwise it will have to be developed outside the platform.

7. What do you think could be added to make education or learning more fun in a MOOC course?

Every student has a different level of interaction, therefore something that may fun to one student might necessarily be fun for another. We can try to cater to the majority in terms of fun by making them do an activity which allows them to show the fun things around them or the fun things they do at home through resources such as videos. They can produce their own videos for example if they were asked to do a project on green sustainability, they can show themselves gardening. Similarly, to social media since MOOCs includes social learning thus the elements of social media have to be in social learning so that it is fun enough for people. People love social media platforms such as Tik Tok, Facebook and Instagram because they include elements of sharing.

8. Some online courses integrate online elements typically found in MOOCs, such as video lectures, online quizzes, and forum discussions, into their learning activities. From the instructor's perspective, how do these elements help or hurt the learning experience of each participant?

Video lectures, online quizzes, and forum discussions are tools that contribute to the learning process. They can be helpful when used correctly at the right place and time. They are intended to help the students otherwise instructors would go through the trouble of including them. However too much of these can be hurtful as well. We have actually conducted a survey regarding these elements and found out our learners love videos even though they can sometimes be boring. The learners still find videos beneficial as they can pause, forward or rewind it. But having too many quizzes and forum discussion with questions posted without replies could be hurtful. Sometimes we tend to overdo things for examples instructors might include all these tools which might defeat the purpose. They have to be included in the right amount to be helpful.

9. In the midst of the Covid 19 pandemic, what do you think the future of MOOCs would be?

I think MOOCs have a bright future, they have been around for the past decade, although they have been slow in Asian countries because there has been no urgent need for it as it is meant to cater for adult learners. When I first started with MOOCs four years ago, people had this perception that online learning is not as good as face-to-face learning. We introduced blended learning before MOOCs and it had the same challenges. In the midst of the pandemic, people are now turning to online learning but

they are also noticing that online learning is not as easy as it looks there are lot of learning designs involved. MOOCs has a good future as people are now more receptive to online and with then current situation people will flock to it.

10. What learning styles do you think are the most effective when learning in MOOC course?

When developing a MOOC, you might want to cater to as many learning styles as possible. MOOCs is actually considered a buffet of learning materials which show cater to many learning styles. However, I believe that visual learning styles would be the most effective.

11. In your opinion how can we design a curriculum for a MOOC course that can cater for individual's learning style?

This is a crucial question that people ask because curriculum is actually a group of high-level documents. Normally we design the curriculum in such a way that it focuses on the content rather than focusing on the delivery. We want the content to relate back to the learning outcomes and so on. The delivery method has to be clear therefore there is a certain criterion that we should put in our curriculum in terms of delivery because curriculum is not just content but it is also delivery. Some curriculums I have seen now mention blended learning which only caters generally for online courses plus face-to-face classrooms but in blended learning under the category of online learning, it has to be set up in which some of the marks, assessments, activities and content should come from MOOCs. The main purpose of MOOCs for our students is to make them mingle with other students from other countries. The activities have to be defined.

Interview 3

Name: P3

1. How do you think students will be able to get a proper education by being participants of a MOOC course?

MOOC is for everybody and everyone is able to participate. MOOC offers lifelong learning and students can access it not only during university but also after they've graduated.

2. The online nature of a MOOC gives its students a certain degree of anonymity, which encourages both constructive questioning and less constructive comments that students might be intimidated to articulate in a face-to-face classroom environment. How do you think this affects the teacher to student relationship in MOOC course?

The provider needs to learn how to make the pedagogy happen for instances now they have to learn the digital pedagogy. MOOC can offer a digital pedagogy, the adaptation for students and lectures in MOOCs is crucial.

3. Assuming the same number and caliber of students enrolled, how would you personally be able to engage with them online to the same degree you do in a classroom?

You need to have a digital pedagogy for example a lesson in Moodle consists of a step-by-step process that shows how students learn constructively, although the lecture isn't always present, learning still takes place. I believe that MOOCs may replace traditional teaching and learning.

4. What do think can be done to increase student enthusiasm towards course work and interest levels in relation to MOOCs?

First is adaptation. MOOCs can be synchronous and Asynchronous. A MOOCs can be offered anywhere and at any time, and the students will benefit from it if they have the proper mindset. If they are willing to learn, they will benefit from it. Learning is now mixed or hybrid, the students who are dynamic and willing to adapt and lean will benefit.

5. How do you keep your students motivated throughout the online course?

By asking them questions throughout and allowing them to speak. If it is asynchronous, the teacher has to ask constructive questions. It has to be interactive.

6. As a MOOC instructor, what features do you think should be made available in the MOOCs platform to help contribute to a more engaging learning environment?

There are many, for example I am using an iPad, I am able to write, read, scribble and also allow students to contribute to the discussion and make suggestions. They can use digital sticky notes or various apps that promote collaboration.

7. What do you think could be added to make education or learning more fun in a MOOC course?

I think lectures need to produce good digital content, these can be done by producing videos or adding animation to their content.

8. Some online courses integrate online elements typically found in MOOCs, such as video lectures, online quizzes, and forum discussions, into their learning activities. From the instructor's perspective, how do these elements help or hurt the learning experience of each participant?

I believe when you integrate any element it is not always perfect, you have to get feedback from your students or from your colleagues on whether your online course is good or not. The instructor also has to learn from the course of other instructors so they can learn and improve their courses. The students should be able to give immediate feedback about the course.

9. In the midst of the Covid 19 pandemic, what do you think the future of MOOCs would be?

Everyone was shocked when Covid-19 occurred and they didn't know how to handle it. MOOCs weren't used by everyone before but they gained more popularity in the midst of the pandemic.

10. What learning styles do you think are the most effective when learning in MOOC course?

Your course has to be organized properly for example an hour course should be divided into sections, it should have an introduction, exercises, questions, student feedback and include rewards for students.

11. In your opinion how can we design a curriculum for a MOOC course that can cater for individual's learning style?

There should be different instructors that will be able to cater for particular students, For example if a particular set of students are visual learners, they should have an instructor who is able to cater to their learning style.

Interview 4

Name: P4

1. How do you think students will be able to get a proper education by being participants of a MOOC course?

MOOCs itself is a whole ecosystem, you need to have a good checklist from the development of the course up to the supporting staff. The instructors have to make sure the participants are being engaged from the early stages until the end of the course.

2. The online nature of a MOOC gives its students a certain degree of anonymity, which encourages both constructive questioning and less constructive comments that students might be intimidated to articulate in a face-to-face classroom environment. How do you think this affects the teacher to student relationship in MOOC course?

In most of the more developed countries, participants prefer to have direct engagement with their course facilitators. However, it really depends on the demographic of your participants since MOOCs is open to all, it really helps to have the demographical data of participants. If the MOOCs offered included

certification, then it is crucial for the course facilitators to know their students. Even though it's difficult to know each one of your students by heart, it is important to know the whole demographic of students and their learning preferences. That's why it is good to have some integration of learner's identification in MOOCs. In addition to learning styles, you should also focus on their demographic, their interest and their reason for joining MOOCs because that will determine how long they are going to stay in that course for example are they there just for the sake of gaining information or till the end of the course where they want attain certification of the MOOCs itself. Some countries are now focusing on micro-credentials or some chunking of the content. All in all, it is good to have some degree of anonymity but it really depends on the way you approach things and the way you approach the demographic of participants because some students really want that deep engagement with their instructors in order for them to stay motivated till the end of the course whereas some prefer to study on their own. That's why I believe this research will be interesting on seeing how the different learning styles, preferences or the demographic of learners can really affect the quality of engagement between learners and facilitators.

3. Assuming the same number and caliber of students enrolled, how would you personally be able to engage with them online to the same degree you do in a classroom?

I don't think there is a big difference, but the degree of engagement will not be the same as in face-to-face classes. You need to have course facilitators that are really experienced in using online platforms because that is one of the determining factors of how successful your course is going to be.

4. What do think can be done to increase student enthusiasm towards course work and interest levels in relation to MOOCs?

A way to increase student enthusiasm towards course work is by making sure whatever you teach is somehow related to the students themselves, their lives or their country for example if you're focusing on economy, you should ask what they think of the economy of the country. By relating the questions to topics that are of interest to them, you can increase their enthusiasm towards the course because people love to see themselves in something else as they get to answer based on their perspective.

5. How do you keep your students motivated throughout the online course?

I truly believe that each MOOC participant has their own motive for engaging in a MOOC course. The motive itself should be the first thing analyzed by course facilitators, but unfortunately that is not what's done on most MOOC platforms. In the previous MOOCs, facilitators focused more on the content and platform rather than the participants. However, now we have the proper technology, budget and time, and should run an analyses on the participant's demographic and motives to uncover why they joined the MOOC course in the first place.

6. As a MOOC instructor, what features do you think should be made available in the MOOCs platform to help contribute to a more engaging learning environment?

People will learn best if they can touch things, if they can feel and see the impact of what they are learning. If we have the technology, I really recommend some sort of 4-dimensional integration present in the platform because I believe that if the learners had

the ability to feel and touch as well as really see the effect of the things that they learn, it will contribute to their engagement.

7. What do you think could be added to make education or learning more fun in a MOOC course?

I think that the platforms should include some integration of 3-dimensional or 4-dimensional graphics into the classroom to make education more fun.

8. Some online courses integrate online elements typically found in MOOCs, such as video lectures, online quizzes, and forum discussions, into their learning activities. From the instructor's perspective, how do these elements help or hurt the learning experience of each participant?

Firstly, the students must be aware of the purpose of that particular course. The duration of the video mustn't be too lengthy in order to keep students engaged so you must have a good instructional team to ensure that the video is in high quality. In the case of online quizzes and forums, they are something that are compulsory.

9. In the midst of the Covid 19 pandemic, what do you think the future of MOOCs would be?

It depends on marketing. Online learning has been the trend since 2000, but its 2021 now and no one has really pushed forward on how to market online learning as how Apple markets their products. I don't know if people really believe or have faith in online learning for example some people want to learn through MOOCs but don't

want their certificate to state that they are a participant of MOOCs, they prefer to have a conventional degree. It really depends on how good the marketing is and the policy of the country whether they are accredited in MOOCs. I believe the future of MOOCs is bright but it really depends on the marketing team.

10. What learning styles do you think are the most effective when learning in MOOC course?

There is no one learning style in MOOCs because you have massive participants. We should really look at the future generation, some people say the future generation will focus more on-screen time. There should be more videos and audio. I would say that visual and auditory are the best learning styles for MOOCs.

11. In your opinion how can we design a curriculum for a MOOC course that can cater for individual's learning style?

MOOCs are like a buffet of content whereby participants get to choose what they like. In order for you to have a buffet of content, you need to have many content developers as well as instructional designs. If you have the money, time and technology, you will be able to design a curriculum for a MOOC course that can cater for individual's learning style.