UNDERSTANDING STUDENT PERSISTENCE IN MASSIVE OPEN ONLINE COURSES (MOOCS): AN EVALUATION STUDY

by

Estella Y. Chen

A Dissertation Proposal Presented to the
FACULTY OF THE USC ROSSIER SCHOOL OF EDUCATION
UNIVERSITY OF SOUTHERN CALIFORNIA
In Partial Fulfillment of the
Requirements for the Degree
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2017

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ABSTRACT

The use of Massive Open Online Courses (MOOCs) has been viewed as a transformational approach to increase educational opportunities to a global audience. However, low persistence rates have been highlighted as a major criticism. Evidence shows that only a small percentage of MOOC participants complete their courses and little is understood about the specific MOOC design and implementation factors that influence retention. This study reports a survey of 696 participants who were enrolled in Mandarin Chinese language MOOCs. Clark and Estes (2008) gap analysis was utilized to investigate the knowledge, motivation, and organizational assumed causes of persistence in MOOCs. Findings demonstrated that teaching presence significantly impacts MOOC participants' perspectives and the success of the course itself. The design of MOOC course content was also found to be a significant predictor of MOOC participants' persistence. Understanding what institutional, course, and student characteristics are related to student success in this relatively new educational modality is important to increasing student retention and success.

ACKNOWLEDGMENTS

Time passes very fast. I can't believe that I graduated twice from USC Rossier! I started the program simultaneously with my first-time entrepreneurial initiative nearly two years ago. It has really been a life-changing decision. Many times, I had serious doubts about my path moving forward. Whenever I thought I couldn't go any further, my determination to see it through and plain stubbornness fueled me again and again. I truly appreciate the Rossier faculty members for their involvement and assistance with my dissertation; especially Dean Gallagher's time and feedback, and Professor Gallagher's insight and editing. Special thanks to my chair, Dr. Mark Robison, for his patience and clear guidance as always. This has been the absolutely perfect combination of the right timing, program, and people to work with.

Grandma, I know you can still see me from Heaven and I know you are, and always be, proud of me!

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CHAPTER ONE: INTRODUCTION

Massive Open Online Courses (MOOCs) have drawn a great deal of attention since 2008 when the first MOOC appeared on the world scene (James, 2017; Spector, 2017; Milligan & Littlejohn, 2017; Stich & Reeves, 2017; Loizzo & Ertmer, 2016), the rapid rise of MOOCs, however, challenges the status quo regarding traditional face-to-face instructional models (Hone & El Said, 2016). MOOCs have shown to be a disruptive innovation in that people who can access the Internet can access education anytime, anywhere (Lee, 2017; Davis, Jivet, Kizilcec, Chen, Hauff, & Houben, 2017; Simpson, 2017). MOOCs have quickly become popular with more than 1.71 million course entries being provided through three dominant platforms: Udacity, Coursera, and edX for 1.03 million participants within the first two years of launch (Deng, Benckendorff, & Gannaway, 2017; Dennis, 2017). However, a 95% attrition rate suggests that MOOC participants are generally more likely to enroll in courses without finishing them than to pursue their completion (Ho, Chuang *et al.*, 2015).

The focus of the study was to examine the factors contributing to a high rate of retention in a MOOC, as the participants' engagement is crucial to their success in online education. This is due to participants being expected to be more self-disciplined, self-directed, and self-motivated than students in traditional brick-and-mortar venues. Furthermore, the study attempted to understand the circumstances that contribute to this MOOC's success in Mandarin language learning, and to evaluate the factors that contributed to the MOOCs high retention rate. In doing so, this study examined the knowledge, motivation, and organizational influences that underpin MandarinX's high completion rate. It also identified ways to extend this success into future MOOC designs so as to advance the MOOC community.

Background of the Problem

There have been discussions among researchers, educators, and practitioners about whether MOOCs may be effective and offer a high enough quality program of study to replace some of the coursework offered at universities, or if MOOCs can be appropriately incorporated into flipped classrooms or blended learning (Thai, De Wever, &Valcke, 2017; Huang, Lee, &Dugan, 2017). There has been prolific research on factors that lead to an effective MOOC from participants' perspective (Alario-Hoyos, Estévez-Ayres, Pérez-Sanagustín, Kloos, &Fernández-Panadero, 2017; Austin, 2016; Cunningham, 2017; Bonk & Lee, 2017; Davis et al., 2017; Jiao, Yang, Zhong, & Ren, 2017; Nagrecha, Dillon, & Chawla, 2017; Salmon, Pechenkina, Chase, & Ross, 2016; Spector, 2017). Studies have identified factors that impact students' success in MOOCs. The factors include their technology, pedagogy, content, usability, assessment, collaboration, and interactivity. The degree of networking opportunities was pointed out to be the most important dimension among the factors identified above. Social networking helps enhance the engagement of online courses. In addition, students have indicated that they value relationships built during their online courses, in which they can practice and seek help from peers (Gamage et al., 2015; Jiao et al., 2017). Although instructors' roles within MOOCs may differ in varied institutional contexts where they can perform communication skills face-to-face, research suggested that MOOCs with more networking opportunities, where participants can gain more engagement through participation, are most effective (Cruz-Benito, Borrás-Gené, García-Peñalvo, Blanco, & Therón, 2017; Ross, Sinclair, Knox, Bayne, & Macleod, 2014).

Some of the weakest aspects of MOOCs shown by Bali (2014) in surveys and observations of four MOOCs on Coursera were that participants tended to take a course as a

hobby, rather than as a learning experience equivalent to a face-to-face course. Other weaknesses mentioned include participants feeling that they were lost or neglected if the instructor or the course team did not provide timely feedback due to MOOCs' large numbers of students.

Furthermore, students sometimes have different interests than the instructor's focus. Students may also have other goals that conflict with those of instructors or even themselves (Ambrose, Bridges, Lovett, DiPietro, & Norman, 2010). Given that some MOOC courses have higher completion rates than others, there is a need for best practices that enhance learner persistence in the MOOC learning experience. The identification of these factors may then drive more MOOC participants to successful completion.

Importance of Addressing the Problem

MOOCs are the latest online learning initiative to attain widespread popularity in many countries. Despite the critiques of low completion rates, MOOCs have yielded transformational opportunities of teaching, learning, and researching. Due to the diversity in education, MOOCs serve a unique opportunity to implement and explore new pedagogy (Daniel, 2012; Ko & Rossen, 2017). MOOCs can also be a great environment not only to develop and test new online teaching pedagogies, but also to understand diversity and better support diversity in education (El-Hmoudova, 2014). It is imperative that MOOC pedagogy be explored by educators and educational institutions, since video lectures are utilized as the main channel for delivering knowledge and course content (Ko & Rossen, 2017). Studying MOOCs can help decipher how millennials perceive education and learning (Dalipi, Yayilgan, Imran & Kastrati, 2016).

In addition, MOOCs bring benefits to society, and their massive database of learner analytics help understand the impact of this revolutionary online learning system on everyday users, as well as on employee training in corporations (Breslow et al., 2013; Daniel, 2012; Dellarocas & Van Alstyne, 2013; Martin, 2012). A recent survey revealed that 22 % out of 525 business organizations use MOOCs as part of their learning and development program (Reiser, 2017). Although the enterprises have not yet developed their own MOOCs, they often encourage employees to enroll in MOOCs to gain skills and knowledge that will enhance individual performance (Head, 2017).

Alraimi, Zo and Ciganek (2015) explained that two significant indicators influencing a substantial percentage of the intention to continue using MOOCs are the reputation of an institution and its openness. Participant intention is an important concern, because most MOOC completion rates are substantially lower than those found in traditional online education courses (Hew & Cheung, 2014). Only learners' own goals drive learning in MOOCs (Masters, 2011). The primary goal of this study was to analyze and understand why a particular MOOC provider, MandarinX, has high retention rates. The quality of MandarinX MOOCs education and an assessment of student work upon completion of a MandarinX course have yet to be fully discovered or resolved.

Understanding why students persist or not could also help optimize educational resources and save on the cost of logistics (Engle, Mankoff, & Carbrey, 2015). Wang and Baker (2015) indicated that many students soon, however, saw that this would not work if they took department-based courses, because the workload in their major was heavy, and there were conflicts in their schedules. MOOCs can provide time flexibility in a university course framework. For example, students enrolled in MOOCs can manage their time by

taking courses which offer flexibility. Universities have also been encouraging their students to pursue other fields of expertise besides their majors in order to promote interdisciplinary interests. Some flagship Western universities such as Harvard and Stanford University have been advocating the use of MOOCs as a means of enhancing teaching and learning efficiency in higher education (Lombardi, 2013).

Organizational Context and Mission

MandarinX is an organization dedicated to providing a premier Chinese language learning experience online through partnership with edX – a Massive Open Online Course (MOOC) provider founded by Harvard University and Massachusetts Institute of Technology. As of December 2016, MandarinX has experienced high demand with an enrollment of 133,281 learners from 202 countries across four in-house designed and developed MOOC courses. They are Basic Mandarin Series: Level One, Two, Three, and Mandarin Chinese for Business. MandarinX's mission is to do the following: (1) provide an active, online-language learning environment that is conducive to language acquisition through strong learn-learner and learn-instructor interactions; and (2) bridge the gap between cultures by introducing different facets of Chinese life, with corresponding materials.

To create MandarinX courses, an interdisciplinary team of professionals was formed from fields of Chinese linguistics and Teaching Chinese as a Second Language (TCSL) and instructional design and media from top universities: Beijing University, Georgetown University, Indiana University, National Taiwan Normal University, Stanford University, and Teachers College at Columbia University. MandarinX courses are also reviewed with the assistance of faculty at the Massachusetts Institute of Technology (MIT) Chinese Language Program.

Organizational Performance Status

The course completion rate of MandarinX learners averages 86% for each of the six, six-week courses. The completion rate is significantly higher than the typical MOOC average completion rate which ranges from 5% - 10% (Davis et al., 2017; Höfler, Höfler, Zimmermann, Zimmermann, Ebner, & Ebner, 2017). The high completion percentage phenomenon is even more notable considering that 55.8% of MOOC participants access less than half of their course material (Nagrecha et al., 2017). MandarinX aims to offer a six-level basic Mandarin MOOC series targeted at learners with no Chinese learning background and a business-oriented Chinese MOOC series caters to business travelers who need knowledge of culture and tradition to sharpen negotiation and communication skills while being exposed to Chinese business markets. The latter course, with its business slant, is a pioneering language MOOC focused on practical use, in contrast to business-oriented classes at institutions such as the University of Pennsylvania and MIT which tend to be conducted on campus rather than virtually.

Organizational Performance Goal

The organizational goal is that by September 2018, MandarinX will have developed six levels of basic Mandarin MOOCs and two business-oriented Chinese MOOCs, which ultimately can be implemented to expand the scope of university course framework. These combined efforts will triple the current enrollment to more than 500,000. The vision for MandarinX is to offer a more complete Mandarin learning system by cooperating with some of the most renowned universities in North America, East Asia, and Europe. Aside from these objectives, one of the organizational performance goals is to maintain and increase the completion rate among MOOCs. In order to have a solid understanding of what has worked

for the current courses, this study examined students' experiences further so the organization can repeat or identify ways in which the completion rates can be improved and achieve the organizational goal.

Description of Stakeholder Groups

There are several stakeholder groups that are critical to a MOOC's success. Online education revolves around convenience, which is what attracts people (Lee, 2017). However, well-structured courses with well-produced videos supported by the instructor and teaching assistants are fundamental elements of successful MOOCs (James, 2017; Ko & Rossen, 2017; Simpson, 2017). The instructor, who conducts the course, encourages learners to discuss the lessons in the discussion board and constantly interacts with participants (Garg & Paepcke, 2017; Jiao et al., 2017). This instructor involvement has been demonstrated to be a key factor in maintaining a high completion rate (Poquet, Dawson, & Dowell, 2017). Therefore, the four stakeholder groups examined in this study will be students, course development teams, teaching assistants, and the instructor(s).

Students enrolled in a MandarinX six-week language course are expected to complete all the online video courses and quizzes and successfully complete the final exam. The course and its requirements are completed at each student's individual pace. Students might arrange themselves differently. For example, students may voluntarily form their own online study groups across regions, countries, or time zones for practicing pronunciation of vocabulary. Course development teams design the course by covering the fundamental knowledge needed to reach course outcomes and produce high-quality instructional materials. A successful MOOC experience requires a high degree of teamwork and collaboration among all individual stakeholders.

Teaching assistants have the knowledge required for a given course and help facilitate online forums and discussions. They take three shifts in a 24-hour period to attend to students in different time zones. How they respond to student questions and inquiries can boost participation.

Stakeholder Groups' Performance Goals

The following are the stakeholder groups' performance goals (each group functions differently when setting up a successful MOOC).

Table 1

Organizational Mission, Goal, and Stakeholder Performance Goal

Organizational Mission		
MandarinX aims to offer a participatory online language learning environment that is conducive to language acquisition.		
Organizational Performance Goal		
By September 2018, MandarinX will have endeavored to provide six levels of basic Mandarin MOOC's (accredited as university Chinese course credits) as well as two business-orientated editions and will be collaborating with distinguished universities from North America, East Asia, and Europe.		
Students/ MOOC Participants	Course Development Team	Teaching Assistants
By September 2018, students will complete every lesson, actively respond to other students' questions, and provide the course development team with feedback/information about their individual needs.	By September 2018, course development team will keep producing highly-rated videos with scaffolded content and online interactive exercises/quizzes. Courses will be implemented to expand the scope of university framework.	By December 2018, teaching assistants will administer one-on-one tutoring sessions while integrating pronunciation skills into the pre-recorded video lessons.

Stakeholder Group for the Study

Generally, MOOCs have been criticized for low completion rates over the past few years despite high enrollment (Austin, 2016; Spector, 2017). Considering the fact that enrollees are from diverse cultural backgrounds, motivation may vary accordingly. Therefore, the key stakeholder group will be students/MOOC participants. Their persistence in completing a six-week based language MOOC is important to study different perspectives to discover the underlying aspects of the MOOC that have worked in producing high completion rates.

Purpose of the Project and Questions

The purpose of this project was to evaluate the features that have enabled the six-week MOOCs provided by MandarinX to achieve a completion rate of 86% compared to the 5% - 10% average for typical MOOCs. The analysis focuses on student knowledge, motivation, and organizational influences related to achieving this organizational goal. For practical purposes, the stakeholders which this analysis examines are participants.

The research questions for this study are:

1. What are the knowledge, motivation, and organizational influences that underpin MandarinX students' high completion rate?
2. What knowledge, motivation, and organizational assets would extend this success into future MOOC design?

Conceptual and Methodological Framework

Clark and Estes' (2008) gap analysis utilized evidence-based research in the development of organizational solutions by identifying performance gaps in organizations and was adapted for evaluation analysis as this study's conceptual framework. The

methodological framework was a quantitative case study with statistics and qualitative reported quotes. Assumed knowledge, motivation, and organizational causes were generated based on personal knowledge and related literature. These evaluations were validated using surveys, interviews, observations, and document review. Research-based solutions were recommended for future implementation.

Definitions

- *MOOCs:* Massive Open Online Courses. Fully online courses scaled to enable an unlimited number of student registrants. Faculty members both design and lead courses. This replaces the master design concept and leverages the natural scaling power of online tools.
- *cMOOCs*: Principals of connectivist/networked-based learning. Knowledge creation, content, context, connections (open learning and online network practices). Emphasis on creation, creativity, autonomy, and social network based learning. Strong focus on online discussion. Instructor led.
- *xMOOCs:* Behaviorist pedagogy. Knowledge duplication, information transmission, computer market assignments, and peer assessments. Emphasis on lecture video and multiple-choice tests (video-taped lectures appear online). Instructor facilitated.
- *Completion Rate*: A percentage which reflects the total number of initial enrollees divided by the number of students who complete the course.
- *Retention:* Students who persist in completion of their educational goals
- *Blended/Hybrid/Flipped*: Generally applied to the practice of using both content and instruction via digital and online media and in-person learning experiences. Combines face-to-face with online in a structured format. Objective is to maximize use of face-to-face time. Students prepare for the class using online tools. The instructor then uses class time to facilitate class participation and discussion.
- *Coursera:* Founded by Stanford computer science professors Andrew Ng and Daphne Koller, with 62 university partners, including Brown, Duke, Princeton, Columbia, and

Stanford, and 2.8M enrollments. Courses are provided in four languages. One of the main MOOC platform providers (Coursera, 2017). Course structure consists of fixed terms, with automated assessment, lectures, and quizzes.

- *edX:* Founded by MIT and Harvard, added UC Berkeley and seeking additional partners; 122K students in pilot course, one of the main MOOC platform providers. Course consists of fixed terms, automated assessment, Pearson testing centers. (edX Insights, 2016)
- *Udacity:* Founded by Sebastian Thrun from Stanford. Focuses on STEM and industry; 160K students in pilot course; one of the main MOOC platform providers (Udacity, Inc., 2017). Course structure is self-paced, automated assessment, Pearson testing centers.

Organization of the Study

Five chapters are used to organize this study. This chapter provided the reader with key concepts and terminology commonly found in a discussion about MOOC pedagogy and how to retain learners' attention. The organization's mission, goals, and stakeholders, as well as the initial concepts of gap analysis adapted to needs analysis were introduced. Chapter Two includes a review of current literature surrounding the scope of the study. Topics of completion rate, MOOC pedagogy, social media, and preparation for faculty to teach MOOCs will be addressed. Chapter Three is a description of the assumed needs for this study as well as methodology, comprising of participant choice, data collection, and analysis. In Chapter Four, the data and results are assessed and analyzed. Chapter Five provides

solutions based on data and literature for addressing the needs and closing the performance gap as well as recommendations for an implementation and evaluation plan.

CHAPTER TWO: REVIEW OF THE LITERATURE

This chapter provides a general review of where MOOCs have been viewed as a prominent trend in higher education with the rise of no brick-and-mortar, technologies used in MOOCs, and credit transfer from MOOCs. Next will come a discussion of instructional design for high-quality MOOCs, including video lectures for MOOCs, pedagogical strategies for online courses, and structured course content. Following that will be a review of factors impacting MOOC completion rates, such as student characteristics, student sentiment, teaching presence, and interactions through social networking. This chapter then concludes with specific knowledge, motivation, and organizational factors affecting organizational management.

MOOCs as a Prominent Trend in Higher Education

No Brick-and-Mortar

Massive Open Online Courses (MOOCs) have been transformative, becoming a part of the educational delivery system at the higher education level in the United States and around the world since 2012 (Kent & Bennett, 2017). In higher education, the data regarding the use of MOOCs is surprising, given the large number of major institutions that have teamed up to help create MOOCs (Ingolfsdottir, 2016). MOOCs have the capacity to host thousands of students simultaneously with just one instructor while formal colleges can only host hundreds of students (Siegel & Carchidi, 2016). There are no entry requirements, no admission applications, and no tuition fees. Everyone can "attend" the class without being formally admitted to an educational program. MOOCs help promote the globalization of higher education by lowering barriers to entry (Loeckx, 2016). As such, MOOCs present no barriers to tertiary level study (Head, 2017; Whitehill, Mohan, Seaton, Rosen, & Tingley,

2017). Although MOOCs do not have a long history, they have been viewed as disruptive and threatening traditional face-to-face instructional formats (Dalipi, Yayilgan, Imran, & Kastrati, 2016). MIT began posting course materials online with the launch of its Open Course Ware in 2001. Stanford University took open courses to a new level when 60,000 students enrolled in its open Artificial Intelligence course. Elite universities have since rushed to create MOOCs. These MOOCs are dominated by the three major providers: Coursera, edX, and Udacity. Coursera and Udacity grew out of Stanford University and is backed by venture capital. EdX is a joint project of Harvard University and MIT.

Each year, MOOC providers become better at offering courses that appeal to students who have neither the time nor resources to attend brick-and-mortar institutions. As of this year, there were an estimated 4,200 MOOCs offered by over 500 universities, and the number of students who have signed up for at least one course was estimated to be 35 million since 2015 (Dennis, 2017). About 8% of Coursera's enrollment comes from India. For edX, although one-third of the participants are from the United States, an estimated 2% of participants are from developing countries (edX Blog, 2017). The U.K.-based MOOC platform FutureLearn has an estimated three million users (Manathunga, Hernández-Leo, & Sharples, 2017). MOOCs are social relationships and provide a large space where people can network with or without seeing each other in very personal ways, but MOOCs are connected through physical computers and networks, tied together by running codes. The new institutional form, no brick-and-mortar, represents the software, highlighting and supporting certain types of interaction (Nakano, Padua, & Jorente, 2017).

Technologies Used in MOOCs

Technology is changing rapidly in the area of online course delivery as seen with the rise of MOOCs. All MOOCs operate mostly on the Internet. Although some MOOCs have been designed to incorporate in-person meetings of students, all materials and interactivity within a course generally are facilitated online, including virtual office hours with the instructor. MOOCs rely on a combination of digital applications to achieve intended functions which serve to deliver instructor's lectures and course content to participants, interact with participants and the instructor, and facilitate discussions and activities that promote learning (Ruipérez-Valiente, Muñoz-Merino, Gascón-Pinedo, & Kloos, 2017). The digital applications include:

Learning Management Systems. Learning management systems (LMS) are web-based applications that are designed to manage and deliver course content (e.g., background readings, links to websites, images, relevant videos or audio, quizzes, exams, and even automatic evaluations) to participants within an online course. MOOCs consist mainly of video-based lectures and reading materials that can be accessed at a student's own pace within the timeframe of a course. It is important to regularly remind participants of new content uploads or certain events through email, posts, or other means of communication.

Learning Analytics. Learning analytics are typically employed in learning management systems, including analyses on how long participants view materials, the paths they take to complete a task, how frequently and for what purpose they communicate with other participants, and which resources they find valuable (Ruipérez-Valiente et al., 2017). MOOC participants are also provided with progress tracking, which are digital graphics that

are "awarded" to participants to indicate completion of course objectives or the degree to which they have participated.

Credit transfer from MOOCs

The new "remote education" application of technology facilitates participation of students from different geographical regions. Many universities use technology to offer alternate instructional formats, providing students with more flexible learning options. The University of Leeds and the Open University have agreed to accept FutureLearn MOOC courses for credit toward a final degree or MBA (FutureLearn, 2017). A reported 440,000 students registered to take the single-session MOOC "Understanding IELTS: Techniques for English Language Tests." which FutureLearn, in collaboration with the British Council, offered in 2016 (FutureLearn, 2017). In partnership with edX, Arizona State University's Global Freshman Academy (GFA) allows students to take their entire freshman year of courses online for credit. The program is the first of its type offered by ASU (Stone, 2016; Byrne, 2015).

In Brazil, Unopar University offers low-cost degree courses by implementing online materials and weekly seminars. Minerva University, based in San Francisco, utilizes technology to lower tuition fees (around USD 10,000 a year) to compete with the best Ivy League colleges (usually up to USD 60,000). Students spend some of their program doing online lectures while living outside the United States, which also proves to future employers that they can manage finances while earning a viable degree (*The Economist*, 2014).

The demands of university students and faculty for technology have been increasing (Green & Gilbert, 2010). Some universities are already adding digital classes to their syllabi (Baker, Nafukho, McCaleb, Becker, & Johnson, 2016). As digital courses have become more

entwined with existing curricula, over half of 4,500 students at MIT take a MOOC as part of their degree requirements (Lazaroiu, Popescu, & Nica, 2016). The John F. Kennedy University in California, which offers courses mainly for mature students, has started to accept edX MOOC credits towards its degrees (*The Economist*, 2014). Some universities even collaborate with MOOC providers and enterprises in order to improve the value of higher education. For example, Georgia Tech offers an online Masters program in computer science in collaboration with Udacity and AT&T (Hashmi, 2015).

Instructional Design for High-Quality MOOCs

Video Lectures for MOOCs

Researchers demonstrated that the length, composition, and production value of MOOC videos are critical by using data from millions of MOOC video watching sessions (Herala, Knutas, Vanhala, & Kasurinen, 2017; Malaga & Koppel, 2017; Ou, Goel, Joyner, & Haynes, 2016; Thornton, Riley, & Wiltrout, 2017). The peak length that any video is watched is around 6 minutes, regardless of full length of a particular video segment (Chew, Cheng, & Chen, 2017). In addition, production value of a video, such as the quality of filmmaking, lighting, and scripting, was related to achievement (Crook & Schofield, 2017; Rana, Besche, & Cockrill, 2017). However, large investments in film quality did not make a difference, suggesting a middle ground in production quality (Guo et al., 2014).

A common practice of MOOC course content structure is segmenting the course into sub-sections, referred to as weekly video lectures (Chew et al., 2017). There are several modules in each section, similar to topics in each lecture session. Some MOOCs split the course structure further into smaller parts within each section, yielding shorter video lectures in each lesson on module. This provides learners with better navigation of the course flow.

Two strategical approaches to segmenting video lectures are part-by-part video segmenting and using timestamps in the video lectures (Chew et al., 2017).

Part-by-Part Video Segmenting. The complete video recording is segmented into smaller portions according to the topics covered in the course content. A table of the course content gives learners an overview of the course and allows instructors to evaluate the structural frame of the course.

Using Timestamp. The video recordings are not segmented into smaller clips. Instead, the whole recording is uploaded with additional timestamps embedded within the video, indicated with labels or captions of the video partition.

Pedagogical Strategies for Online Courses

Pedagogy in designing online courses is critical as students do not have the benefit of merely raising their hand and asking the teacher any time a question arises. In order to provide more examples, resources, and guidance on how concepts can be incorporated into course projects, Ou et al., (2016) proposed several pedagogical strategies to be integrated in designing videos for MOOCs to create a coherent and dynamic instructional structure in the video lesson and keep every video lesson short and concise. Students in an artificial intelligence course from the Georgia Tech Online Masters of Science in Computer Science program agreed that such dynamic and concise exercises kept them engaged and strongly believed that the video lessons were valuable in helping them learn.

Clear Guidance. Video lessons are organized based on the structure of the course topics, and students are provided with a schedule articulating when they should finish studying each of the lessons. All videos are available to the students and can be self-paced (Malaga & Koppel, 2017).

Learning by Examples. Video lessons present real-world tasks and authentic scenarios. Examples are tied with a particular practical problem. Each video lesson also includes several interactive exercises, one for each main concept from the course (Crook & Schofield, 2017).

Personalized Learning. Video lessons are equipped with teaching assistants to facilitate discussions, monitor peer assessment, and provide timely feedback on student responses to assignments or course content questions (Malaga & Koppel, 2017).

Structured Course Content

Although interactions with the instructor of MOOCs are a significant predictor of MOOC retention, MOOC course content also has been a significant predictor of MOOC retention. Hone and El Said (2016) noted that these constructs explained 79% of the variance in MOOC retention. Instructional strategies for designing solid course content include opportunities for students to learn from each other or adapting content to more simple activities and materials that are still challenging to students (Macleod, Sinclair, Haywood, & Woodgate, 2016). Therefore, fully-structured course content should be emphasized when creating MOOCs (Smith, Caldwell, & Richards, 2017). The quality of course content should be used as the primary method of encouraging long-term student involvement in the course and boosting student persistence throughout the course (Jaggars & Xu, 2016).

Factors Impacting MOOCs' Completion Rates

Student Characteristics

MOOCs require learners to have good learning habits, including being autonomous and self-regulated. Greene, Oswald, & Pomerantz (2015) categorized student characteristics

as one of the major reasons for dropout rates in online education. They found that participants with prior experience of MOOCs were less likely to drop out, as were older and more educated participants. Self-rated commitment to completing the course was the most statistically significant predictor (Hone & El Said, 2016).

Research found that students' backgrounds predicted their performances in MOOCs (Hew, 2016). "Student characteristics" refers to student background, previous academic achievement, experience related to the course content, and skills dealing with tasks and time management. Motivation, despite being a psychological characteristic, is also part of these student characteristics (Greene, Oswald, & Pomerantz, 2015; Whitehill, Williams, Lopez, Coleman, & Reich, 2015). Students have greatly varying characteristics due to open enrollment and no prior student selection criteria (Agarwal, 2014). Thus, diagnosing student characteristics before the course is impossible, especially considering that a MOOC is an environment that anyone in the world can sign up for, with enrollment for some courses exceeding 50,000 students.

Student Sentiment

Robust evidence has shown that student emotions and achievements are reciprocal effects (Pekrun, Lichtenfeld, Marsh, Murayama, & Goetz, 2017). Typically, positive emotions such as enjoyment of learning show positive links with achievement, while negative emotions such as test anxiety show negative links (Ben-Eliyahu, Linnenbrink-Garcia, & Putallaz, 2017; Broadbent, 2017; Pekrun & Linnenbrink-Garcia, 2014; Zepke, 2017).

Furthermore, positive sentiment expressed in relation to the course instructor had the greatest positive effect on likelihood of completion; sentiment expressed in relation to assignments and course material also had a positive effect (Alexander & Grossnickle, 2016; Broadbent, 2017; Zepke, 2017). Positive attitudes and feelings towards the learning process usually are triggered by learning motivation (Richardson, Maeda, Lv, & Caskurlu, 2017; Topala & Tomozii, 2014). Students' satisfaction is strongly associated with students' motivation.

Emotional support from faculty and friends and learners' self-efficacy were also important factors for students who persisted in remote learning (Kangas, Siklander, Randolph, & Ruokamo, 2017; Ross et al., 2014; Shepherd, Bolliger, Dousay, & Persichitte, 2016). Satisfaction in life or a program is also a construct that affects engagement (Wong, 2017). Lin (2012) found that science and engineering graduate students showing dissatisfaction with their graduate life had low motivation toward what they were studying. Other studies indicated that learning satisfaction is influenced by factors such as content, location, facilities, teaching styles, individual characteristics, and students' participation (Kangas et al., 2017). Academic ambiance also has positive effects on students' level of satisfaction with learning.

Teaching Presence

Although Joy and Kolb (2009) agreed that learning preferences and styles were shaped by the influence of individual cultural dimensions, Willingham (2008) argued that learning styles do not exist. He proposed that students are more successful if teachers focus on teaching style rather than about student learning styles. Specifically, teaching presence, or

the instructor's personality, presentation skills, and delivery methods greatly influences student perception of the course (Huang et al., 2017; Wang & Antonenko, 2017). MOOC pedagogy has drawn attention among educators and researchers. On account of the massive enrollment in MOOCs, instructional design should be structured in such a way as to ensure that there are interactions with peers and with the instructor (Shepherd et al., 2016; Boettcher & Conrad, 2016; Ross et al., 2014).

Udacity's Mr. Thrun admits that "MOOCs' pedagogy needs to improve very quickly," adding that MOOC participants "needed more personalized support to use a university-level online course" (*The Economist*, 2014, Finance 101, para. 15). An analysis of instructional design quality conducted by Margaryan, Bianco, & Littlejohn (2015) indicated that the majority of MOOCs scored poorly on most instructional design principles. However, most MOOCs scored highly on organization and presentation of course material. Thus, pedagogy tied with teaching presence significantly affects student persistence (Bowers & Kumar, 2017; Wang & Antonenko, 2017); even instructor enthusiasm or the university/institution are reasons that keep learners engaged and persisting in their chosen courses. As a result, pedagogy and teaching styles need to be explored when designing materials and activities in MOOCs in order to prevent a drastic decrease in learners' activities in distance courses (Boettcher & Conrad, 2016; Shepherd et al., 2016).

Interaction Through Social Networking

Interaction through social networking has been considered an important means to enhance communication in the collaborative process (Duval, Sharples, & Sutherland, 2017; Zheng, Han, Rosson, & Carroll, 2016). Current technology familiar to today's students such as Facebook, Skype, Twitter, and other networking tools should be implemented in MOOCs to promote learners' engagement by encouraging them to collaborate in small groups based on interests, and to support and learn from each other (Flavin, 2017; Veletsianos, 2017; Liu, McKelroy, Kang, Harron, & Liu, 2016). Student interactions with peers and the instructor in the course influenced persistence (Ostashewski, Howell, & Dron, 2016; Zheng et al., 2016). Online discussion forums have shown to be effective methods for students to get feedback and communicate among others in order to compensate for the frequency of usually one instructor to many thousands of students in MOOCs (Smith et al., 2017; Manathunga et al., 2017; Reiser, 2017; Ostashewski et al., 2016). Although discussion forums can have low levels of student participation and large amounts of low quality posts (Bouchet, Labarthe, Bachelet, & Yacef, 2017; Balakrishnan, Teoh, Pourshafie, & Liew, 2017), they are shown to be valuable in enhancing learning and understanding for those who participated (Flavin, 2017; Ng, Lam, Ng, & Lai, 2017; Ostashewski et al., 2016).

Students should be encouraged to actively participate in discussion forums or activities due to the high volume of students enrolled in MOOCs (Ostashewski et al., 2016).

Communication through social networking tools or events becomes a necessary medium for students to interact with peers and support each other (Flavin, 2017; Cruz-Benito et al., 2017; Ostashewski et al., 2016). Further research showed that student likelihood of being at risk of dropping the course or suffering from low motivation could be detected based on course discussion forum posts via linguistic analysis (Ng et al., 2017; Wise, Cui, Jin, & Vytasek, 2017).

MOOC Participants' Knowledge, Motivation, and Organization Influences

In this section, the knowledge, motivation, and organization (KMO) influences that might impact the stakeholder's goal of completing a six-week Massive Open Online Courses (MOOC) will be examined from a theoretical perspective and by reframing specific previously reviewed literature that is relevant to the knowledge, motivation, and organization factors.

Knowledge and Skills

The framework evaluating factual, conceptual, procedural, and metacognitive knowledge suggested by Anderson and Krathwohl (2001) will be implemented in understanding MOOC participant knowledge. Factual knowledge consists of the fundamental units that one must be equipped with to solve problems, including terminology, definitions, and specific details. Conceptual knowledge is the relationship among basic elements that enables them to function together, including categories, generalizations, structures, and models. Procedural knowledge is "how to do something," such as criteria for using subject-specific skills or determination of when to apply appropriate procedures.

Lastly, metacognitive knowledge is the highest-level knowledge. It is one's own cognition: how one reflects, reviews retrospectively, and ruminates on one's progress toward achieving one's goals. It is the knowledge of monitoring, controlling, and regulating. The following sections will examine the key knowledge influences.

Factual knowledge. Participants may lack factual knowledge of the technology proficiency or resources to access the course materials (Anderson & Krathwohl, 2001). This factual knowledge could extend to participants' geographical locations, whether they are technology-friendly, and the features of the MOOC platform. Without this knowledge, participants will not be able to navigate the course and use the features to complete their quizzes and exercises.

Participants' factual knowledge. Green and Gilbert (2010) found that the use of technology in education facilitates the participation of the students from different geographical regions; however, technology-unfriendly areas have not yet been included in educational technology. As such, there are gaps between the registrants' various regions, but mainly between Western countries and Middle East regions. Participants from technology-unfriendly areas tend to drop out of the course.

Conceptual knowledge. In addition to knowledge of accessing the online course materials, participants also need knowledge of how the course will be conducted and what learning outcomes might be expected from a required assignment. This conceptual knowledge is assessed differently than other types of knowledge (Anderson & Krathwohl, 2001). Participants may need to know that in order to earn a certificate, they must complete the segments involved in each lesson using certain learning features on the MOOC platform.

For example, students need to practice with the audio vocabulary book assignments that are graded in the participation section but are shown in the final grades section.

Participants' conceptual knowledge. Learning with understanding is more likely to occur when students are provided with categories of knowledge, or concepts, as opposed to an independent body of facts (Schunk, 1996). However, there is a disconnect between the participants and the instructors' conceptual understanding of the course work. Head (2015) indicated that most MOOC providers are from the US; professors and course designers often fail to take consideration of different cultural backgrounds. For instance, certain assignments or activities may illustrate an American concept such as Super Bowl Sunday, potentially impeding the understanding of participants who are unfamiliar with American culture.

Procedural knowledge. Participants need to demonstrate that they have knowledge skill to navigate the curriculum and course materials on the MOOC platform (Anderson & Krathwohl, 2001). With this procedural knowledge, participants will be able to explore the curriculum and locate the course materials and assessment quizzes that they needed to complete in the course.

Participants' procedural knowledge. Nearly all MOOCs failed to reflect the principle of demonstration. Participants did not continue with the course due to the lack of explicit demonstration and clear guidance throughout the course (Margaryan, et al., 2015).

Metacognitive knowledge. Anderson and Krathwohl (2001) indicated that metacognitive knowledge is essential to building expertise at performing a task. Participants learn how to reflect and monitor their learning and performance through opportunities to practice metacognitive strategies, such as instructor approaches to tasks, scaffolded steps in the learning process, peer coaching, and providing feedback.

Participants' metacognitive knowledge. Several researchers have commented on the importance of metacognitive knowledge for MOOC completion rates. Tomkin and Charleviox (2014) agreed that aside from MOOC courses being fully-structured, many MOOC participants are highly motivated with high academic achievement, stronger self-regulation, and goal-driven attitudes. Whitmer et al. (2014) echoed that participants and university characteristics also affect student retention. Since most of the MOOCs are provided by top-tier universities, the majority of the participants are from those universities. As such, metacognitive knowledge is a critical construct driving MOOC participants to assessment completion.

Motivation

Motivation has been considered a dominating factor that helps learners maintain perseverance and achieve successful learning outcomes for many years (Ambrose et al., 2010). Perseverance is to continue working until a goal is achieved with or without any obstacles. Motivation-related constructs influence individual belief towards one's ability to obtain a goal and one's reasons for doing an achievement activity (Wigfield & Cambria, 2010). When learner motivation is inspired, learners show curiosity about the learning topic, immerse themselves into the learning tasks, and seek strategies that enhance their learning (Hodges, 2004; Wlodkowski, 2008). Learner motivation and learning outcome was usually found to be positively correlated (Busato, Prins, Elshout, & Hamaker, 2000; Liu, Bridgeman, & Adler, 2012; Sankaran & Bui, 2001; Waschull, 2005). It is also assumed that learners with higher achievement will be more likely to have continued motivation in the future (Hodges, 2004). Thus, learner lack of motivation can lead to disengagement in learning and cause them to perform poorly (Starcher & Proffitt, 2011). Goal orientation theory and attribution

theory, the two social-cognitive theories considered to be the most important motivation influences, will be discussed in the next section.

Goal orientation theory. A social-cognitive theory of achievement motivation examines the reasons why students engage in their academic work. According to Pintrich (2000), the first type is called a mastery goal. Students hold mastery goals (also referred to as being mastery-oriented) when their goal is to truly understand or master the task at hand. Students who are mastery-oriented are interested in self-improvement and tend to compare their current level of achievement to prior achievements. The second type is called a performance goal. Students hold performance goals (also referred to as being performance-oriented) when their goal is to demonstrate their ability compared to others. Students who are performance-oriented are interested in competition, demonstrating competence, and outperforming others; they tend to use other students as points of comparison, rather than themselves.

Participants' expectations. According to Pintrich's (2000) goal orientation theory, students learn Mandarin for specific reasons and expect to actually use what they learn in real-life scenarios. Some courses on the MOOC platforms have catered to this in many ways, which was found to be very helpful and effective for students' learning (Gamage et al., 2015). An example from the Entrepreneurship course offered by the Massachusetts Institute of Technology bridged the gap between course materials and industry needs by encouraging students to take part in the industrial needs published on a platform (Coursolve.com). Students were also directed and introduced to the industrial perceptions through live webinars with guest panelists who were key people from the industry. Such course related activities

are rarely implemented for MOOCs. Nevertheless, students highly valued such activities and found it to be a very important dimension for effective learning.

Attribution theory. Anderman and Anderman (2010) articulated that attribution theory is an important method to examine and understand motivation in academic settings. They examined the influence of certain events on individual perception of success and failure as well as subsequent motivation in participating in the related learning activities. There were two main ideas that Heider (1958) proposed that became influential: 1) Internal Attribution, the process of assigning the cause of behavior to some internal characteristic, rather than to outside forces, and 2) External Attribution, the process of assigning the cause of behavior to some situation or event outside a person's control rather than to some internal characteristic, such as situational or environment features. For example, under a theory of internal attribution, one attributes the behavior of a person to their personality, motives, or beliefs.

Participants' engagement. Several references examined in the previous sections of this literature review shared a common finding: participants' engagement is the key to completion rate. Tomkin and Charleviox (2014) pointed out that whether a credit is tied with a MOOC course or not affects student engagement although many students took Mandarin courses to prepare for future career success. Travelling in Mandarin speaking countries was the second strongest motivating factor for respondents. However, participation levels decreased over time and appeared to be related to the amount of effort required for activities (Whitmer et al., 2014). Quizzes and the final examination had a higher level of participation than assignments.

Organization

Gallimore and Goldenberg (2001) suggested that cultural-related explanations of models and settings have gained prominence in educational reform and the problem of change in organizations. Cultural models consist of shared mental schema or normative understandings of how the world works, or ought to work (Gallimore & Goldenberg, 2001). The concept incorporates behavioral activities as well as cognitive and affective components. Cultural settings are environments in which more than two people coming together and put time in to accomplish something. Both cultural models and settings are considered the way things should be, taken-for-granted assumptions that are unnoticed in an ecological niche. Clark and Estes' (2008) gap analysis model also identified some organizational barriers which hinder the completion of the original goals. In the next section, cultural models and settings will be discussed as an advanced organizational factor.

Cultural models and settings. According to Gallimore and Goldenberg's (2001) definition of cultural models and settings, "culture" is thought to be composed of many cultural models, internalized differently by culture members. Furthermore, the learning is social and individual. With the belief that everyone should have the equal opportunity for high-quality education through the Internet, MandarinX is committed to ensuring that students are fully and timely supported whenever technical issues hinder their learning and networking.

Organization's reputation and participants' language barriers. One crucial factor affecting MOOC participants' completion rate is the reputation of the organization (HarvardX & MITx, 2014). MandarinX, associated with Harvard and Massachusetts Institute of Technology, has accreditation. As it was originally founded with a small team, every staff

member has been trained to cover one another's job duty and is adequately acquainted with the platform and course information. Weekly online meetings and social networking groups keep the staff coordinated through near-instant communication. The task of translating and localizing content has become a challenge for non-native English speakers to enhance the effectiveness of learning because most MOOC courses have been taught in English with context based more on American culture (Che et al., 2016).

CHAPTER THREE: METHODOLOGY

Purpose of the Project and Questions

The goal of this study was to evaluate the reasons why MOOCs provided by MandarinX achieved an unusually high completion rate compared to the average for MOOCs, and to build on this success with future MOOCs. The analysis focused on knowledge, motivation, and organizational influences related to understanding this organizational achievement. For practical purposes, the stakeholders this study focused on were MandarinX participants.

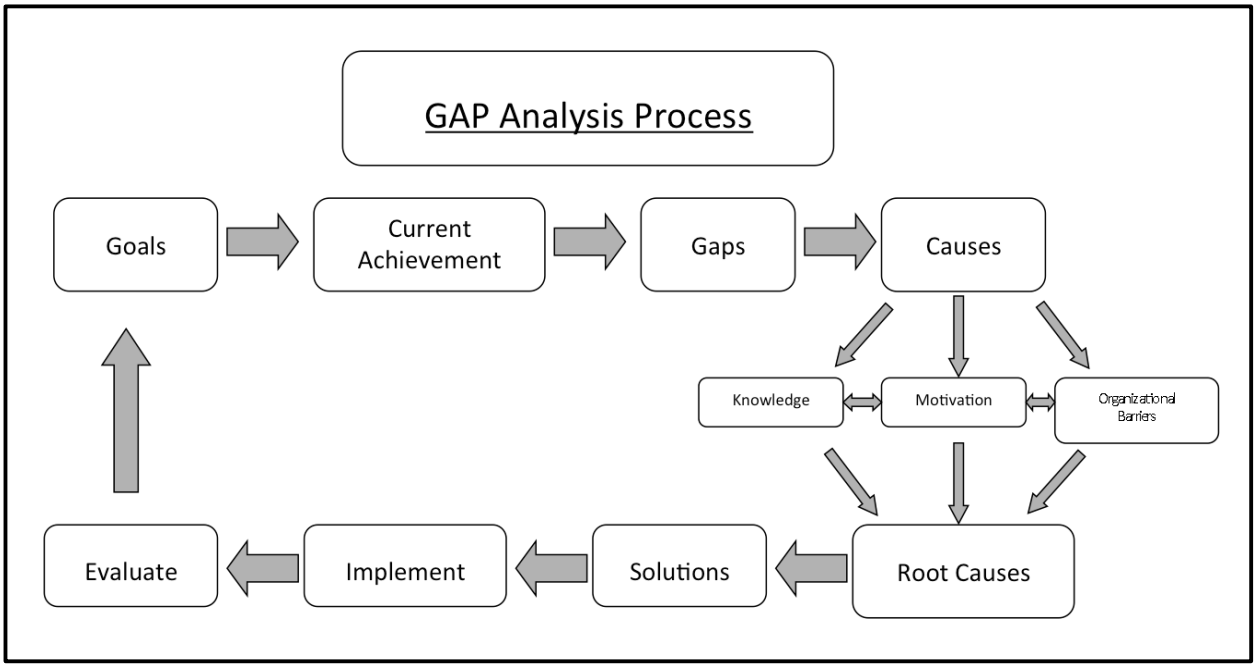
The research questions for this study were:

1. What are the knowledge, motivation, and organizational influences that underpin MandarinX's high completion rate?
2. What knowledge, motivation, and organizational assets would extend this success into future MOOC design?

In this chapter, a gap analysis methodological framework developed by Clark and Estes (2008) was adapted as a needs analysis model to evaluate the assumed causes categorized by Knowledge, Motivation, and Organization. Preliminary scanning data was discussed based on this 'KMO' method. Following that, the focus shifted to participating stakeholders and descriptions are provided. Surveys were utilized to obtain data in this study. Validation of the performance issues/needs/assets, conceptual framework for addressing the inquiry questions, trustworthiness of data, the role of investigator, data analysis, and limitations and delimitations are discussed.

Methodological Framework

The gap analysis framework began with an overarching goal that was compared to the current progress toward the goal. The model was then followed by an analytical procedure to examine the gaps between the target achievement and the current achievement by looking at the causes for any discrepancies between the two. These causes were then broken down into three categories: Knowledge, Motivation, and Organizational barriers (Figure 1).



Source: Clark and Estes (2008)

Figure 1: The Gap Analysis Process Model

With further analysis and an understanding of the underlying causes for the gaps, steps can be taken, and improvements can be made in order to attain a nearer completion of the original goals. The eventual realization of the goal can be achieved with repeated implementation of this methodological approach.

Three key elements, knowledge, motivation, and organization, were analyzed within this gap analysis framework. Knowledge was further categorized into: 1) factual knowledge, the ability to understand the pieces of information related to any given concept; 2) conceptual knowledge, the ability to associate factual knowledge with categories and classifications; 3) procedural knowledge, the ability to use knowledge to accomplish certain tasks; and 4) metacognitive knowledge, the ability to transfer knowledge to a new context or to solve a problem (Clark & Estes, 2008).

Motivation was also categorized into: 1) choice, the decision to begin the motion toward the accomplishment of a settled goal; 2) persistence, the ability to be consistent with moving forward regardless of obstacles; and 3) mental effort, the ability to maintain sustainability toward the achievement (Clark & Estes, 2008).

Two categories of organization were: 1) organization models, the culture and values within any organization that are inherited rather than created, forming hidden assumptions that are the basis of interactions and decision-making processes within the organization; and 2) organizational settings, the organization's structures and procedures. Both organizational models and settings may be barriers to the good execution of performance goals (Clark & Estes, 2008).

Knowledge, motivation, and organization serve as the starting points to tackle the problems raised in organizational performance. Clark and Estes (2008) defined Knowledge (K), Motivation (M), and Organization (O) as targets and fundamentals that must be internally aligned with any successful organizational goal achievement.

Assumed Performance-Based Influences

The gap analysis model proposed by Clark and Estes (2008) was adapted as an evaluation method for this study, which required an analysis of the organization's goals and current achievements that exhibit gaps. The causes for the gaps will be classified as Knowledge, Motivation, and Organizational barriers. In order to examine the influences thoroughly, both qualitative and quantitative studies were utilized in this study. Examples of factors related to each Knowledge, Motivation, and Organization at MandarinX were investigated based on the literature review and data analysis. Components affecting student completion in the study were: students' dropout rates, course design, and other technological or environmental barriers. This data was gathered by surveying the stakeholders and analyzing the survey results. The motivation lens probes individual's motivation, participant's persistence, and the mental effort of completing a six-week online language course. The impact of instructor involvement was contrasted with students' learning outcomes. Reasons were validated, and research-based solutions were sought in order to address the dropout rate. Implementations and tools were then offered to the organization.

Preliminary Scanning Data

Knowledge and skills. With China's economic growth, an increasing number of people are starting to learn Mandarin Chinese. A survey conducted by a Mandarin-learning website indicated the Chinese government recently held back western expats for job opportunities or promotions due to language barrier restrictions (Selmer, 2006). Although English ability is improving in China, business conversations carried out in English might not be fully comprehended. Ferraro and Briody (2017) pointed out that cultural differences and

norms sometimes hinder the efficiency of real understanding when two parties communicate in a second language.

Based on geographic distribution, the top three countries by enrollment for MandarinX are USA, India, and the United Kingdom. All three countries have economic transactions and business partnerships with China. Thus, the learning goal of applying fundamental language skills and cultural knowledge to real-world applications is valued highly (Mayer, 2010). Chances are also higher that participants from these countries may remain enrolled to the end of the course.

Motivation. High enrollment rates create challenging issues. Participant motivation varies for a number of reasons: receiving certificates to improve resumes; learning new things in a manner that allows for more flexible time management (e.g. businesspeople, retired professors, double-majored college students); meeting with people from fields of similar interest, or just for fun. Overall, students choose to continue their studies for personal betterment, self-improvement by adding skills or credentials, or simply gaining knowledge of a topic that they had previously been unable to for whatever reason. Therefore, the factors that helped to maintain perseverance in studies has been the most critical of the assessments conducted within MOOC, given that the average completion rate is often less than 10% (Alario-Hoyos et al.,2017; Aparicio, Bacao, & Oliveira, 2017; Bonk & Lee, 2017; Cunningham, 2017; Milligan & Littlejohn, 2017).

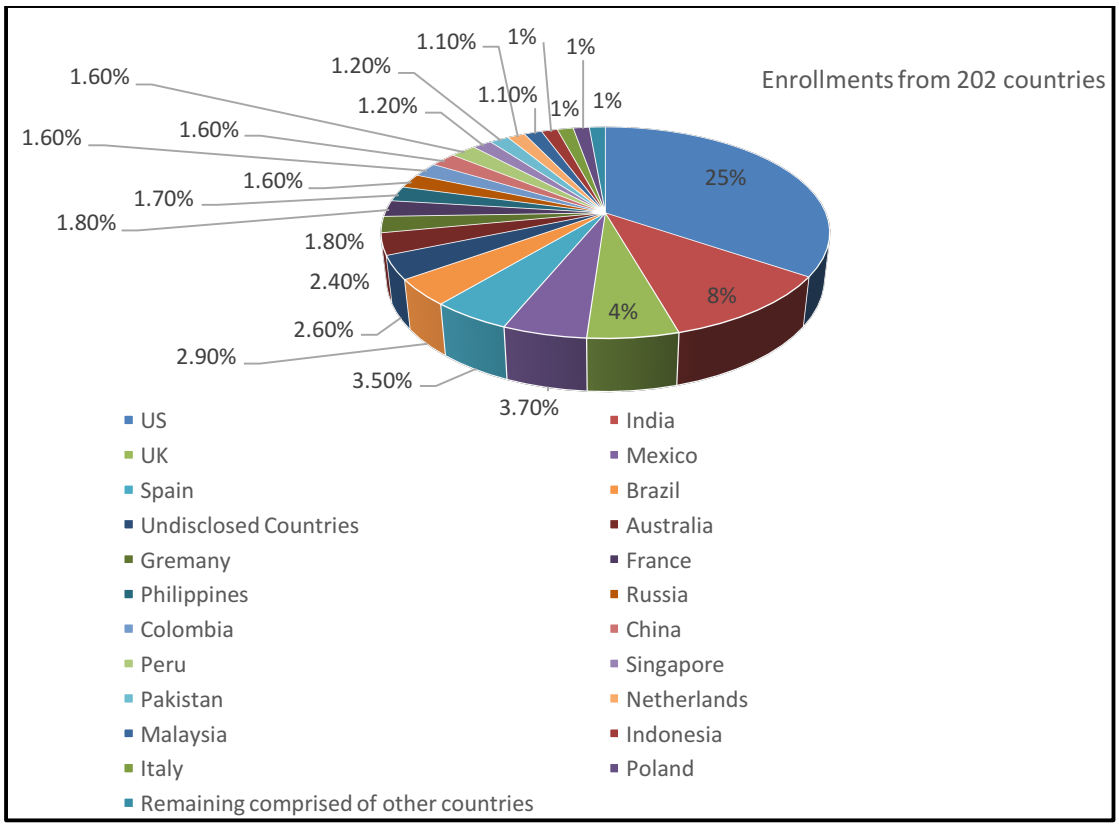
Organization. Due to the large number of enrollees, time differences, and some participants from Internet-unfriendly areas, obtaining support and reducing obstacles has become a top priority (Sergis, Sampson, & Pelliccione, 2017). In order to encourage perseverance and provide students with the resources that they need to keep learning, certain

measures have been implemented: 1) teaching assistants took shifts answering questions posted on the forum; 2) the instructor offered periodic online office hours and tutoring; and 3) the technical support team provided real-time solutions to problems caused by the Internet or platform which hindered course viewing.

Support from the other staff members was critical as the team was small and there was no hierarchy involved. The team comes from different professional backgrounds and different Mandarin speaking areas, which helped to enhance collaboration on cultural perspectives of language usage. Often, MandarinX staff had to solve unprecedented problems, such as dealing with time differences due to geographical location and language differences within the team itself.

Participating Stakeholders

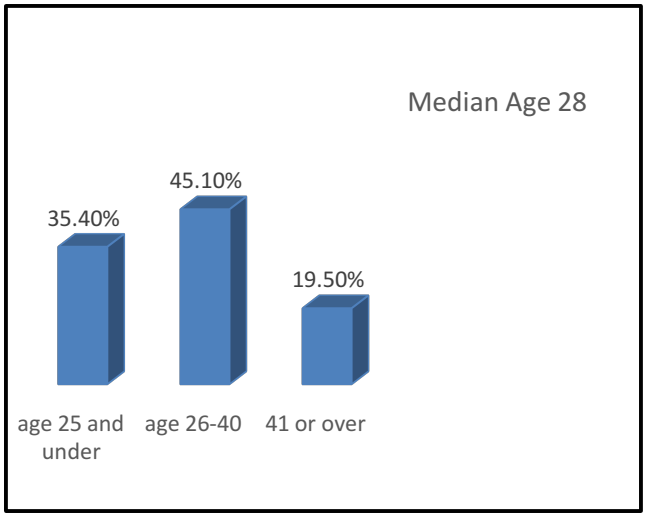
The stakeholders of this study were the first (47,081 enrollments), second (39,849 enrollments), and the third ongoing cohort (24,084 enrollments as of August, 2016) of three MOOCs: Basic Mandarin Level One, Two and Business Chinese. Geographically, these MandarinX participants come from around the world, for a total of 202 countries. The United States was in the lead (25%), followed by India (8%), the United Kingdom (4%), Mexico (3.7%), Spain (3.5%), Brazil (2.9%), undisclosed countries (2.6%), Australia (2.4%), Germany (1.8%), France (1.8%), the Philippines (1.7%), Russia (1.6%), Colombia (1.6%), China (1.6%), Peru (1.2%), Singapore (1.2%), Pakistan (1.2%), Netherlands (1.1%), Malaysia (1.1%), Indonesia (1.0%), Italy (1.0%), and Poland (1.0%) with the remaining 1% consisting of various other countries (edX Insights, 2016) as shown in Figure 2.



Source: *Learn Basic Chinese (edX Insights, 2016)*

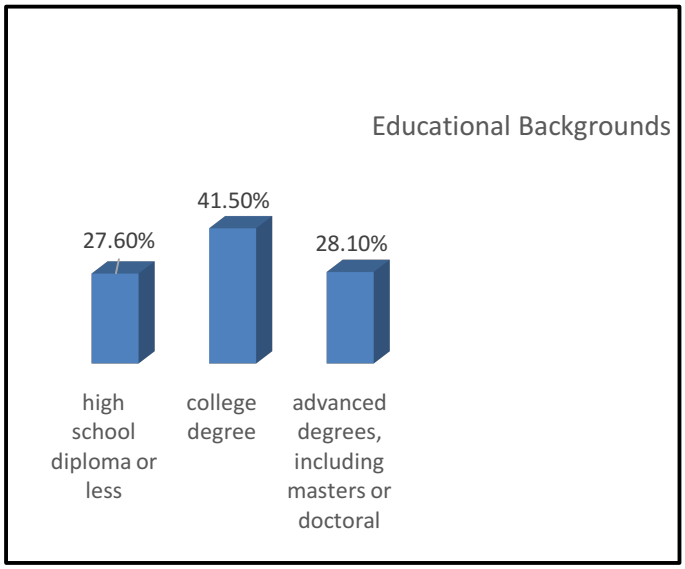
Figure 2: Enrollments in MandarinX's Current MOOCs

Regarding the demographics, the median student age was 28; 35.4% of the student age was 25 and under; 45.1% of the students were aged 26-40; 19.5% of the students were 41 or over (see Figure 3). 27.6% of the participants had a high school diploma or less; 41.5% of the total possessed a college degree; 28.1% earned advanced degrees, including masters or doctoral degrees (see Figure 4). In addition, 58.3% of the registrants were male, 41.1% were female, and 0.6% claimed the gender as other (edX Insights, 2016).



Source: *Learn Basic Chinese (edX Insights, 2016)*

Figure 3: Age Distribution of the Enrollment in MandarinX's Current MOOCs



Source: *Learn Basic Chinese (edX Insights, 2016)*

Figure 4: Educational Backgrounds of the Enrollment in MandarinX's Current MOOCs

A stratified random sampling approach was used in which the researcher identified the relevant stratums and their actual representation in the population, namely completion and non-completion. Random sampling was used to select a sufficient number of subjects from

each stratum. Too small a sample size would fail to claim the findings (Schabenberger & Gotway, 2017). Researchers determined the adequate sample size based on judgment and experience. "Sufficient" referred to 1-2 percentage of the total enrollments of the three cohorts, which the researcher considered significant enough to be reasonably confident that the stratum represented the population. The margin of error that this study tolerated was 5%. The confidence level was 95%. Providing the population size was 111,014, and the response distribution was 50%, the recommended sample size was 383 (Calculated by sample size calculator: www.raosoft.com/samplesize.html).

Data Collection

The sample data collection method for this study relied on enrollment information tracked by MandarinX including participation in video lectures, quizzes, exercises, and activities within the edX platform. All participants' data, including demographic background, learning process within the six weeks (responses, retention, participation, and performance) collected and stored on the edX platform database was requested and assessed by edX partners after signing a disclosure agreement on educational research use. The data included general student demographics such as nationality, age, geographical location, level of engagement in the course, and performance on tasks and quizzes. Permission from the University of Southern California's Institutional Review Board (IRB) was obtained. Family Educational Rights and Privacy Acts (FERPA) was observed as well due to the number of registrants from the United States (25% of the total). One data collection method was used in this study. Data collection occurred by surveys only, since surveys were the most efficient way to acquire desired information in a relatively short period (Orcher, 2017). However, the utility of the data remains limited by the lack of insight into learning analytics of survey

respondents who complete or do not complete a MandarinX course. There have also been concerns expressed over the potential research ethics of MOOC data mining in cases where insufficient consideration has been given to issues such as informed consent, privacy, anonymity and confidentiality (Rolfe, 2015; Marshall, 2014).

Surveys

Given the number of registrants from different countries, an exit course survey embedded in a Google sheet was distributed in weekly newsletter emails. The survey was only provided in English as the course was taught in English. Participants were encouraged to complete the online survey. Muijs (2010) asserted that two things determine the size of the significance level of a research: 1) the size of the relationship or difference found in the sample; 2) the sample size. The latter is crucial to the significance level, which is of 0.051 (not significant) and 0.049 (significant). The arbitrary cut-off point is less than 0.05 (5%). Provided that the total registrants exceeded more than 100,000, even with a low response rate, the number of responses, which were collected anonymously, would still be considered effective. A 6-point Likert Scale questionnaire was used to prevent people from choosing the neutral option. Data from individuals not responding completely was discarded. SPSS (statistical software) was utilized to run the data for quantitative analysis. Analysis emphasized understanding phenomena as they exist, not following pre-determined hypotheses. The survey protocol is included as Appendix A.

Validation of the Performance Needs

Only surveys were used to validate the assumed needs necessary for performance goal achievement of an unusually high completion rate as compared to the average for MOOCs. Each of the critical knowledge, motivation, and organizational needs were validated through the collection of quantitative data.

Table 2

Conceptual Framework for Addressing the Inquiry Questions

Inquiry Question	Survey
What are the knowledge, motivation, and organizational influences that underpin to MandarinX students' high completion rate?	X
What knowledge, motivation, and organizational assets would extend this success into future MOOC design?	X

Trustworthiness of Data

This study utilized the statistical tool, SPSS, to ensure the trustworthiness of data. Further, survey questions were based upon existing valid and reliable instruments. Additionally, the anonymity and confidentiality of survey respondents were guarded with a disclosure agreement on educational research use exclusively (Merriam, 2009).

Role of Investigator

The researcher is the founder of MandarinX, graduated from the University of Southern California (USC) with a Masters degree in Teachers of English to Speakers of Other Languages (TESOL) at Rossier School of Education, and hold teaching credentials from Commission of Teacher Credentialing (CTC) California of both subjects in Mandarin and

English. Currently, the researcher serves as a professor in the College of Commerce at National Chengchi University in Taipei, Taiwan.

As the founder and instructor of MandarinX, the investigator oversaw all staff, including the course development team, production team, and teaching assistants within the organization. The founder's passion is also the fuel and compass of the organization. As principle investigator in this study, the founder conducted a gap analysis of the performance evaluation and proposed recommendations to help MandarinX and other institutions achieve a better course completion rate by designing MOOCs. Understanding MOOC participants' persistence will help the organization create a conductive online language environment and maintain the high completion rate for the future courses. During this study, stakeholders were not made to be aware of the investigator's role as a researcher to prevent distraction and confusion.

Data Analysis

This study relied on the gap analysis model proposed by Clark and Estes (2008) to determine if the presented information was relevant to the assumed influences. First of all, four types of knowledge (factual, procedural, conceptual, and metacognitive) were employed to identify the gaps caused by the lack of skills. Secondly, various types of motivational issues, such as participants' expectation towards goal setting and engagement in the course, were identified. Lastly, the effects caused by cultural models and settings within the organization were reviewed. A thorough framework based on the Clark and Estes model was developed after probing the presented influences by scrutinizing the data, which affirmed what Rueda (2011) asserted: gap analysis and solutions to the problems are in alignment.

Quantitative data are presented in a numerical format and were collected in a standardized manner (surveys and open-ended interviews). The statistical analyses were conducted with SPSS statistical software once all online surveys were completed in a period. Statistical significance and factor analysis were reported. A unique identifier was assigned. Completeness and accuracy was checked. Incomplete data was then removed.

Limitations and Delimitations

Limitations

Due to the fact that the researcher is the founder of the organization, several biases were impossible to be avoided and thus need to be addressed. First, possible methodological limitations could include self-reported gathered data from surveys which are not independently verifiable in order to report a noteworthy outcome to achieve a high performing organization's goal. Second, participants, the key stakeholder, may not interpret the survey questions and items in the manner intended. The researcher had adequate explanations while conducting surveys.

Delimitations

The focus of this study was to conduct a gap analysis to understand the high completion rate of the organizational designed MOOC. One of the delimitations of the study was that the context was global and virtual which made it more connected to other institutions or organizations. Moreover, the implementation of Clark and Estes' (2008) gap analysis model of this evaluation study served as a strategical tool to the reader. A second delimitation was the size of the selected stakeholder group made the study most revealing for academic and practical uses.

CHAPTER FOUR: RESULTS

The objective of this study was to explore the knowledge, motivation, and organizational influences that underpin MandarinX students' high completion rate in a six-week Massive Open Online Courses (MOOC). A systematic method adapted from Clark and Estes' (2008) gap analysis framework was applied to validate the assumed causes, examining organizational performance by clearly articulating organizational performance goals, and evaluating the gap between actual performance and desired performance goals. Validity of the assumed causes were then analyzed using data collected from a survey. The Statistical Package for Social Sciences (SPSS) was employed to analyze all the quantitative data from the questionnaire survey.

This chapter presents findings from the collected data organized according to the categories of Knowledge, Motivation, and Organization with key findings synthesized. The objective is to determine which of the assumed causes listed in Chapter Three have been validated through the data collection process. Causes which ensure the success of MOOCs were validated in this chapter and can be summarized in three essential components: 1) clear guidance is provided by the instructor and participants are prepared for reciprocal ability to navigate course content on the MOOC platform; 2) online teaching pedagogy profoundly affects participants' perspectives towards MOOC and their emotions are significantly related to motivations, learning strategies, and completion rates; and 3) interactions and prompt feedback increase the satisfaction level of the overall MOOC design.

Participating Stakeholders

All cohorts of MandarinX participants (133,281 enrollments as of December, 2016), including participants who joined Basic Mandarin Level One, Two, and Business Chinese (both instructor-led track and self-paced track), were invited to complete an online survey for this study. The online survey questionnaire was distributed to the participants through weekly newsletters, Facebook, and Twitter for one month, beginning on 6th December 2016. When this survey was closed, a total of 696 members had provided valid responses. The stakeholders surveyed as part of the data collection process were drawn from course participants in 202 countries. The demographic information of the respondents is provided in Table 3. All respondents remained anonymous, and responses from participants under the age of 18 were excluded.

Data Collection and Validity

This study, therefore, aimed to examine two research questions:

1. What are the knowledge, motivation, and organizational influences that underpin MandarinX students' high completion rate?
2. What knowledge, motivation, and organizational assets would extend this success into future MOOC design?

To examine participants' persistence in a six-week Massive Open Online Courses (MOOC), a survey was conducted. All the measures were developed from a gap analysis framework (Clark & Estes, 2008). This method is more effective than other approaches with regard to obtaining knowledge, motivation, and organization (KMO) influences and enhanced the broader application of the research findings. In all of the scales used in survey questions, respondents were asked to assess the degree to which they agreed with each statement (1

'Strongly Disagree' to 6 'Strongly Agree'); see Appendix A for a complete copy of the survey instrument.

To investigate the reliability of the survey used in this study, Cronbach's alpha was used as the statistical tool to calculate the internal consistency and reliability. According to Devellis (1991), a value of Cronbach's alpha coefficient of internal consistency between .65 and .70 is acceptable, between .70 and .80 is quite good, and between .80 and .90 is excellent. Checking the Cronbach's alpha coefficients in this questionnaire, the alpha coefficients of the three main KMO causes with 20 assumed causes all reached the acceptable degree. The alpha coefficients were between .731 to .828 and total reliability reached .904. This means that the reliability and internal consistency was acceptable.

There were more male (61.8%) than female (37.2%) respondents, and the majority (76.1%) were above 26 years of age. A range of careers was represented, although nearly half (49%) of the respondents were students, teachers, or retired professors, and almost all of the respondents (96.9%) had a high school diploma or higher degree. ANOVA, t-test, Regression, Pearson correlation, chi-square test and P value were used to find some significant differences for statistical analysis.

Involvement in a wide variety of factors in this language MOOC is also represented in the sample. Table 3 presents the detailed demographic information of the respondents.

Table 3

Demographic Information of the Respondents

Measure	Item	Frequency	Percentage
Gender	Male	430	61.8
	Female	259	37.2
	Decline to state	6	0.9
Age	Under 18	31	4.5
	18 – 25 years	135	19.4
	26 – 35 years	158	22.7
	36 – 45 years	124	17.8
	Over 45 years	248	35.6
Ethnic Background	Caucasian	258	37.1
	African	50	7.2
	Hispanic	112	16.1
	Asian	204	29.3
	Other	72	10.3
Education Level	Primary	5	.7
	Middle	16	2.3
	Secondary	89	12.8
	Associate	45	6.5
	Bachelor's	254	36.5
	Masters	214	30.7
	Doctorate	41	5.9
	Other	31	4.5

Note: The sample size is 696.

An independent samples t-test was conducted to compare participants' gender perceptions towards all of the assumed causes under Knowledge, Motivation, and Organization. There was no significant gender difference in the three domains of assumed causes. However, there were significant differences by participants' age, education level, and ethnic background for the assumed causes under the Motivation and Organization categories based on one-way ANOVAs.

Results and Findings for Knowledge Causes

Three assumed knowledge causes out of four outlined in Chapter Three were validated, as summarized in Table 4. Following the table, there is a discussion of the knowledge causes in the context of Krathwohl's (2002) knowledge framework, dividing knowledge into four dimensions: factual, conceptual, procedural, and metacognitive.

Table 4

Validated Assumed Knowledge Causes

Category	Assumed Cause	Validated	Not Validated
Factual	Participants know reasons which prevent them from completing the course.	√	
Conceptual	Participants are aware that different Mandarin speaking countries have different language usages.		√
Procedural	Participants have the knowledge necessary to navigate the curriculum and the LMS.	√	
Metacognitive	Participants need to know where to find supplementary materials to assess their learning.	√	

Three key findings associated with knowledge were identified: *adequate knowledge for completing courses, unfamiliarity with differences in Mandarin Chinese, and self-awareness and adaptability.* In the next section, each of these assumed causes will be described in more detail; in the later discussion, the relationships among several assumed causes under three main categories: Knowledge, Motivation and Organization will be summarized by tables and figures.

Adequate Knowledge for Completing Courses

Adequate knowledge and completion rates are assumed to be closely related in this study and much of the research (Reiser, 2017; Gütl et al., 2014; Jordan, 2014; Khalil & Ebner, 2014; Kizilcec, Piech, & Schneider, 2013). Participants have the requisite knowledge to diagnose reasons which prevent them from completing the course. Factual knowledge encompasses only basic facts related to a specific topic (Krathwohl, 2002). A learner must possess factual knowledge in order to be familiar with a subject area and to solve problems in that subject area. Elements of factual knowledge therefore include knowledge of awareness of facts that hinder course completion.

Figure 5 shows that "busy schedule" was the reason 329 (47.3%) respondents failed to submit an assignment. Conflict or busy schedule is the most commonly cited reason for not completing an assignment or exam whether it is for online courses or school work. Also, 80 (11.5%) respondents admitted that they were "being lazy and procrastinated." It came as no surprise that these two reasons accounted for more than half of the total responses, which was 696. Surprising, however, was that 161 (23.1%) respondents, constituting almost a quarter of the pie chart, selected "nothing impeded me," which indicates that participants had the adequate knowledge required to complete the course. Lastly, only 27 (3.9%) participants responded "confusion about the instruction," which also suggests that the course was well-structured with explicit guidance and instructor support. MOOC instructor's role, as a teacher and facilitator, deeply affected participants' learning experiences and the MOOC success, will be discussed later in the last section, the Organizational category.

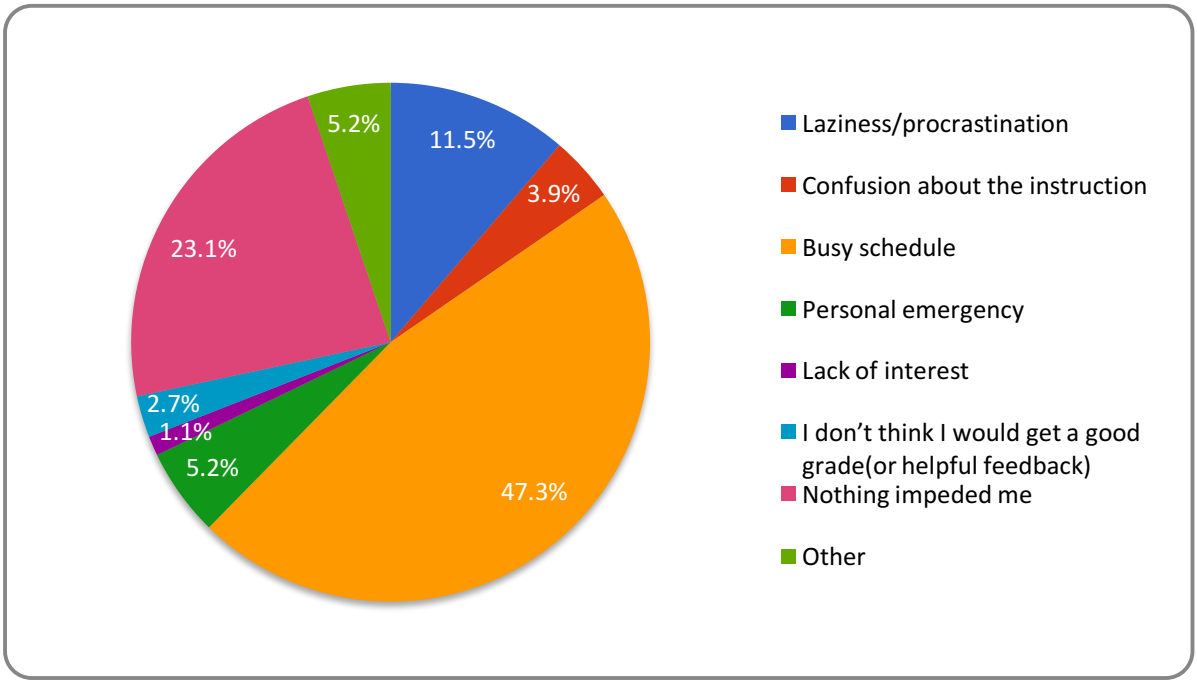


Figure 5. Survey Participants Reasons of Failing to Submit an Assignment

A one-way ANOVA was conducted to compare all of the assumed causes under the Knowledge, Motivation, and Organization categories to see if variables are related in different categories. That meant a survey question was expected to identify mutually referencing factors under two or even the three categories. The results showed that "reasons" played a significant part in impeding participants from submitting assignments, completing video lectures or exams at the $p<.000$ level for the three categories (see Table 5).

What the study illustrated was the factual reasons for participants not completing the courses; however, the data presented a significant effect on mutually reinforcing among the three categories, which explained the assumed causes under the Motivation and Organization categories affected participants' viewpoints in perceiving every aspect of this MOOC. The Motivation and Organization assumed causes will be discussed individually in the next two sections.

Table 5

ANOVA Analysis for all of the Assumed Causes under Knowledge, Motivation, and Organization Categories

	N	Mean	SD	F Value
Knowledge	696	4.06	1.120	7.936 ***
Motivation	696	4.25	.972	8.735***
Organization	696	4.27	1.023	4.807***

Note: *P<0.05, **P<0.01, ***P<0.00

Unfamiliarity with Differences in Mandarin Chinese

Conceptual knowledge is whether leaners understand the different varieties of the language. Mandarin Chinese is made up of an entire group of language varieties across most of northern and southern China, including many local dialects and the basis of standard Mandarin or standard Chinese. Apart from the main stream of the course design, additional learning of related varieties of spoken Chinese was also conveyed through weekly cultural notes videos.

Nevertheless, the survey results did not validate the assumption that the participants were aware of the differences among accents, dialects, and usages in various Mandarin-speaking countries and regions after the course based on the conceptual knowledge that the participants could access through additional weekly cultural notes videos. Slightly more than half of the respondents 363 (52.2%) did not think that they could differentiate one from another. Still 181 (26%) out of the total (696) regarded themselves as being capable of differentiating among the varieties (Figure 6 shows more detail). Although the course materials covered two versions of written Chinese: traditional and simplified Chinese

characters, due to the geographic distribution and various dialects, challenges of covering and delivering all are insurmountable.

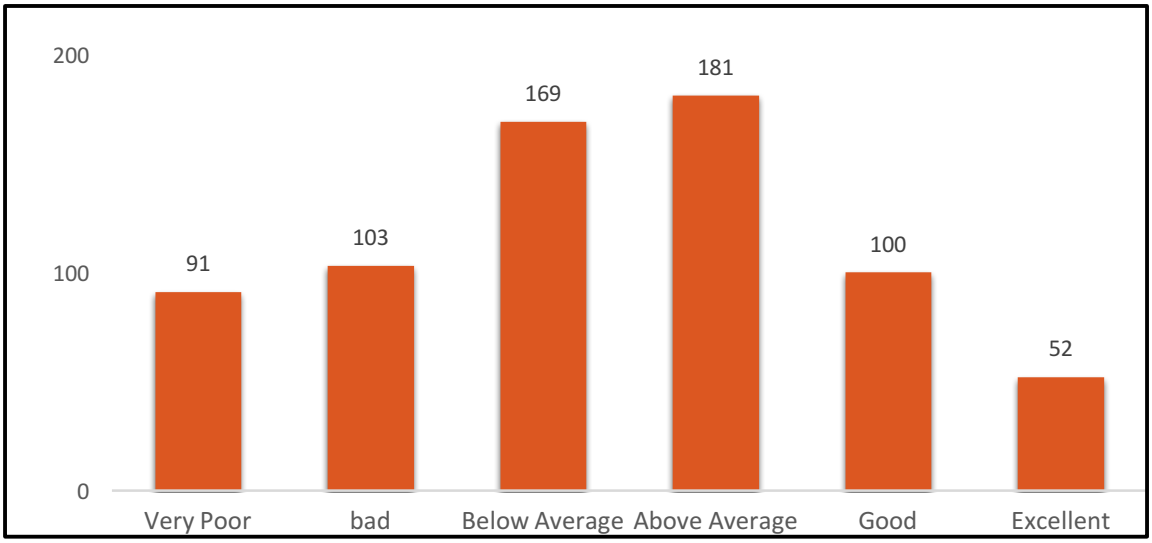


Figure 6. Survey Participants Knowledge of Differentiating Language Usages in Mandarin-Speaking Regions

Self-Awareness and Adaptability

Procedural knowledge for learners is to have the knowledge necessary to navigate the curriculum and skills necessary to troubleshoot techniques to isolate the root cause of problems and to adjust learning strategies (Krathwohl, 2002). Learning is increased when learners acquire component skills, practice integrating them, and know when to apply what they have learned. Metacognitive knowledge encompasses awareness of cognition; application of this knowledge results in modification of one's own thought processes and actions (Krathwohl, 2002). Based on the data collected, the participants seemed to demonstrate a good understanding of awareness of their own cognitive ability in general, validating both assumed procedural and metacognitive causes. There were 544 (78.1%) participants who noted that they were "familiar with the courseware for accessing all of the

units for the lessons" while only 152 (21.8%) disagreed with the statement. When asked, "how would you rate your ability to seek additional resources to help with learning Mandarin?" there were 525 (75.4%) out of 696 participants who responded that they were confident in their ability in seeking additional resources to help with learning Mandarin (shown in Figure 7). A significant majority of the participants were confident that they had reciprocal technical arrangement to access all of the course materials and activities by utilizing the MOOC platform and network infrastructure, while some studies identified that lack of knowledge is a major concern of drop-out rate, especially to those who have invested time and effort and did not complete (Gütl et al., 2014). Further, they demonstrated self-reliance in seeking additional sources for the purpose of learning Mandarin Chinese.

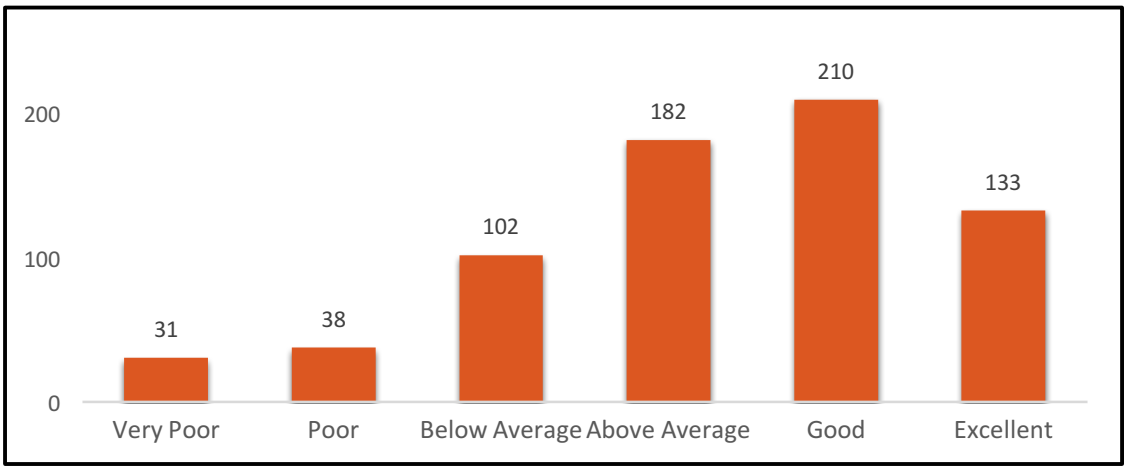


Figure 7. Survey Participants Confidence in Seeking Additional Resources to Help with Learning Mandarin

MOOCs reach a wide geographically dispersed group of participants. However, participants face issues of isolation and disconnect, the same as those in most of the online learning environments. Although MOOC participants are expected to learn autonomously, it is also reported that the majority of them fail to self-organize. They are not prepared to

control their own learning and encounter problems in using the learning tools or have difficulty in understanding the subject matter. With this in view, the results from the knowledge causes demonstrate that MandarinX MOOC participants are equipped with sufficient knowledge to navigate the curriculum and used the learning tools to access the materials and activities on the MOOC platform. In addition, they have the ability to search for supplementary materials to enhance their learning and detect various factors including academic and personal reasons which stop them from submitting assignments and thus completing courses successfully. Notwithstanding that Mandarin Chinese has the most variety of language usages and norms, MandarinX MOOC participants could understand the basis of standard Mandarin Chinese.

Results and Findings for Motivation Causes

The ten motivation assumed causes discussed previously in Chapter Three were, as with the knowledge assumed causes discussed above, either validated, or not validated based on the same survey. The results of the data analysis are summarized in Table 6 and followed by a discussion of the data.

Table 6

Validated Assumed Motivation Causes

Category	Assumed Cause	Validated	Not Validated
Intrinsic Value	Participants have substantial interests to learn Mandarin.	√	
Goal Orientation	Participants learn Mandarin due to professional needs for work or travel to Mandarin-speaking countries.	√	

Table 6 (Cont'd.)

Category	Assumed Cause	Validated	Not Validated
Intrinsic Motivation	The course has relevance to individual differences.	√	
Extrinsic Motivation	Participants receive emotional support from faculty members.	√	
	Participants have instant feedback from the instructor, peers, and teaching staff.	√	
Cost/Benefit	Participants can audit the courses for free unless they would like to have a certificate.	√	
	Participants appreciate a certificate from an organization which has reputation/affiliation with top tier universities.		√
Metacognition	Participants are aware of their own learning.	√	
Self-Efficacy Perceptions	Participants are confident with their academic abilities.	√	
Affect	Participants' academic emotions are closely related to their learning strategies and academic performances.	√	

Results of the findings associated with motivation were described into three categories: *participants mastery of learning Mandarin, perceived value of taking the course, and high self-efficacy perceptions in high completion rates.* In the following section, each of these assumed causes will be presented in tables and figures with further discussions. The relationships among some of the assumed causes listed under three main categories: Knowledge, Motivation and Organization will also be summarized.

Participants Mastery of Learning Mandarin

The concept of mastery in goal orientation suggests that a person focuses on self-improvement by mastering a particular skill or task, with the implication that the person has a genuine interest in the topic (Linnenbrink & Pintrich, 2003). The assumed cause that the participants actively seek to master Mandarin Chinese because of business reasons was not validated here. Only 22.3% of the respondents selected "business opportunity" when asked "why did you choose to learn Mandarin Chinese?" Surprisingly, 40.2% responses went to "curiosity" for the same question (shown in Figure 8), meaning that most participants enrolled in this language MOOC mainly because they wanted to learn Mandarin Chinese out of their curiosity, or to increase their knowledge, and/or to refresh what they had learned before. Only quite a few of them are for the purpose of helping them in their work. Studies also presented that participants enrolled because they were curious about MOOCs. They wanted to experience taking an online course with thousands of people coming from diverse backgrounds and interacting with the instructor (Shirvani Boroujeni, Hecking, Hoppe, & Dillenbourg, 2017; Belanger & Thornton, 2013; Jacobs, 2013; Martin, 2012; Young, 2013).

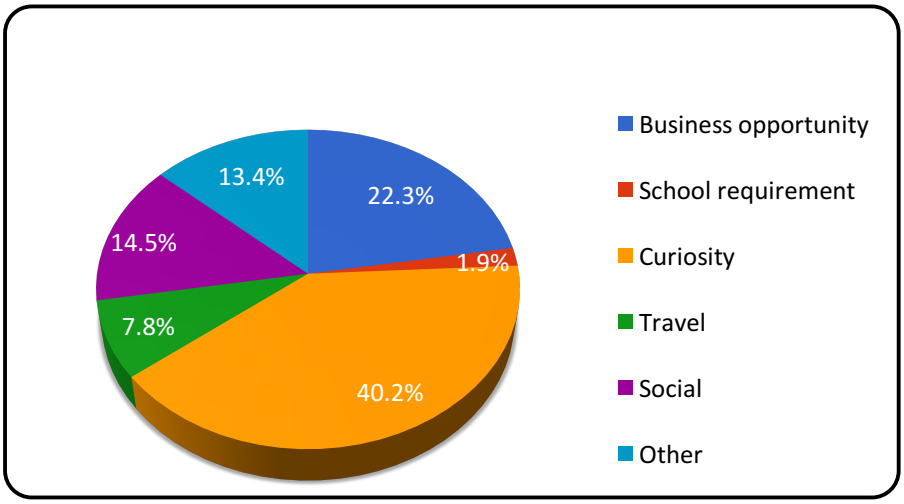


Figure 8. Survey Participants Reasons of Leaning Mandarin Chinese

Similarly, an even lower percentage (9.2%) of the total responses fell on the item "career marketability" and (19.4%) on the item "improve my ability to communicate at work, or with client" for the question "what was your primary goal/expectation of this course?" However, one third of the participants (33.3%) selected "personal hobby" for the same question; another one third (30.3%) chose "solid foundation for further Mandarin language learning" (shown in Figure 9). Analogously, the majority of the participants enrolled in this MOOC, particularly, for their hobby and personal challenge, such as testing themselves to see if they could master one of the most commonly spoken, but difficult languages in the world. Insightfully, another major group of the participants were seeking fundamental bases for advanced personal development, either a college degree or a professional credential/certificate.

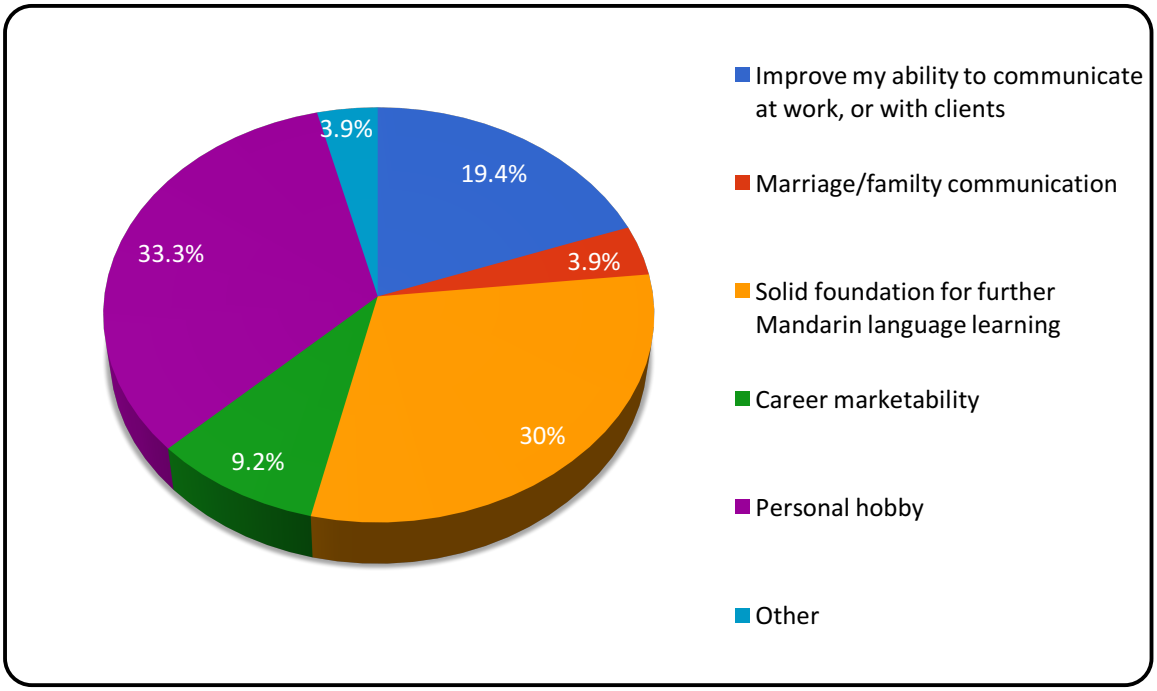


Figure 9: Interviewed Participants Reasons for Leaning Mandarin Chinese

While the survey questions were designed to examine assumed causes listed respectively under three main categories, they were expected to exist with mixed reinforcements among one from another. Thus, when this survey question along with the assumed cause was analyzed further by conducting a One-way ANOVA, the statistical data reported that all assumed causes under the Organization category were found to be significant (Table 7), meaning that participants perceptions towards "primary goal and expectation of this MOOC" were relatively higher associated with the factors under the Organizational category. A significant level means that $p < .005$. In the following section, all of the Organization assumed causes will be discussed separately.

Table 7

ANOVA Analysis for the Factor "Primary Goal and Expectation of this Course" in Knowledge, Motivation, and Organization Assumed Causes

	N	**Mean**	**SD**	**F Value**
Knowledge	696	4.06	1.120	1.545
Motivation	696	4.25	.972	1.896
Organization	696	4.27	1.023	3.687*

Note: *P<0.05

Figure 10, presented in orange bars, also shows a positive correlation with the "solid foundation for further Mandarin language learning" item in Question 2, Part 2. It shows that 77.2% (538 responses out of 696) of the participants agreed that "they stay with this course because it covers everything that they are looking for while learning Mandarin." Yellow bars present the responses for "I found the learning environment to be encouraging," and 84.9% (591 out of 696) agreed with the statement. Likewise, the assumed cause "participants

receive emotional support and instant feedback from the instructor, peers, and teaching staff" as an extrinsic motivation was validated by examining the responses for the survey question "I found that the feedback helps me adapt to an online learning environment." Shown in the blue bars, 76.9% (535 out of 696) agreed that the support and feedback motivated them to keep up with the course and stay with this online learning environment. Therefore, all three assumed causes under intrinsic and extrinsic motivation categories were validated.

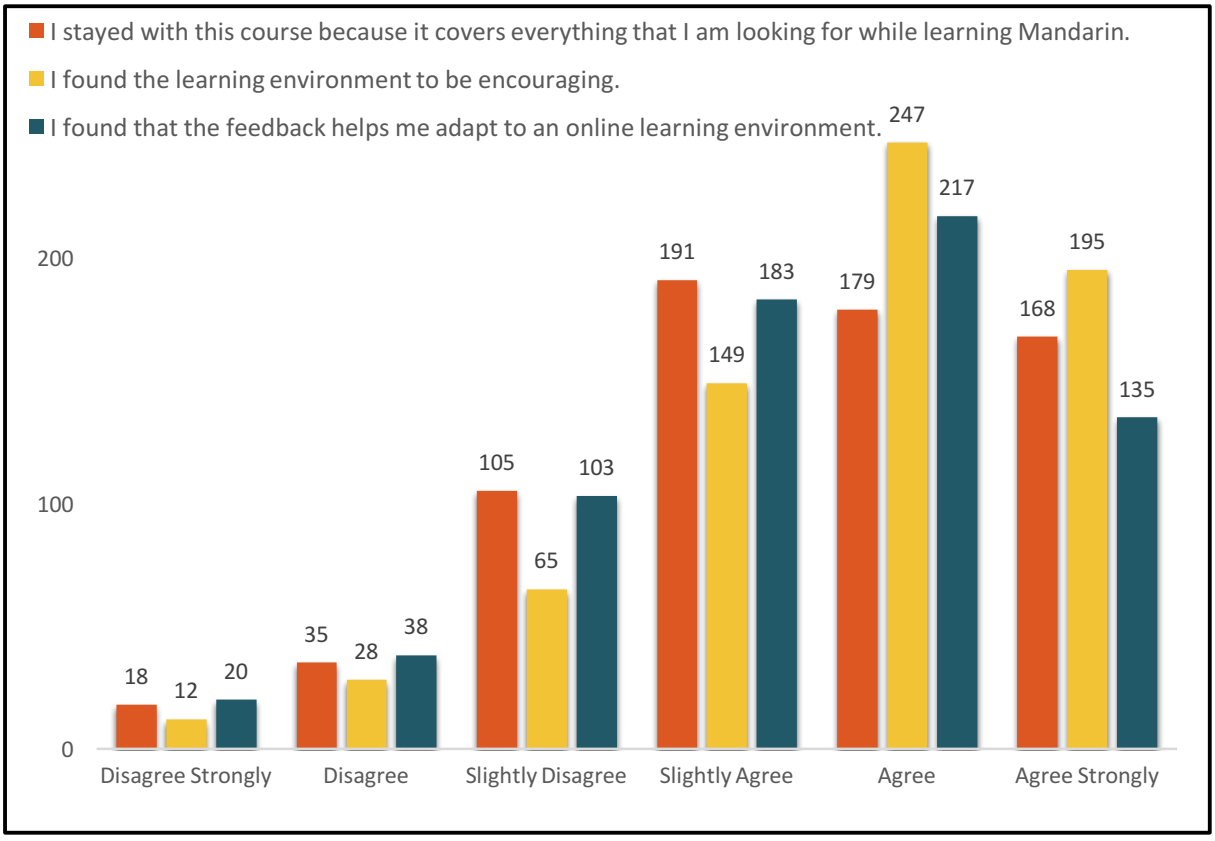


Figure 10. Survey Participants Perceptions towards Solid Course Design with Encourage Online Learning Environment and Supportive Feedback

Perceived Value of Taking Course

Initially, this study assumed that the participants chose this MOOC because the certificate is issued by edX. A significant amount of research indicated that MOOC

participants appreciate a certificate from an organization which has a good reputation or affiliation with top tier universities, e.g. Harvard University and Massachusetts Institute of Technology (Loizzo & Ertmer, 2016). However, when asked "I enrolled in this MOOC because the certificate is issued by edX," more than half (51.7%) of the total responses (360 out of 696) disagreed with this statement, with 172 participants (24.7%) choosing "strongly disagree."

Validation of the assumed cause can be supported further by another survey question, "what made you choose this Mandarin MOOC?" Only 7.5% of the responses selected "it has a good reputation/affiliated with top-tier universities." It was expected that more than one third of the participants, 37.9%, chose "it is free" which validates the MOOC mission. The learning materials are open to everyone, everywhere. Another 11.6% thought "it works well with my school/work schedule" which also validates the nature of online learning. However, 22.4% (156 out of 696) chose the reason "it is well-structured with adequate exercises." A One-way ANOVA was conducted to further analyze whether the assumed cause that the course has relevance to individual differences by examining the survey item. The data are shown as Table 8.

Table 8

ANOVA Analysis for the Factor "Well-structured with Adequate Exercises" in Knowledge, Motivation, and Organization Assumed Causes

Results of the Survey Item: **What made you choose this Mandarin MOOC?**					
		N	**Mean**	**SD**	**F Value**
Knowledge	It is free	264	3.88	1.123	
	It works well with my school/work schedule	81	4.32	1.032	
	It is well-structured with adequate exercises	156	4.36	1.024	
	It is taught in English	67	3.79	1.171	
	It has a good reputation/affiliated with top-tier universities	52	4.18	.960	4.698**
	Someone referred it to me	32	3.70	1.428	
	Other	44	3.89	1.203	
	Total	696	4.06	1.120	
Motivation	It is free	264	4.11	.916	
	It works well with my school/work schedule	81	4.44	.977	
	It is well-structured with adequate exercises	156	4.53	.786	
	It is taught in English	67	3.89	1.123	
	It has a good reputation/affiliated with top-tier universities	52	4.51	.944	6.105**
	Someone referred it to me	32	3.91	1.041	
	Other	44	4.08	1.282	
	Total	696	4.25	.972	
Organization	It is free	264	4.11	.961	
	It works well with my school/work schedule	81	4.29	1.215	
	It is well-structured with adequate exercises	156	4.55	.819	
	It is taught in English	67	4.04	1.175	
	It has a good reputation/affiliated with top-tier universities	52	4.58	1.033	4.803**
	Someone referred it to me	32	3.87	1.180	
	Other	44	4.29	1.063	
	Total	696	4.27	1.023	

Note: *P<0.05, **P<0.01

As can be seen in Table 8, to examine the assumed causes in knowledge, motivation, and organization, the mean of "it is well-structured with adequate exercises" (M=4.36) was higher than all the other factors in the knowledge part; the mean of "it is well-structured with adequate exercises" (M=4.53) was also the highest among all the other factors in the motivation part; only the mean of "it has a good reputation/affiliated with top-tier universities"

(M=4.58) was slighter higher than the mean of "it is well-structured with adequate exercises" (M=4.53) in the organization part. In other words, "well-structured with adequate exercises" was the most influential factor for undertaking this MOOC for the majority of participants. Figure 11 also demonstrates the responses as percentages in a pie chart.

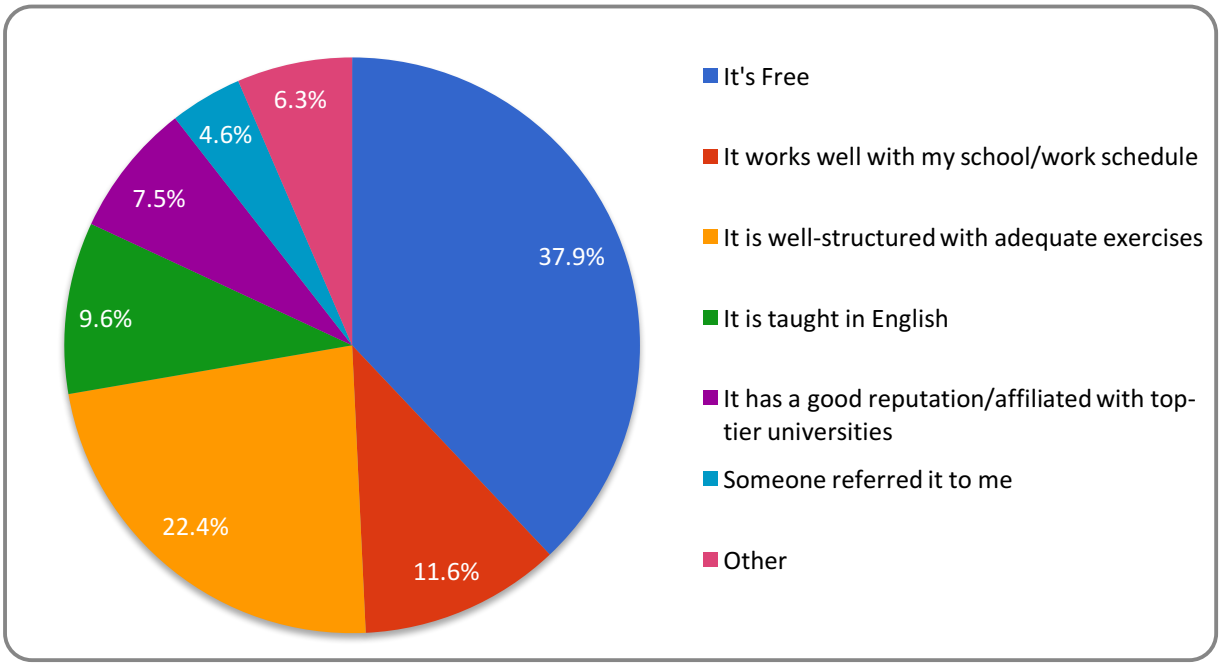


Figure 11. Survey Participants Reasons Choosing this Mandarin MOOC

A chi-square test (Table 9) was performed to examine the relation between those who agreed and disagreed with Question 13, Part 2: "I stayed with this course because it covers everything that I am looking for while learning Mandarin." Participants who scored above 5 were divided into the "Score High" group; participants who scored below 5 were put into the "Score Low" group because of the mean (M=4.4).

Table 9

The Crosstabulation Table (Intrinsic Motivation Relevance to Individual Differences Crosstabulation)*

Intrinsic Motivation* Relevance to Individual Differences Crosstabulation			
	Intrinsic Score High	Motivation Score Low	Total
It is free	106	158	264
It works well with my school/work schedule	49	32	81
It is well-structured with adequate exercises	96	60	156
It is taught in English	30	37	67
It has a good reputation/affiliated with top-tier universities	32	20	52
Someone referred it to me	11	21	32
Other	20	24	44
Total	345	351	696

Table 9 showed that those respondents whose intrinsic motivation was higher perceived the value of this course for the following survey items: “It works well with my school/work schedule,” “It is well-structured with adequate exercises,” and “It has a good reputation/is affiliated with top-tier universities.” Among the three reasons, “well-structured with adequate exercises” has the highest percentage. On the other hand, those who had lower intrinsic motivation perceived this course in a more practical, less self-developed way based on the survey items: “It is free,” “It is taught in English,” “Someone referred me to the course,” and “Other.” Table 10 summarizes the ranking of the survey items chose by higher intrinsic motivation group and lower intrinsic motivation group.

Table 10

Comparison of Higher Intrinsic Motivation and Lower Intrinsic Motivation Participants' Perceptions Choosing this MOOC

Higher intrinsic motivation	Lower intrinsic motivation
It is well-structured with adequate exercises	It is free
It works well with my school/work schedule	It is taught in English
It has a good reputation/is affiliated with top-tier universities	Someone referred me to the course

Participants with higher intrinsic motivation weighed more on the course design than it is offered free. They perceived that the course is solid, well-organized with skillful practices, and it is also relevant to their own learning needs, personal growth, or self-fulfillment. Furthermore, they appreciated the time flexibility for taking this course and it has the reputation. On the contrary, participants who had lower intrinsic motivation were reported to value external and more passive reasons. The demographic data presented that more than half (492 out of 696) of the MOOC participants speak English as native or second language, nevertheless, nearly one third (29.3%) of the population was Asian, and mainly from Mainland China. They signed up for this course to learn teaching skills by using English and to meet English speakers who want to learn Mandarin, while participants in developing countries or who had less access to the Internet or high-quality education took this course because it is free.

According to Table 11, the relation between these variables was significant, $X2$ (6, N = 696) = 24.254, $p < .001$. The results of the "Pearson Chi-Square" row showed that there is

a statistically significant association between the reasons recognized by the higher/lower intrinsic motivation participants and its relevance to individual differences.

Table 11

The Chi-Square Tests Table

	Value	df
Pearson Chi-Square	24.254***	6
N		696

Note: *P<0.05, **P<0.01, ***P<0.00

That is, those who exhibited higher intrinsic motivation respected more of the core values: "It is well-structured with adequate exercises," "It works well with my school/work schedule," and "It has a good reputation/is affiliated with top-tier universities" than external reasons or side benefits: "It is free," "It is taught in English," "Someone referred me to the course," and "Other."

Table 12

Key Components Producing High-quality MOOCs and Relevance to Individual Differences

Core Value of a High-quality MOOCs	Relevance to Individual Differences
It is well-structured with adequate exercises	Solid foundation for further learning
It works well with my school/work schedule	No time and space limit in online learning
It has a good reputation/is affiliated with top-tier universities	High-quality course production when designing a competitive MOOC

Table 12 described key components inherent in producing a high-quality MOOCs and the relevance to participants' individual differences. Importantly, it was found that the

MOOC design has to be well-structured with adequate exercises so that participants can have solid foundation for further learning. No time and space limit in online learning fits participants school/work schedule, and thus helps create completion rates. Meeting the criteria set by top-tier universities or organizations maintains the reputation when designing a competitive MOOC.

High Self-Efficacy Perceptions in High Completion Rates

The assumed cause that participants were aware of their own learning and confident in their academic abilities was validated by the data collected. First of all, 67.1% (467 out of 696) of the participants stated that "they reflected on their learning progress and adapted their strategies to assist with their learning." Further, 71.2% (496 out of 696) respondents were "confident that they can complete all of the assignments and pass the final exam" (shown in Figure 12).

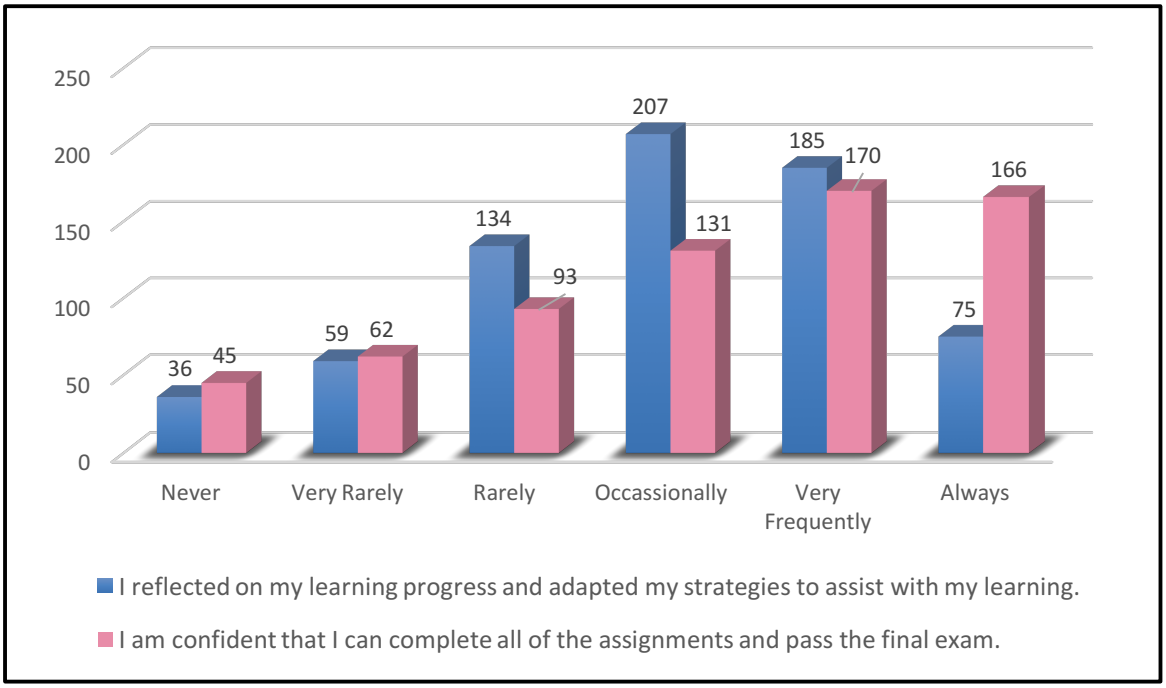


Figure12. Survey Participants Perceptions, Metacognition and Self-Efficacy

Students' motivation is a major factor that affects the attrition and completion rates in the online courses (Hone & El Said, 2016; Frankola, 2012). MOOC participants were diagnosed to be more self-motivated (Deng et al., 2017; Zheng, Rosson, Shih, & Carroll, 2015). The strength of the learner's self-motivation is influenced by self-regulatory attributes and self-regulatory processes. The self-regulatory attributes are the learner's personal learning characteristics including self-efficacy, which is situation-specific self-confidence in one's abilities (Bandura, 1977).

Thus, the results indicated that MOOC participants are more self-regulated and highly motivated with self-discipline. Self-regulated learning requires changing roles of students from passive learners to active learners. Learners must self-manage the learning process. The core of self-regulated learning is self-motivation (Salmon et al., 2016; Smith, 2001). Participants with strong motivation will be more successful and tend to learn the most in online courses than those with less motivation. High self-efficacy also helps achieve in high completion rates. In addition to metacognition and self-efficacy, the assumed cause in the category of affect was validated by examining the survey question "I feel happy while taking this course, including watching videos, working on exercises, and interacting with peers." The data showed that 86.1% (600 out of 696) of the participants agreed with the positive items (shown in Figure 13).

Emotions are believed to be ever-present in academic settings and deeply affect students' engagement and academic performance (Broadbent, 2017; Zepke, 2017; Pekrun & Linnenbrink-Garcia, 2012). Results showed that academic emotions, (e.g. enjoyment of learning, pride of success, or test-related anxiety) and social emotions are significantly related to learning strategies, motivation, self-regulation, and academic achievement (Ben-Eliyahu et

al., 2017; Broadbent, 2017; Zepke, 2017; Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011). Students' perspective towards learning experience and classroom instruction intensely associated with emotions which are directly linked to their academic achievement (Alexander & Grossnickle, 2016). Findings also show relatively high inter-correlations between emotion relations and achievement outcomes in different academic domains. For example, most of the students' academic enjoyment in language classes are higher than in mathematics classes (Benesch, 2017; Goetz, Frenzel, Hall, & Pekrun, 2008). In line with this assumption, the result explains that the academic emotions were closely related to their learning strategies and academic performances, which is also indicative of a happy organization and a happy culture. Equally important, employees are reported to be happier in an adhocracy cultural settings than in rigid bureaucracy (Lund, 2003). This result will be elaborated in the next organizational causes section.

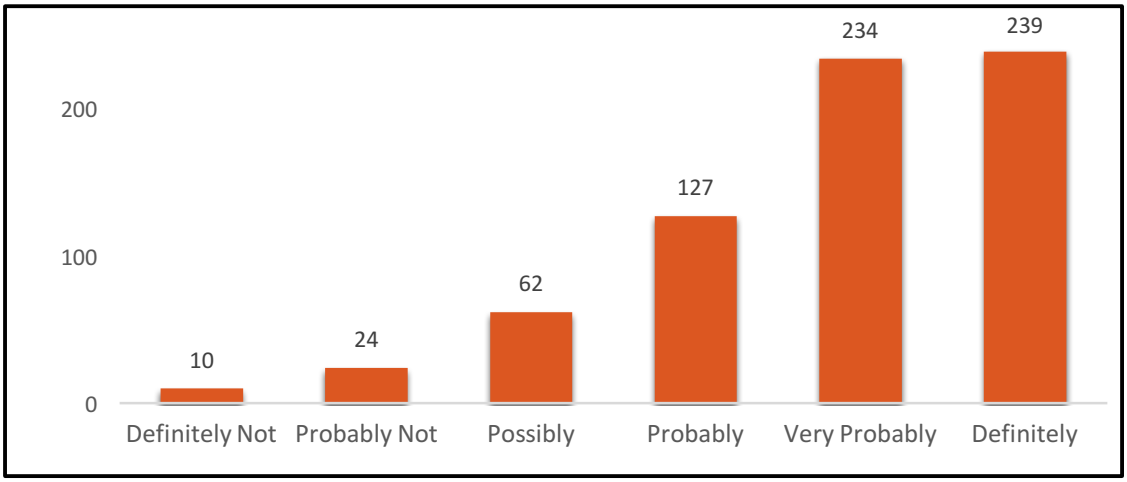


Figure 13. Survey Participants Academic Emotions are Closely Related to Learning Strategies and Academic Performances

MandarinX language MOOCs attract a diverse audience from all age groups and 202 countries around the world. Motivations vary among tens of thousands of participants. How participants perceive the learning experience in MOOCs that differs from that in physical classroom settings and how they navigate through course content are major components related to motivations (Hew & Cheung, 2014; Milligan & Littlejohn, 2017; Shapiro, Lee, Roth, Li, Çetinkaya-Rundel, & Canelas, 2017; Stich & Reeves, 2017). There are intrinsic value and extrinsic goal orientation motives for MandarinX participants to sign up for the course. They have substantial interests to learn Mandarin and the course has relevance to individual differences. Also, some of them learn Mandarin Chinese due to professional needs for work or travel to Mandarin-speaking countries. Meanwhile, they receive emotional support and instant feedback from the instructor, the teaching staff team through online discussion, and peers in the community (Ko & Rossen, 2017; Chew et al., 2017; Frank, 2012; Levy, 2011).

One major group of the participants are retired professors and CEOs, who learn Mandarin Chinese language out of curiosity (Jacobs, 2013; Kirschner, 2012; Martin, 2012; Young, 2013) and their own fulfillment and personal growth (Breslow et al., 2013). Another major group of the participants join the course because it is free unless they would like to have a certificate. Although some studies showed that participants want to get as many course certificates as they can, especially issued from prestigious universities (Young, 2013), others pointed out that many participants do not seek credits or credentials (Fini, 2009; Kolowich, 2013). MandarinX participants did not appreciate a certificate from an organization which has reputation or affiliation with top tier universities; preferably, the quality of the MOOC that an organization produced and conducted.

Findings also indicated that participants' satisfaction levels taking MandarinX MOOCs are mixed. Their academic emotions are closely related to learning strategies and academic performances. Positive participants' perceptions include metacognition and self-efficacy. They are confident with their academic abilities and are aware of their own learning.

Results and Findings for Organizational Causes

Six organizational causes were identified in Chapter Three and have been validated or not validated based on data collected from the survey. The results from this are articulated in Table 13 and discussed further.

Table 13

Validated Assumed Organization Causes

Category	Assumed Cause	Validated	Not Validated
Cultural Setting	Interactive language course design	√	
	Social networking activities	√	
	Opportunities to interact with diverse groups of learners		√
	Time flexibility and convenience	√	
Cultural Models	Teaching presence influences learners' perceptions of the course	√	
	Positive culture and happy organization	√	

Four central pieces of elements associated within a happy organization were: *pleased participants, role models within the organization, social networking helps enhance engagement, and flexibility in online learning courses.* In the last section, each of these assumed causes categorized into the four elements will be discussed individually with tables

and figures. A synthesized analysis among the three main categories: Knowledge, Motivation, and Organization (KMO) will also be summarized.

Pleased Participants

In an online learning environment, specifically language courses, it is easy to neglect interactive and engaging elements when it comes to course design. It is, therefore, unsurprising that the first and last organizational assumed causes "interactive language course design" and "positive culture and happy organization" were validated by survey questions distributed during the data collection period. The results indicated that 86.5% of the participants found "the course design on the platform to be interactive and engaging." Another 92.1% of them were "satisfied with the overall course design."

Furthermore, when responding to "What did you find most engaging while taking this course?" The data showed that 75% of the total responses noted "high-quality videos;" more than half, 62.6%, of the respondents said "practical exercises and peer assessment;" slightly less than half, 41.8%, listed on the third, was "explicit guidance (including weekly newsletter and cultural notes videos)." Participants could check all items that applied to this survey question (Figure 14).

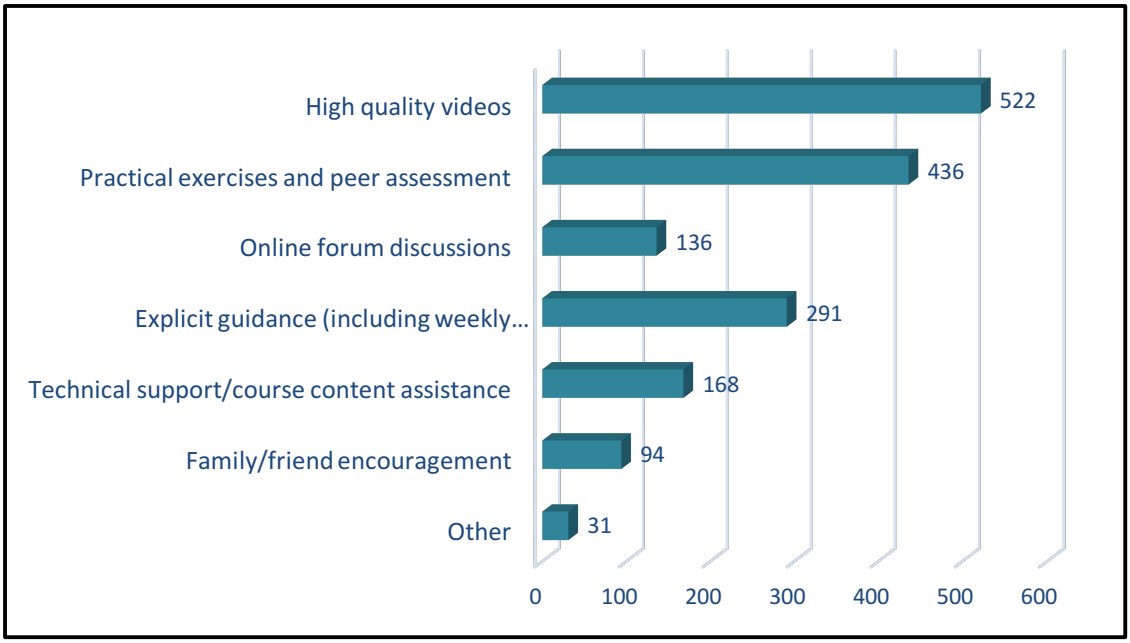


Figure 14. Participants Found the Most Engaging Part while Taking the Course

Again, a Pearson product-moment correlation coefficient was computed in order to assess the relationship among assumed causes under the three categories: Knowledge, Motivation, and Organization (KMO) and the overall satisfaction level of this course. There were positive correlations among the four variables. Table 14 presents the statistical results. Overall, there was a strong, positive correlation among all assumed causes in all categories. Participants' satisfaction level was correlated with all the assumed causes in the Knowledge, Motivation, and Organization categories. Among the three, Organization was highly correlated with the satisfaction level of participants ($r = 0.648$, $n = 696$, $p = 0.001$). Also, assumed causes under the Organization category were highly connected to those under the Motivation category ($r = 0.721$, $n = 696$, $p = 0.001$).

Table 14

Pearson Product-moment Correlation Analysis for the Factor "Overall Satisfaction Level of the Course Design" in Knowledge, Motivation, and Organization Assumed Causes

	Knowledge Assumed Causes	**Motivation Assumed Causes**	**Organization Assumed Causes**
Knowledge Assumed Causes	1	.574**	.470**
Motivation Assumed Causes	.574**	1	.721**
Organization Assumed Causes	.470**	.721**	1
Satisfaction Level	.439**	.621**	.648**
N	696	696	696

Note: ** Correlation is significant at the 0.01 level (2-tailed)

Role Models Within the Organization

According to Garrison, Anderson and Archer (2000), teaching presence is composed of design and organization, facilitating discourse, and directing instruction (Huang et al., 2017; Boettcher & Conrad, 2016; Swan, Shea et al., 2008). Instructional course design, including the interaction and evaluation, is to plan and design the course structure and process. Facilitating discourse refers to managing the discussion, namely, reviewing and commenting on student discussion. Directing instruction is that the instructor as subject matter expert, provides leadership through the sharing of expertise (Anderson, Rourke, Garrison & Archer, 2001; Shepherdet al., 2016). Research has shown that teaching presence impacts participants' perceptions of higher levels of learning (Evans, Ward & Reeves, 2017; Kanuka, 2011; Morris, 2011; Shea, Li, & Pickett, 2006) and their success in online courses

(Arbaugh, 2010; Garrison, Cleveland-Innes & Fung, 2010; Kupczynski, Ice, Wiesenmayer & McCluskey, 2010).

Reports collected in the process of data analysis showed that teaching presence influenced learners' perceptions of this course. This supports the assumed cause that there are role models within the organization who have successfully underpinned MandarinX high completion rates on the six-week long MOOCs. Pedagogy, teaching styles, and the most important, the instructor's presence and attitude are all indicated by the research as the top criteria for online learning courses and environment (Boettcher & Conrad, 2016; Kanuka, 2011; Morris, 2011; Wang & Huang, 2017; Shapiro et al., 2017; Shea, Li, & Pickett, 2006). Almost half (43.1%) of the participants strongly agreed that "the instructor's manner of speaking and presentation skills are fluent, relaxed, and natural." Likewise, nearly half (43.7%) of them strongly agreed that "the instructor's attitude kept them interested in watching the videos" (Figure 15). The organizational assumed cause that there are role models within MandarinX course design and teaching presence therefore was validated by the data collected.

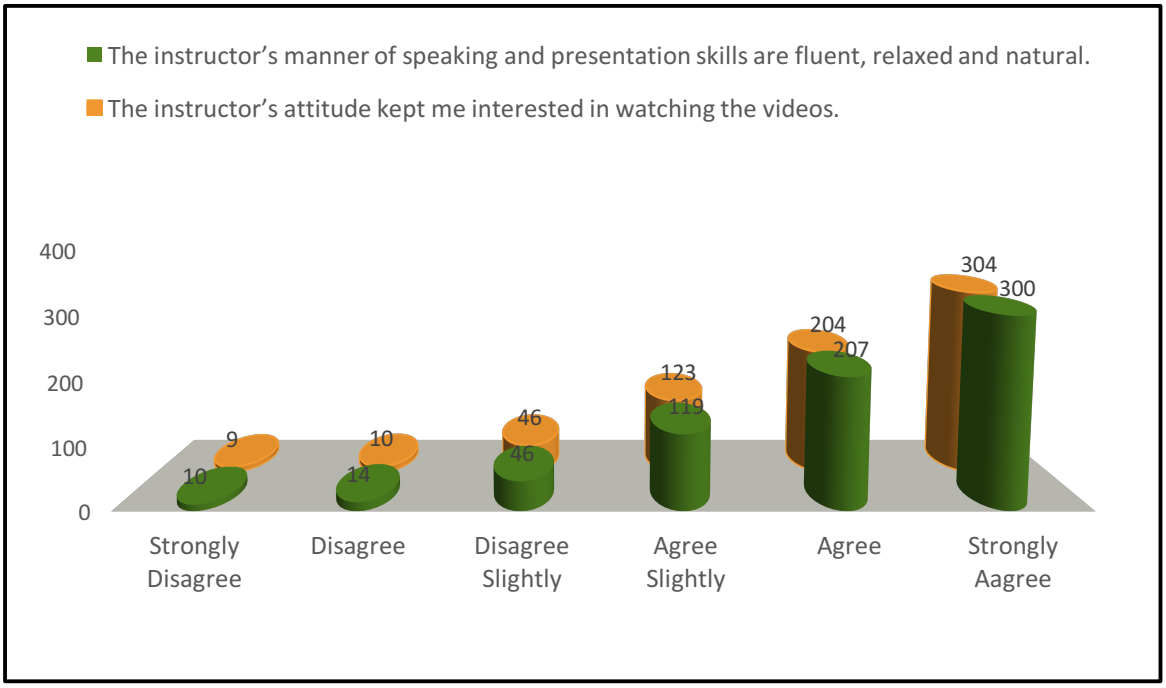


Figure 15. Survey Teaching Presence Influences Participants Perceptions of the Course

However, when responding to "the videos were very much like just being in the classroom, where the teacher is talking and writing on the board," not as many participants strongly agreed with this statement as they had with the previous survey questions discussed above. Only 23.4% of them strongly agreed; less than one third of them, 28.4%, agreed; about the same number of them, 26.4%, agreed slightly. It was expected that the percentage of agreement would be similar to that of the previous two survey questions, because this survey question was also designed to validate whether the instructor's teaching presence would influence participants' perceptions towards the course or not. As discussed above, teaching presence includes methods that an instructor utilizes to promote a quality online environment and facilitate an effective online learning experience (Boettcher & Conrad, 2016; Evans et al., 2017; Huang et al. 2017; Kangas et al., 2017; Shepherd et al., 2016; Wang & Huang, 2017).

Although the extent of agreement was not as high as the previous two survey questions, the result was actually promising. The reason is because videos were shot in everyday scenarios in real settings which aimed to let learners have an authentic learning experience, rather than learning the language and memorizing words in a classroom dominated by a teacher who wrote everything on the board. Nevertheless, the question item itself might be a bit confusing as designed.

Social Networking Helps Enhance Engagement

It should not be surprising that the more that online learners can be exposed to social networking activities and interact with diverse groups of learners, the higher the engagement and completion rate. Nevertheless, the two assumed causes: Social Networking Activities and Opportunities to Interact with Diverse Groups of Learners are validated and not validated respectively by the data collected. The data showed that 71.3% of participants agreed that "the broadcasting and online meetings led by the instructor were beneficial for them to learn Mandarin." The broadcasting was conducted through the MandarinX Facebook page and the weekly online meeting was mainly held via Google Hangout or Skype. However, only 50.4% of the participants thought "it was helpful for them to use the discussion forum to interact with peers and support each other." In other words, 49.6% of them did not regard the online discussion forum, provided and designed by the edX platform, as a handy and timely way to communicate with each other and the whole community (Figure 16).

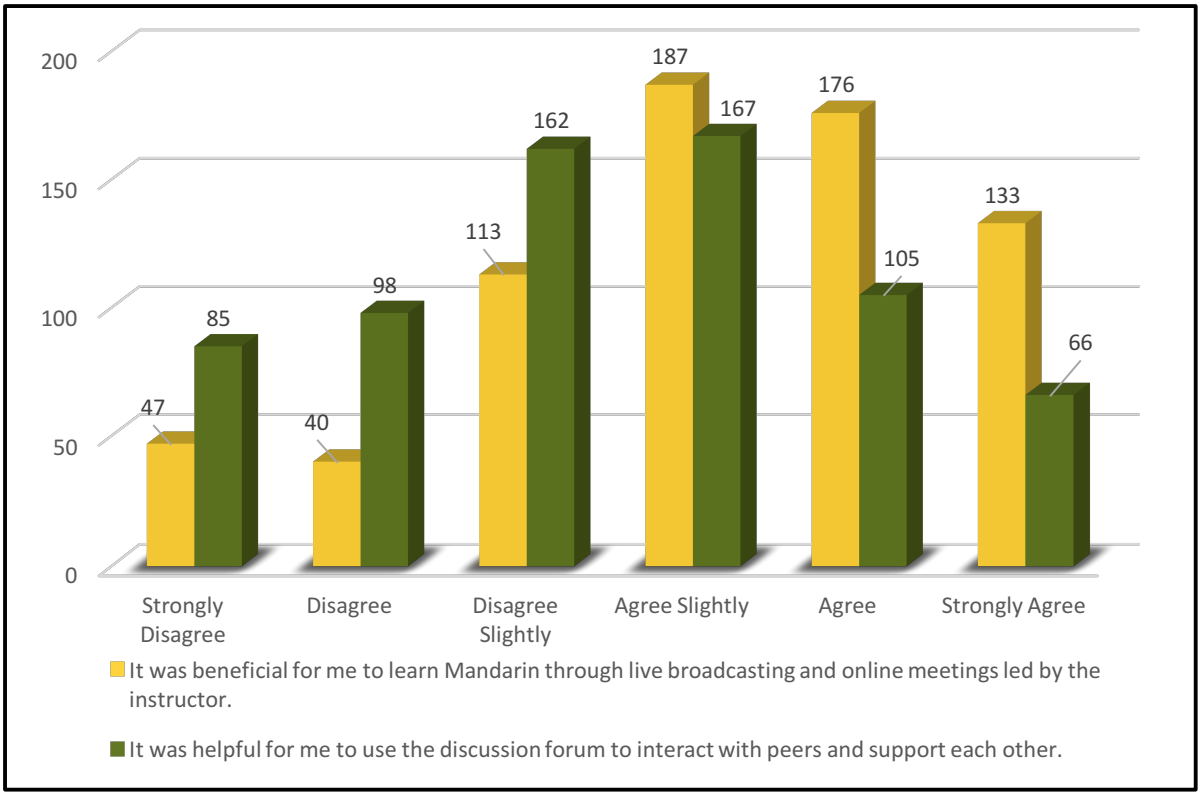


Figure 16. Survey Participants Use of Social Networking Events and Opportunities to Interact with Diverse Groups of Learners

Although Question 5 "How did you study while taking this course?" was examined earlier in Part 2 to analyze the correlation between social networking and the high completion rates of the course, it was still a surprise to see that 84.9% was checked "alone" (Figure 17).

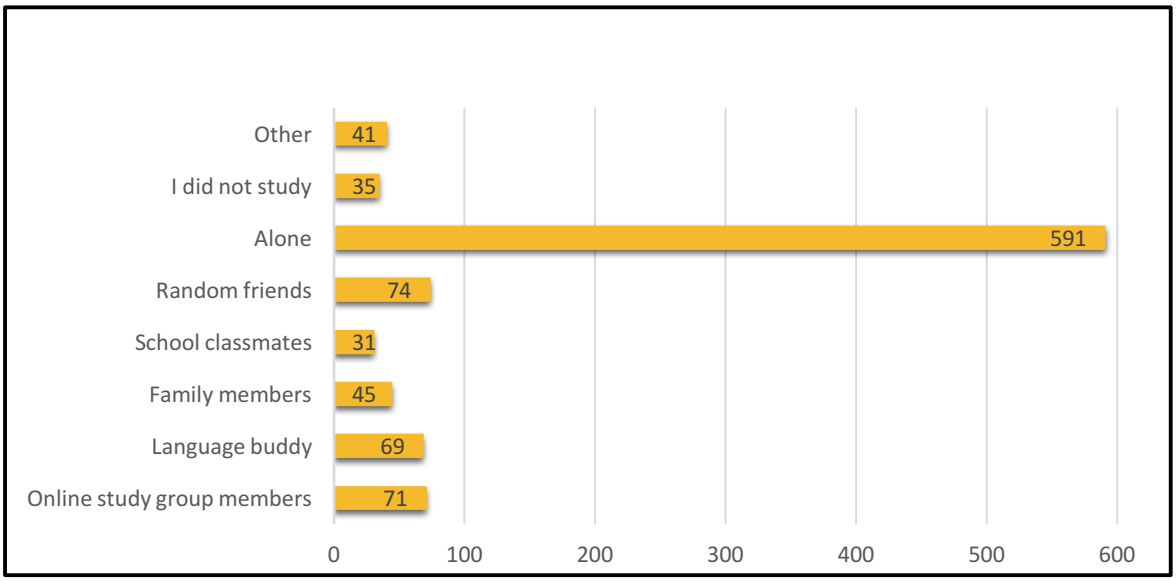


Figure 17. Survey Participants Learning Habits while Taking this Course

By analyzing participants' perceptions of social networking events and opportunities to interact with diverse groups of learners and their learning habits in Figure 16 and Figure 17, three reasons were also inferred from the findings in the previous paragraphs and Knowledge and Motivation sections. Table 15 summarizes the three reasons of MOOC participants' perspectives towards social networking and their course engagement.

Table 15

Three Reasons of MOOC Participants' Perspectives Towards Social Networking and Their Course Engagement

Summary of MOOC Participants Perspectives of Social Networking and Course Engagement
MOOC participants tended to be very self-directed
Busy schedules prevented them from interacting with other leaners in different time zones
Guidance from the instructor and the interaction with the instructor were valued more than online forum administered by the teaching assistants and technical team

Initially, the study estimated to see that social presence was validated by the collected data. Social presence is that students interact affectively with peers within an online learning environment (Choy & Quek, 2016; Swan, Garrison, & Richardson, 2009). Given the massive numbers of participants in a MOOC, it is more challenging to achieve social presence and to connect at a personal level. Thus, participants' perceived teaching presence had a positive impact on their constructive and interactive engagement of the course. An independent-samples t-test (Table 16) was conducted later to compare the "alone" (84.9% of the total) participants who scored high and low in Question 23 "the instructor's manner of speaking

and presentation skills are fluent, relaxed and natural" and Question 24 "the instructor's attitude kept me interested in watching the videos" in Part 2 conditions (M=5.02, SD=1.083).

Table 16

Sample Descriptives Using T-test for the Factor "Teaching Presence" in "Study Alone" Participants Group

	N	**M**	**SD**	**t-test**
Score Low	188	3.57	.836	-13.260***
Score High	508	4.56	.866	

Note: ***P<0.00; Both questions range from 1 (strongly disagree) to 6 (strongly agree).

There was a significant difference in the scores for those who perceived low in the teaching presence (M=3.57, SD=0.863) and those who perceived high in the teaching presence (M=4.56, SD=0.866) conditions; t (696) = -13.260, p = .000. The result suggested that the instructor's manner of speaking, presentation skills, and attitude really do have an effect on MOOC participants. Findings presented in previous paragraphs and sections demonstrated that instructor strategies in a MOOC design significantly impact MOOC participants' perspectives, attitudinal change, and the success of the course itself. Focusing on the establishment of a collaborative learning community can help inform future instructional design and instruction of MOOCs in general. Specifically, the results suggested that when participants are interested in watching the videos, their completion rate for MOOCs increases.

Flexibility in Online Learning Courses

One stating feature of MOOCs is that they allow considerable flexibility in organizing one's own learning, particularly for people who do not have the time to learn a subject matter

(Thai, et al., 2017; Montoya & Hernández, 2016; Loya, Gopal, Shukla, Jermann, & Tormey, 2015). Coursera, a MOOC platform, described itself as "learn without limits" for those who are busy with many demands on their time (Coursera, 2013). MOOCs allow much greater flexibility than in traditional learning that provides school calendars, timetables, and deadlines. MOOCs, on the other hand, allows participants to submit assignments and complete courses at a time and place that is more convenient to their own schedule (Montoya & Hernández, 2016; Levi, 2013). Although flexibility is viewed as a benefit for participants, it could be a challenge if participants did not manage well the flexibility that MOOCs provide. Therefore, the assumed cause was that the course provides flexibility and the participants benefit from that. More than half (68.6%) of the participants agreed that "the course allowed them to re-learn the concepts that they did not understand previously in the other language programs or institutions.

Furthermore, video length is the key indicator of MOOC participants' engagement. Findings indicate that shorter videos are much more engaging, and median engagement time is at most 6 minutes, regardless of total video length (edX Insight, 2016; Guo, Kim, & Rubin, 2014). Participants seldom make it to the halfway point if videos are longer than 9 minutes. They also engage less even if there are assessment exercises followed by longer videos. MandarinX course design team and video producers take better advantage of the online video format. The six-week long course consisted of 8 to 10 video clips (with a median time of 6 minutes) for the one hour lecture, every week. Depending on the difficulty of the course level and learners' proficiency of the language, the required time for completing assignments and quizzes varied. On average, participants could expect to spend around three hours or less on course related activities per week. The survey showed that nearly half (48.9%) of the

participants spent less than three hours on average with this course every week (Figure 18). The time that participants devote themselves into the weekly course content meet the criteria of ideal online video format in MOOCs.

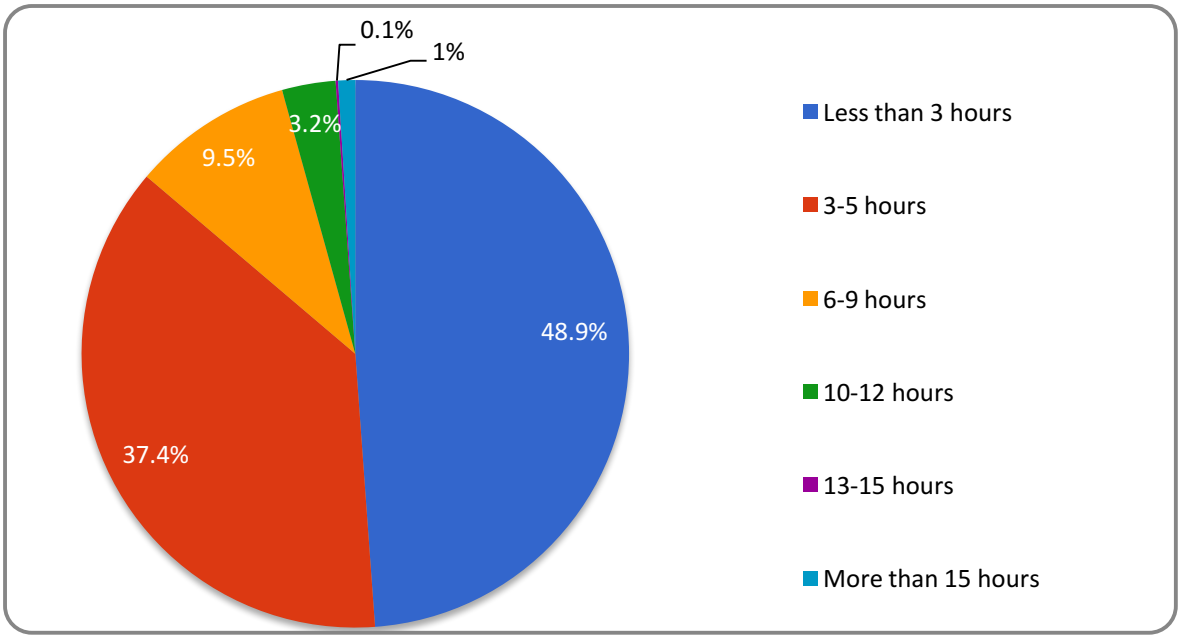


Figure 18. Survey Participants Time Spent on Average with this Course Every Week

As discussed previously in the Knowledge, Motivation, and Organizational assumed causes sections, a high-quality MOOC production involves various collaborations among many teams. All assumed causes are mutually reinforcing. Thus, when examining hours that participants spent while taking the course by conducting a One-way ANOVA, the results showed that all the Knowledge (M=4.05), Motivation (M=4.25), and Organization (M=4.26) assumed causes are significantly related with one another (Table 17). That means no matter how many hours participants devoted in taking the course, they perceived the same towards this MOOC production — quality delivery.

Table 17

ANOVA Analysis for the Factor "Hours Spend on Average with this Course Every Week" in Knowledge, Motivation and Organization Assumed Causes

	N	Mean	SD	F Value
Knowledge	696	4.05	1.121	9.722***
Motivation	696	4.25	.973	19.612***
Organization	696	4.26	1.022	10.602***

Note: *P<0.05, **P<0.01, ***P<0.00

Much of the research identified that interaction is the key element in high-quality MOOCs (Hood & Littlejohn, 2016; Fisher, 2012; Khalil & Ebner, 2013; Levy & Schrire; 2012; McAuley, Stewart, Siemens, & Cormier, 2010; Waard, 2011). Milligan and Littlejohn (2017) also stated that only the poor course design would make participants feel isolated and depressed. The feeling of isolation among MOOC participants can be solved by focusing more on social interactions when designing courses. MandarinX MOOC participants exhibited a high level of satisfaction with the overall course design, as well as acknowledging that the course design on the platform to be interactive and engaging.

Interactions in MOOCs helped students to develop their own ideas, express themselves, establish a presence, and make thoughtful long-term relationships (Wang & Huang, 2017; Chew et al., 2017; Salmon et al., 2016). Prompt and personalized communications with the instructor particularly have a significant impact on MOOC participants' satisfaction (Thai et al., 2017; Kangas et al., 2017; Choy & Quek, 2016). The MandarinX organization triumphed over most of MOOCs' failure by offering prompt, clear feedback from the instructor and the teaching assistants, hosting social networking activities, and a virtual weekly office hour. Despite the fact that interactions were time-consuming and

difficult to arrange, especially with larger class sizes in different time zones, the teaching staff team within the MandarinX organization managed a way to sustain and thus create a positive culture and high-performing organization.

Furthermore, the complexities of instructor roles in MOOCs is critical, given the massive numbers of students and their diverse background and goals. Role models within the MandarinX organization succeeded in playing the roles as a distant lecturer with fluent, relaxed, and natural presentation skills, a mentor whose attitude kept the participants interested in watching the videos, and a facilitator within the network acting as a co-participant.

Summary of Validated Causes

The research confirmed several of the knowledge, motivation, and organizational influences identified in the literature review. The MOOC participants in MandarinX online language environment are highly engaged with the interactive courses and social networking activities led by the instructor. Participants' perceptions towards the course are strongly influenced by the teaching presence, even though opportunities to interact with diverse groups of learners seem less favorable. The organizational culture also affects the learning ambience and participants' willingness to persist and thus complete the course.

Participants were also found to be rich in factual, procedural, and metacognitive knowledge and favor the time flexibility and convenience of learning Mandarin Chinese online. However, participants lack conceptual knowledge in differentiating varying language usages in Mandarin speaking regions. Regarding motivation, MandarinX participants have a substantial interest in learning Mandarin and are confident with their academic abilities and their own learning. They feel the course has relevance to their individual goals. Thus, the

knowledge, motivation, and organizational influences for MOOC participants are likely best addressed by ensuring stakeholders are highly motivated and engaged with an interactive learning environment and well-structured course design. Chapter Five will present implementations for designing future MOOCs based on empirical evidence.

CHAPTER FIVE: FINDINGS, IMPLEMENTATION, AND EVALUATION

The purpose of the study was to understand the reasons why participants persisted in a six-week long Massive Open Online Course (MOOC) offered by MandarinX. Assumed causes within knowledge, motivation, and organizational dimensions were adapted from a gap analysis model proposed by Clark and Estes (2008). The study validated the assumed factors, which were based on a survey questionnaire completed by 696 participants. A total of 17 assumed causes were validated after computing the data; this was done by use of the SPSS statistical tool. This chapter is designed to identify and extend those factors leading to this MOOC's success. The next section of this chapter, Validated Causes Selection and Rationale, will discuss the assets, the recommended solutions, an implementation plan, and an evaluation plan based on the Kirkpatrick (2006) model. The chapter then concludes with a discussion of the limitations of the study and a discussion of possible future research in the field.

Validated Causes Selection and Rationale

In Chapter Four, a total of 17 assumed causes were validated. The validated causes stem from knowledge, motivation, and organizational factors. In order to effectively answer the questions as to what MOOC participants perceived about the quality of the courses, including participants being high performers and the organization performing better than the average, the rest of the study presents the validated causes and related recommended practices that could be adapted by other universities or institutions to design courses well for the sake of improving the learning experience and completion rates in the MOOC community. A list of validated causes is displayed in Table 18.

Table 18

Validated Causes Summary Table

Gap Analysis Dimension	Validated Causes
Knowledge	**Factual** Participants know reasons which prevent them from completing the course. **Procedural** Participants have the knowledge necessary to navigate the curriculum and the LMS. **Metacognitive** Participants need to know where to find supplementary materials to assess their learning.
Motivation	**Intrinsic Value** Participants have substantial interests in learning Mandarin. **Goal Orientation** Participants learn Mandarin due to professional needs for work or travel to Mandarin-speaking countries. **Intrinsic Motivation** The course has relevance to individual differences. **Extrinsic Motivation** Participants receive emotional support from faculty members. **Extrinsic Motivation** Participants have instant feedback from the instructor, peers, and teaching staff. **Cost/Benefit** Participants can audit the courses for free unless they would like to have a certificate. **Metacognition** Participants are aware of their own learning. **Self-Efficacy** Participants are confident in their academic abilities. **Affect** Participants' academic emotions are closely related to their learning strategies and academic performances.
Organization	**Cultural Setting** Interactive language course design **Cultural Setting** Social networking activities **Cultural Setting** Time flexibility and convenience **Cultural Model** Teaching presence influences learners' perceptions of the course **Cultural Model** Positive culture and happy organization

Findings for Knowledge Causes

The survey results which resulted from the use of the SPSS statistical tool validated the assumed knowledge causes that contributed to the success of the MOOC performance and completion rates. Participants were able to identify reasons which prevented them from completing the course. Procedurally, participants had the knowledge necessary to navigate the curriculum and access course materials on the MOOC platform. Lastly, participants had the ability to find supplementary materials that helped enhance their learning.

Table 19

Validated Causes under Knowledge Category and Findings Summary Table

Validated Causes	Findings
Factual Participants know reasons which prevent them from completing the course.	• Participants possess knowledge which allowed them to complete the course successfully. • It is fundamental that they be provided with the factual knowledge of reasons in successfully completing courses in the MOOC learning environment.
Procedural Participants have the knowledge necessary to navigate the curriculum and the LMS.	• It is a process of high performing that is directly connected to academic achievement. • Knowledge of how to explore required course materials and assessments will ensure a higher probability of course completion.

Table 19 (Cont'd.)

Validated Causes	Findings
Metacognitive Participants need to know where to find supplementary materials to assess their learning.	• Participants have the metacognitive knowledge to anticipate and potentially solve problems encountered during the course. • The acquisition of this metacognitive knowledge will enhance participants' ability to facilitate their use of strategic methods and achieve the goal of completing the course. successfully.

Factual

MOOC participants in this study demonstrated the factual knowledge of knowing the reasons which caused them to fall behind, and even prevented them from completing the course. Factual knowledge refers to facts which are basic to specific disciplines and includes topics that one must be familiar with in order to understand and function in a given field (Rueda, 2011). In this regard, participants across various demographics knew that reasons which hinder the progress of their learning would play a part in completing the course. This finding suggested that participants possess the knowledge which allowed them to complete the course successfully (Clark & Estes, 2008).

For other organizations and MOOC participants to achieve similar results, it is fundamental that they be provided with the factual knowledge of reasons in successfully completing courses in the MOOC learning environment (Clark & Estes, 2008). For an instructor-led track, instructors and course development teams could lead course overview sessions with clear guidance and deadlines for submitting exercises and the final examination at the beginning of the six-week long course in order to ensure that participants have the factual knowledge of possible reasons that could impede them from completing courses.

Even if it is for a self-paced track, the relative factual knowledge needed for successfully completing the course can be embedded throughout the courseware on the MOOC platform (e.g. course syllabus and pre-recorded course overview videos). Keeping participants informed of the knowledge they need to know will help them achieve the goal of completing the course successfully (Clark & Estes, 2008).

Procedural

In this study, participants demonstrated that they have adequate knowledge to navigate the curriculum and course materials on the MOOC platform. The term "knowledge skill" refers to procedural knowledge, simply meaning the ability to do something (Rueda, 2011). In the study, participants knew where to locate the course materials and assessment quizzes that they needed to complete in the course. This finding is crucial, because it is a process of high performing that is directly connected to academic achievement (Clark & Estes, 2008). Being able to know how to explore the curriculum requires knowledge of specific skills (Rueda, 2011).

Other instructors and the course development teams can employ this finding through hosting trainings to help equip MOOC participants with the skills of utilizing the learning tools on the MOOC platform which are needed to access the course materials and complete exercises (Clark & Estes, 2008). Knowledge of how to explore required course materials and assessments will ensure a higher probability of course completion. The training will also enable MOOC participants to increase their efficiency of learning and to evaluate their own progress.

Metacognitive

Participants in this study demonstrated that they knew where to find supplementary materials to assess their learning strategically. Metacognition refers to the ability to think about thinking, rather becoming aware of one's own thinking processes (Rueda, 2011). In the study, the participants expressed confidence that they were capable of searching extensive learning materials to augment their learning progress. They, therefore, had the metacognitive knowledge to anticipate and potentially solve problems encountered during the course (Clark & Estes, 2008).

This finding is transferable to other instructors and the course development teams that furnish the MOOC participants with factual, conceptual, theoretical, and strategic knowledge of how to evaluate their own progress in the online learning environment (Clark & Estes, 2008). The acquisition of this metacognitive knowledge will also enhance participants' ability to facilitate their use of strategic methods and achieve the goal of completing the course successfully (Clark & Estes, 2008).

Findings for Motivation Causes

According to Clark and Estes (2008), validated factors should be prioritized depending on the needs of the organization. Therefore, the MOOC participants' intrinsic value, motivation, and goal orientation are addressed first among motivational factors. The majority of the participants have substantial interests in learning Mandarin due to professional needs for work or travel to Mandarin-speaking countries and the course has relevance to individual differences (Rueda, 2011). The survey results also validated the sources of extrinsic motivation among the participants, such as the emotional support and instant feedback from the instructor, peers, and teaching staff. The practice of allowing

participants to audit the courses for free unless they desire a certificate was also validated. Metacognition, which refers to the participants' awareness of their own learning proved to be motivational causes. Self-efficacy, which relates to participants' confidence with their academic performances was also proved to be motivational causes. Finally, participants' academic emotions were found to be closely related to their learning strategies and academic performances, which were defined as affect. These motivational factors are discussed in sub-sections later on in this paper. Validated causes and findings are grouped into three elements and shown in Table 20.

Table 20

Validated Causes under Motivation Category and Findings Summary Table

Validated Causes	Findings
Intrinsic Interest in the Subject Participants have substantial interests to learn Mandarin. Participants learn Mandarin due to professional needs for work or travel to Mandarin-speaking countries. The course has relevance to individual differences.	• Participants demonstrated substantial interests in learning Mandarin Chinese and responded that the course is relevant to individual differences.
Extrinsic Benefit of the Course Participants receive emotional support from faculty members. Participants have instant feedback from the instructor, peers, and teaching staff. Participants can audit the courses for free unless they would like to have a certificate.	• Receiving emotional support and instant feedback from the instructor, peers, and teaching staff acts as an additional incentive for MOOC participants to complete the course.

Table 20 (Cont'd.)

Validated Causes	Findings
Positive Attitudes toward MOOCs Participants are aware of their own learning. Participants are confident with their academic abilities. Participants' academic emotions are closely related to their learning strategies and academic performances	• Participants who were satisfied with the degree of participation demonstrated higher levels of learning strategies (e.g. evaluating their own learning) and academic performances (e.g. showing confidence with their abilities).

Intrinsic Interest in the Subject

The finding focuses on the intrinsic motivation in learning the subject of the MOOC participants. It is believed that motivational factors that stem from the intrinsic value motivate people to perform better in a particular task (Barba, Kennedy, & Ainley, 2016). MOOC participants demonstrated substantial interests in learning Mandarin Chinese and responded that the course is relevant to individual differences.

Extrinsic Benefit of the Course

The fact that almost all MOOCs are free is one of the main motives for participants to enroll (Instructure, 2013). Practical use, which has been viewed as utility value, is the belief that people are more likely to increase commitment to a task because of the benefits associated once completed (Clark & Estes, 2008). However, receiving emotional support and instant feedback from the instructor, peers, and teaching staff acts as an additional incentive for MOOC participants to complete the course.

Positive Attitudes toward MOOCs

Participants' attitudes result from the satisfaction derived from taking MOOCs. A senior participant who completed 'Basic Mandarin Series Level One to Three' and 'Business

Chinese' courses, commented that taking this MOOC was like taking a real class with weekly live meetings, assignment deadlines, quizzes, a midterm, and a final. The importance of the attachment to values can lead people to adopt the action and persist, regardless of distractors (Clark & Estes, 2008). Participants who were satisfied with the degree of participation demonstrated higher levels of learning strategies (e.g. evaluating their own learning) and academic performances (e.g. showing confidence with their abilities).

Findings for Organization Causes

The assumed organizational causes were validated by the survey results, which was computed through use of the SPSS statistical tool. The MandarinX organization has established a positive cultural setting around happy models. Teaching presence, including the interactive language course design and adequate social networking activities within the organization, influenced participants' perceptions towards this MOOC and motivated them to reach targeted goals: completion of highly engaged and complete courses. Validated assets are discussed in the following paragraphs by reviewing current relevant literature. Table 21 summarizes the relationship between validated causes and findings.

Table 21

Validated Causes under Organizational Category and Findings Summary Table

Validated Causes	Findings
Cultural Setting Interactive language course design Social networking activities Time flexibility and convenience	• Participants in the study valued that the courses were designed interactively with social networking activities. • The organization offered the courses with time flexibility and convenient access so that participants could meet their goals.

Table 21 (Cont'd.)

Validated Causes	Findings
Cultural Model Teaching presence influences learners' perceptions of the course Positive culture and happy organization	• The instructor's attitude affected participants' learning outcomes of this course. • A positive attitude with a joyful atmosphere within the organization increases the likelihood for effective learning. • All teams have a clear vision and an effective way to communicate, which thus led to a culture with positive attitude and happy working ambiance.

Cultural Setting

The finding is grounded in the organizational theory of cultural settings. Cultural settings are visible and considered to be physical settings where the organization's values and beliefs are displayed (Gallimore & Goldenberg, 2001). The MOOC participants in the study valued that the courses were designed interactively with social networking activities. Furthermore, the organization offered the courses with time flexibility and convenient access so that participants could meet their goals.

Cultural Model

Cultural models refer to beliefs and values that are generally invisible, often involving values that are relative (Gallimore & Goldenberg, 2001). MOOC participants in the study stated that the instructor's attitude affected their learning outcomes in this course. They believed that a positive attitude with a joyful atmosphere within the organization increases the likelihood for effective learning. Despite having different teams across various fields, all of the teams had a clear shared vision and an effective way to communicate, which thus led to a culture with positive attitude and happy working ambiance (Clark & Estes, 2008).

Implementation Plan

The gap analysis framework provides a manageable method of exploring the causes of the MOOC participants' knowledge, motivation, and organizational gaps. However, in the development of an implementation plan, all of the findings addressing each validated gap should work together as part of a whole. The completion rate (86%) within the organization is significantly higher than the average completion rate, which ranges from 5% to 10% (Davis et al., 2017; Höfler et al., 2017) for most MOOC courses. The phenomenon is even more notable when taking into consideration that according to Ho, Reich et al. (2014), 55.8% of MOOC participants access less than half of their course material. Granted, some MOOC courses have higher completion rates than others, and with such a large gap in performance, one must ask questions such as: what drives MOOC success? In particular, what promising practices are needed to reduce the attrition rate of MOOC courses in general? Also, what promising practices are needed in order to deliver effective online language teaching for foreign languages? Specific criteria need to be considered when designing and implementing MOOCs in general, with specialized approaches to teaching for language acquisition.

Based on the research findings presented in Chapter Four, the policies to be implemented within MandarinX organization are: 1) identify instructional design suggestions to advance the MOOC community by optimizing educational resources and saving on the cost of logistics (Funieru & Lazaroiu, 2016); and ultimately, 2) expand the scope of the coursework offered at universities by appropriately incorporating MOOCs in flipped classrooms, blended learning, and teacher training. MOOC teaching is more than the instructor, the course delivery platform, and the participants. A successful MOOC consists of a number of "invisible" systems and actors. A model (Figure 19) was created to illustrate the

multiple collaborations and subsystems that are necessary to support MOOC instructional design, and thus expand the scope of the coursework offered at universities, noting that these systems are rarely implemented as well thought out schemes. The MOOC *scheme* represents highly engaged learning and significant completion rates that support the entire process of MOOC teaching. It is instructor-centered because MOOC instructors need to complete three stages for each MOOC they teach: preparation, execution and implementation. In the following sub-sections, these stages and their associated tasks will be discussed in more detail.

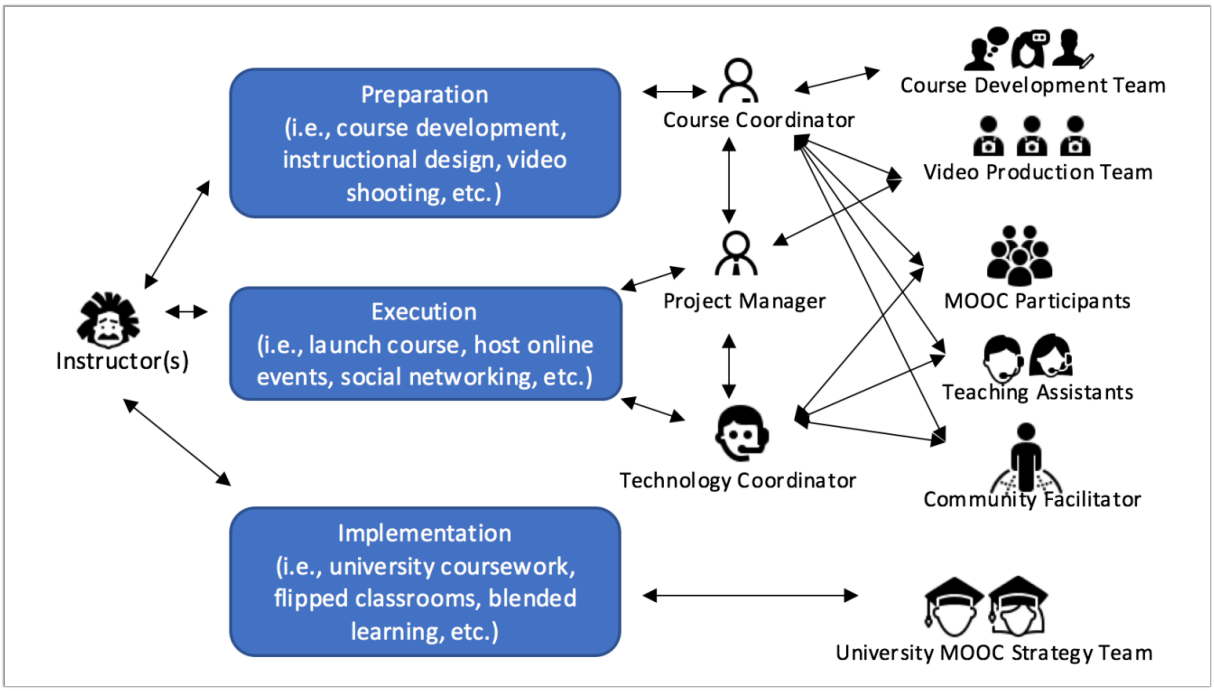


Figure 19: MOOC Scheme

Stage 1: Preparation

A MOOC instructor initiates a course by brainstorming with the course coordinator and the course development team. A teaching proposal is then established to be aligned with university requirements, strategic plans and students' needs. After obtaining permission, the

instructor and the course development team design the MOOC curricula by preparing teaching materials. The instructor and the course coordinator communicate with the video production team to decide which format or layout can help teaching pedagogy for online courses. This stage usually takes a long period to organize appropriate content into 4-6 weeks of lectures that are clear and concise, especially since the MOOC audience comes from an extremely wide range.

Stage 2: Execution

In the second stage, an instructor's primary duty is to launch the MOOC and ensure that it proceeds as planned. In order to run the course more effectively, the project manager must monitor the progress of the video production team to ensure the course is on time and on budget. Every week, the technology coordinator needs to upload the lectures, assignments, quizzes and announcements each week created by the course development team. The technology coordinator is also required to solve problems (e.g., correct broken links of course materials, deal with students who encounter technical issues while viewing courses). During this stage, the instructor and the course coordinator also need to collaborate with teaching assistants and the community facilitator to answer questions raised by students in a timely and appropriate manner and host online synchronous meetings. A community facilitator is usually a volunteer or a star student from the previous cohorts that the instructor has nominated.

Stage 3: Implementation

Feedback and comments from forum discussions, social media posts, and even student blogs received during the MOOC execution are collected and documented for the next MOOC's implementation, making this process iterative in nature and ensuring that MOOCs offered by instructors align with university goals.

Collaboration across a larger team is an important and necessary part of a successful MOOC administration. However, many of the current MOOC design systems only create collaborations for student support and the platform due to the fact that researchers have been emphasizing the concept of student-centered MOOC implementation and design. From this model, instructors were highlighted as they needed to interact with a range of collaborators. This includes participants' engagement outside the MOOC platform (e.g. social networking events and virtual meetings with the instructor and the course development team), as well as interactions with other actors in the overall system. For instance, the instructor collaborates with teaching assistants and the technical coordinator to run virtual office hours or make the social networking events attractive. The instructor collaborates the most with the action item individuals or heads (e.g. for curriculum design, lecture shooting, etc.) during the preparation and execution phases. Collaborations take place often *online* (using tools like social media or virtual meetings), but they sometimes occur in *offline* shooting studios or places with intensive schedules to save on the cost of logistics.

Organizational Environment and Features Relevant to Implementation

The MandarinX organization consists of approximately 18 people, of which 90% are based in different locations around the world and whose professional backgrounds are diverse. Staff members come from different Mandarin speaking areas, which helps enhance the

collaboration regarding the cultural perspectives on language usages. Learning how to support each other as staff members is crucial, as the team is small and there is no hierarchy involved. Because of the small team, everyone has been trained to cover one another's job duties and is adequately acquainted with all of the course information. Weekly Skype meetings and WeChat groups are the tools that keep everyone on the same page with instant communication. Oftentimes, staff members have to solve unprecedented problems. As a start-up organization, the budget remains tight, with corresponding salary. Staff needs to be passionate about the mission.

Despite the organization's financial difficulties, the staff generally demonstrates extreme enthusiasm and resilience, in that it makes attempts to provide findings to problems or target problems efficiently and on time. A lack of capable project managers or engineers is the main obstacle for the organization because in-house employees are a significant cost. A main issue for MOOCs in general, and this organization in particular, is how they can be profitable in some ways while the non-profit organization can be managed to be sustainable.

With an individual founder and a very small team, decision-making is a combination of top down and bottom up methods. Decisions are often made under time constraints without prolonged analysis. It is rare that the organization can engage in a lengthy discussion of benefits and drawbacks of a particular policy before making a decision. Thus, many decisions are made based on intuition and a gut reaction. These environmental features of the organization must be taken into account in implementation planning.

Related Solutions and Organizational Capacity to Implement

One must first examine the policy development process when it comes to evaluating the relationship between decision making and organizational behavior. Much like a garbage can's function is to receive trash as it is produced (Cohen, March, & Olsen, 1972), organizations may treat the policy development process as a receptacle awaiting input in the forms of numerous problems and solutions as the input is developed. Once the "receptacle" receives the input, the organization then can make a decision based on the input. In general, no policy can be developed without decision-making. Decisions made by the organization, however, cannot be detached from the organization's overall behavior or the organization's culture. Intuition, such as the "intuitive repulsion" felt in analysis of an image, can be a reaction based on prior knowledge, experience, or culture (Gladwell, 2007). Therefore, policy development and decision making is heavily influenced by the organization's overall behavior, or its culture.

Moving the suggested MOOC execution plan forward at university levels requires specific solutions which are outlined below in Table 22. These include two primary implementations. First, the instructional design within this MOOC execution plan focused on establishing a strong collaboration among all related teams and a collaborative community of learners. The instructor entered the MOOC execution plan with the idea of serving as a co-producer and a participant was made to address the issue of multiple perspectives and experiences. Although instructors' roles within MOOC may differ in varied institutional contexts, in which they can perform communication skills face-to-face, MOOCs with more network opportunities, where participants can gain more engagement through participation, are most effective (Ross et al., 2014; Veletsianos, 2017). The results in Chapter Four present

a detailed examination of instructional strategies and teaching presence in a MOOC designed to focus on the establishment of a collaboration regarding MOOC production and a collaborative learning community that can underpin the highly-engaged MOOCs with high completion rates in general and MOOCs for language learning specifically.

Secondly, carrying out these solutions rests on the development of working groups within university MOOC strategy team members. There are two predicted oppositions that could hinder the implementation: 1) some universities do not promote and accept course credits gained by participants working online (Aydin, 2017); 2) possible resistance from university faculty members, who may view this alternative as unwelcome additional work (Zheng, Wisniewski, Rosson, & Carroll, 2016). MOOCs would not have to consist of formal classes, as the hectic schedule of a university would make it difficult to have students who wish to have double majors to attend required course classes. Alternatives for instructors might consist of collaborating on interdisciplinary coursework that could be used for reference by all instructors so that students would receive consistent course framework regardless of which faculty member's course they are enrolled in. It was suggested that the courses' scripts would need to be visual and written since some of the participants are hearing impaired. However, a university needs to know how to manage the MOOC platform, or it would be risky to invest a lot of time and money without having specific expected outcomes.

A university setting, which is more structured in nature, weighs strongly toward a more methodical examination of policy and lengthy discussion before making any policy decision. Oftentimes, the decision-making process seems overly rational and impeded by bureaucratic decisions. The process here is closer to Etzioni's (1967) mixed scanning approach, following a systematic evaluation strategy before arriving at a decision. A series of

working groups involves hierarchy and a more rational process in which each policy decision is based on a careful and thorough analysis of all options based on the facts available (Aydin, 2017). The decision is formally decided upon after extended discussion among different levels within the university; contrastingly, a sudden intuitive decision is often made at some point within the organization. The process of making decisions among a variety of policy alternatives seems to depend on specific organization's cultures and should eliminate hasty initiatives of intuitive decision making, which may be the ultimate description of decision-making. Three validated assets are discussed below through a review of the literature and summarized in Table 22.

Table 22

Summary Implementation Plan for Two Proposed Solutions: Create Strong MOOCs with Instructional Design Strategies at MOOC Community and for University Coursework Framework

Solutions	**Human Resource Roles/ Responsibilities/Capacity**	**Timeframe**
Establish clear goals and access needs for major stakeholder group (MOOC participants), starting by reviewing the existing resources, recruiting professionals, and making recommendations for changes.	Working group consisting of instructor(s), course coordinator, course development team, and project manager.	7/17 – 10/17 (3 months)
Determine stakeholder groups engaged in assessment in various teams.	Working group consisting of instructor(s), course coordinator, course development team, teaching assistants, community facilitator, video production team, project manager, technology coordinator, and MOOC participants.	7/17 – 10/17 (3 months)
Evaluate the training needed by each stakeholder group, as well as managerial level assessment training needs.	Working group consisting of instructor(s), course coordinator, project manager, and technology coordinator (i.e., leading roles).	7/17 – 10/17 (3 months)

Table 22 (Cont'd.)

Solutions	Human Resource Roles/ Responsibilities/Capacity	Timeframe
Develop specific training plan for each group as well as broad training on assessment. It will likely be sequence of training as well as repetition and practical development of applicable tools for participants to utilize.	Working group consisting of instructor(s), course coordinator, project manager, technology coordinator (i.e., leading roles), and/or outside consultant.	7/17 – 10/17 (3 months)
Develop clear mechanism of communication among all of the teams, including means, timeline, and links to the knowledge capture.	Working group consisting of instructor(s), course coordinator, project manager, technology coordinator (i.e., leading roles), and (or) outside consultant.	7/17 – 10/17 (3 months)
Determine available funding and source(s) of funding across the organization or partnered with sponsorship institutions.	Working group consisting of instructor(s), course coordinator, project manager, technology coordinator (i.e., leading roles), and university MOOC strategy team.	7/17 – 12/17 (6 months) then ongoing
Develop course content, including, video lectures, textbook, workbook, exercises, quizzes, final exam, feedback loop and ongoing assessment, edition. and revisions.	Working group consisting of instructor(s), course coordinator, course development team, teaching assistants, video production team, project manager and technology coordinator.	10/17 – 12/17 (3 months)
Launch course on MOOC platform, including: having virtual office hours, managing forum discussions, hosting social networking events and providing technical support. Communications among all teams are continually encouraged to achieve efforts of a high-performing MOOC with high completion rates.	Working group consisting of instructor(s), course coordinator, course development team, teaching assistants, community facilitator, video production team, project manager, technology coordinator, and MOOC participants.	1/18 – 3/18 (3 months)
Evaluate and assess MOOC execution plan and activities, make necessary adjustments. Develop plan for coming school year focused on university framework and stakeholders (e.g. faculty from online division) within the institution who have been trained and had experiences teaching online courses. Provide teacher training to faculty who have interests in teaching online courses.	Working group consisting of instructor(s), course coordinator, project manager, technology coordinator, and university MOOC strategy team.	2/18 – 4/18 (3 months)

Table 22 (Cont'd.)

Solutions	Human Resource Roles/ Responsibilities/Capacity	Timeframe
Identify organization(s), universities, and/or individual instructor to provide MOOC execution plan holistically, as well as within and across each area (curricular and co-curricular). This will include both on-campus flipped classroom implementation for larger groups, as well as 100% online degree programs and other hybrid programs for targeted stakeholders (MOOC participants).	Working group consisting of instructor(s), course coordinator, project manager, technology coordinator, and university MOOC strategy team.	2/18 – 4/18 (3 months)
Take redrafted implementation plans and policies to governing bodies (e.g. University Council) for approval.	Working group consisting of university MOOC strategy team (e.g. members of University Council, Deans, Chairs of programs, Director of Academic Administration, and Director of Online Education).	2/18 – 7/18 (6 months)
Implement university course framework Fall 2018 in alignment with MOOCs incorporations and accreditation.	Working group consisting of university MOOC strategy team (e.g. members of University Council, Deans, Chairs of programs, Director of Academic Administration, and Director of Online Education) and accreditation institutions or agencies.	8/18 – 1/19 (6 months)

Evaluation Plan

Kirkpatrick and Kirkpatrick (2006) describe the four levels of evaluation: reaction, learning, behavior, and impact. The objective of the levels of evaluation is to determine whether policies implemented by the organization are effective and how these policies can be improved or otherwise made more efficient (Kirkpatrick & Kirkpatrick, 2006). Assessment can be formal or informal, depending on the existing culture of the organization.

Moving from one level to the next, they represent a sequence of complexity and the evaluation process becomes more difficult and time-consuming with each step, but it also

provides increasingly more valuable information. (Kirkpatrick & Kirkpatrick, 2006). Kirkpatrick and Kirkpatrick's (2006) evaluation model will be applied, and the four levels of evaluation needed to fully determine the effectiveness of the implementation plan will also be discussed in the following sections.

Level 1: Reactions

At Level 1, the focus is on the participants' reactions to the implementation plan. The measurement instruments request surveys or comments about the course content, training materials, instructors, facilities, delivery methods, venues, etc. (Kirkpatrick & Kirkpatrick, 2006). Positive reactions to an implementation plan may encourage participants to get involved in the future project. However, negative reactions towards the implementation plan may discourage participants from attending or joining in the project. Both the positive and negative reactions can be used to modify the proposed solutions and to ensure organizational support for the implementation plan. Kirkpatrick highlighted the importance of Level 1 evaluation because favorable reactions to the implementation plan do not guarantee that learning (Level 2), or transfer (Level 3) would occur (Kirkpatrick & Kirkpatrick, 2006).

It is imperative to devote time for extensive analysis of data in lieu of participants' reactions towards the MOOC scheme for university coursework framework in the first level of the evaluation plan. Assessment and data collection are in the form of formal surveys, as recommended by Kirkpatrick & Kirkpatrick (2006), rather than an informal process based on staff feedback, observations, or participants' testimonials. A set of Level 1 reaction questions will be administered through a survey, which will include Likert-scale and open-ended questions. The survey questionnaire is used by the instructors and the course development team in the beginning of the implementation plan to better understand their motivation and

perceptions towards the MOOC scheme. One sample Likert-scale question would ask participants to rate the following statement on an agreeability scale from 1 'strongly disagree' to 6 'strongly agree:' "Do you think that MOOC would enhance students' learning experiences and positive outcomes?" One sample open-ended question would be "How does teaching a MOOC differ from non-MOOC online courses? Altogether, the results of the survey will indicate the motivational impact of the MOOC scheme implementation plan.

Level 2: Learning

Kirkpatrick's Level 2 is learning. As Kirkpatrick and Kirkpatrick (2006) underlined, no behavioral change will happen without learning. Thus, evaluating learning is important. Kirkpatrick contended that learning to some extent changes participants' attitudes, improves knowledge, and/or increases skills (Kirkpatrick & Kirkpatrick, 2006.) Although research does not support that acquired knowledge and skills associate with behavioral changes (Payne & Isaacs, 2017), it is evident in the literature that the examination of what participants learned during the training used the most in evaluations (Giacumo & Bremen, 2016). Evidence needs to be provided to demonstrate the merit of the implementation plan.

The second level of the evaluation plan will check how learning, motivation, and organizational change impact the implementation plan of the MOOC scheme for university coursework framework. The best way to measure learning is to utilize a direct assessment to determine what type of learning has occurred. It is essential to truly understand if the solution resulted in any changes at this level (Kirkpatrick & Kirkpatrick, 2006).

Participants will be provided with clear guidance and explicit demonstration throughout the training, and the training professionals will provide timely feedback if and when questions are raised. There are formal assessments of participants' performance and

their perceptions towards the training. Assessment plans will be required among various teams (i.e., the stakeholder groups), including instructors, course development team, video production team, project manager, and technology coordinator, to determine the acquired learning and training while implementing the MOOC scheme at the universities (Kirkpatrick & Kirkpatrick, 2006). This assessment will be demonstrated and the engagement of the stakeholder groups will also be determined to measure if they learned the appropriate skills in the training.

Level 3: Transfer

Level 3 addresses the issue of learning transfer and measures participants' performance by determining the extent to which participants transfer their newly acquired knowledge and skills on the task/project (Kirkpatrick, 2006). The training effort cannot have an impact on the organizational results (Level 4) if participants do not apply what they learned to their new tasks/projects. Only positive transfer can predict progressive results. Kirkpatrick and Kirkpatrick (2006) noted that the evaluation in this level is more complicated, demanding, and time-consuming than the reaction and learning evaluations in Level 1 and 2. Nevertheless, executives often neglect Level 3, jumping straight to Level 4, as it should be since most of the time, energy, and expense are invested in Level 1 and 2 by training professionals (Kirkpatrick & Kirkpatrick, 2006).

The third level of the evaluation plan focuses on transfer, which measures the effectiveness of the implementation in an actual work setting (Kirkpatrick & Kirkpatrick, 2006), namely, if the MOOC scheme collaborations were transferred over into the university setting where the scope of the coursework was appropriately expanded. Ongoing evaluation and observation will be required to measure the transfer of the skills from the MOOC scheme

collaborations (Kirkpatrick & Kirkpatrick, 2006). It is imperative to observe and survey the stakeholder groups after the implementation plan has been executed for a few months to gauge the transfer of the required skills. The triangulation of surveys and observations will be conducted to determine if the stakeholder groups effectively transferred the skills learned from the training and the collaboration into the university setting where they are employed. Positively, the results will indicate the success of the transferred skills and learning from the MOOC scheme into the university coursework framework.

Level 4: Impact

Level 4 is the most essential and challenging level to assess (Kirkpatrick & Kirkpatrick, 2006). Typically, at Level 4, organizations seek business results for their training efforts. Organizations attempt to measure actual organizational changes due to training, and place a numerical value on those changes. The four levels are positively inter-correlated. It is important to evaluate both reactions (Level 1) and learning (Level 2) to ensure transferals (Level 3) occur. Participants become more accountable for their own performance and achievement by evaluating both Level 1 and 2. Furthermore, time constraints, complexity of analysis, lack of support for the process, cost, ineffectiveness, and not being familiar with the previous level processes are all barriers to organizational impact (Level 4).

The fourth level measures the impact of the MOOC scheme on expanding the scope of the coursework offered at universities. The measurement will also include if the identified instructional design suggestions advanced the MOOC community, meanwhile, optimizing educational resources and saving on the cost of logistics. The evaluation plan will take place at the end of the school year to determine how MOOCs were incorporated appropriately to contribute to expand the scope of the coursework offered at universities.

To measure the overall impact, the university MOOC strategy team (e.g. members of the University Council, Deans, Chairs of programs, Director of Academic Administration, and Director of Online Education) and accreditation institutions or agencies should look at course evaluations to determine the impact of the effectiveness on implementing the MOOC scheme to expand the university course framework throughout the school year. The university MOOC strategy team should also examine students' academic performance in their subjects to determine overall effectiveness of their learning. As for the MOOC scheme collaborations, the university MOOC strategy team can survey the stakeholder groups (e.g. instructors, course development team, video production team, etc.) and analyze students' feedback to determine the impact of the implementation plan throughout the school year. Accordingly, the evaluation will indicate the success of the implementation plan and areas for improvement (Kirkpatrick & Kirkpatrick, 2006).

The ultimate determination of whether the organization's actions are effective is simple: if the organization continues to build up high-quality language learning MOOCs and maintains high completion rates, then whatever actions the organization is implementing are effective. Thus, assessments need to be formal and extensive for evaluating the organization's actions. A systematic examination of performance data, including participants' continued participation and the collaboration of various teams, is absolutely vital for the organization and the implementation plan.

Limitations

Several biases are impossible to avoid and thus need to be addressed owing to the fact that the researcher is the founder of the organization. First, possible methodological limitations could include self-reported gathered data from surveys which are not independently verifiable in order to report a noteworthy outcome to achieve a high performing organization goal. Second, participants, who are the key stakeholders, may not interpret the survey items in the manner intended. The qualitative data could have revealed additional information beyond the perceptions of the MOOC participants taking the courses. The qualitative data could also have led to assumed causes that were validated by quantitative data and generated new assets in the knowledge, motivation, and organization dimension.

Furthermore, the contexts in which these incorporated solutions transfer to other universities or institutions could vary because of the infrastructures and available capital of those universities or institutions. Other universities or institutions may not have the inclination or the ability to replicate the practices at the MandarinX organization for many reasons.

Implications for Future Research

Future studies with larger sample sizes and more varied populations should validate the findings empirically through more confirmatory methods, such as surveys, interviews, or experimental designs. The study is not intended to advocate for MOOC instructors over participants or other MOOC stakeholders. Instead, the focus has been shifted on the instructors, instructional design, and teaching pedagogy when evaluating benefits, challenges, and design implications associated with the rapidly emerging and evolving MOOC paradigm. Lastly, the applied recommendations are based solely on the experiences and data collected

within the organization, which require additional exploration to determine if they are sustainable solutions for overall MOOC success.

Conclusions

The evaluation study focused on the reasons that participants persist in their enrollments in six-week long MOOCs. Through the Gap Analysis Framework, the study explored knowledge, motivation, and organizational factors that impact MOOC participants' completion rates (Clark & Estes, 2008). The Statistical Package for Social Sciences (SPSS) was employed to analyze all the quantitative data from the questionnaire survey to validate all of the assumed causes. Evidence which ensures the success of MOOCs was integrated into solutions and a MOOC scheme in order to maximize and ensure effective implementation of all of the validated assets.

Additionally, the study enables instructors and the course development team to implement identified instructional designs for a successful MOOC. Although specific subjects might be different, the MOOC scheme is designed for practical application and effective collaboration towards high-performing learning outcomes. With the aim of having an impact on the completion rates, ongoing engagement throughout interaction among all participants and autonomous learning improvement in learning communities, the study decomposed the complex and iterative process of administering a successful MOOC as a proposed model: preparation, execution and implementation.

A main finding is that successful MOOC administration requires a team effort (e.g., instructors, curriculum design, video production, technical support, etc.), and the mandatory collaboration is rare to be seen. By boosting support for collaboration, teaching and learning outcomes will be elevated for all MOOC stakeholders. The study provides actionable

guidance for organizing, delivering, and managing MOOCs as part of the MOOC community and the university course framework. In addition to existing research that examines MOOCs as a novel learning pedagogy, the study advocates for a view of MOOCs as complex and collaborative bionetwork.

References

Adamopoulos, P. (2013). *What makes a great MOOC? An interdisciplinary analysis of student retention in online courses.* New York: NY: New York University. Retrieved from http://pages.stern.nyu.edu/~padamopo/What%20makes%20a%20great%20MOOC.pdf

Agarwal, A. (2014). TED. (2014). *Why massive open online courses (still) matter*. Retrieved from https://www.ted.com/talks/anant_agarwal_why_massively_open_online_courses_still_matter/transcript?language=en

Alario-Hoyos, C., Estévez-Ayres, I., Pérez-Sanagustín, M., Kloos, C. D., & Fernández-Panadero, C. (2017). Understanding Learners' Motivation and Learning Strategies in MOOCs. *The International Review of Research in Open and Distributed Learning*, *18*(3).

Alexander, P. A., & Grossnickle, E. M. (2016). Positioning interest and curiosity within a model of academic development. *Handbook of Motivation at School*, 188-208.

Alraimi, K. M., Zo, H., Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, *80*, 28-38.

Ambrose, S., Bridges, M., Lovett, M., DiPietro, M., & Norman, M. (2010*). How learning works: 7 research-based principles for smart teaching.* San Francisco, CA: Jossey Bass.

Anderman, E., & Anderman, L. (2010). Attribution theory. Retrieved from http://www.education.com/reference/article/attribution-theory/

Anderson, L. W., & Krathwohl, D. R. (Eds.), (2001). *A Taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* New York, NY: Longman.

Anderson, T., Rourke, L., Garrison, R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2). Retrieved from http://auspace.athabascau.ca/bitstream/2149/725/1/assessing_teaching_presence.pdf

Aparicio, M., Bacao, F., & Oliveira, T. (2017). Grit in the path to e-learning success. *Computers in Human Behavior*, *66*, 388-399.

Arbaugh, J. B. (2010). Sage, guide, both, or even more? An examination of instructor activity in online MBA courses. *Computers & Education, 55*(3), 1234-1244.

Austin, K. (2016). [Review of the book *MOOCs, high technology, and higher learning.* by R. Rhoads] *Education Review/Reseñas Educativas*, *23*. Retrieved from http://edrev.asu.edu/index.php/ER/article/viewFile/2081/617

Aydin, C. H. (2017). Current status of the MOOC movement in the world and reaction of the Turkish higher education institutions. *Open Praxis*, *9*(1), 59-78.

Baker, C., Nafukho, F. M., McCaleb, K., Becker, M., & Johnson, M. (2016). The tangible and intangible benefits of offering massive open online courses: Faculty perspectives. *Internet Learning*, *4*(2), 6.

Balakrishnan, V., Teoh, K. K., Pourshafie, T., & Liew, T. K. (2017). Social media and their use in learning: A comparative analysis between Australia and Malaysia from the learners' perspectives. *Australasian Journal of Educational Technology*, *33*(1).

Bali, M. (2014). MOOC pedagogy: Gleaning good practice from existing MOOCs. *MERLOT Journal of Online Learning and Teaching, 10*(1), 44-56.

Bandura, A. (1977). Self-efficacy: Toward a unified theory of behavioral change. *Psychological Review*, *84*(2), 191-215.

Barba, P. D., Kennedy, G. E., & Ainley, M. D. (2016). The role of students' motivation and participation in predicting performance in a MOOC motivation and participation in MOOCs. *Journal of Computer Assisted Learning 32*(3), 218-231.

Belanger, Y. & Thornton, J. (2013). *Bioelectricity: A Quantitative Approach*, Duke University's First MOOC, Duke Center for Instructional Technology.

Ben-Eliyahu, A., Linnenbrink-Garcia, L., & Putallaz, M. (2017). The intertwined nature of adolescents' social and academic lives: Social and academic goal orientations. *Journal of Advanced Academics*, *28*(1), 66-93.

Boettcher, J. V., & Conrad, R. M. (2016). *The online teaching survival guide: Simple and practical pedagogical tips*. San Francisco, CA: John Wiley & Sons.

Bonk, C. J., & Lee, M. M. (2017). Motivations, achievements, and challenges of self-directed informal learners in open educational environments and MOOCs. *Journal of Learning for Development-JL4D*, *4*(1).

Bouchet, F., Labarthe, H., Bachelet, R., & Yacef, K. (2017, May). Who wants to chat on a MOOC? Lessons from a peer recommender system. In *European Conference on Massive Open Online Courses* (pp. 150-159). Springer, Cham.

Bowers, J., & Kumar, P. (2017). Students' perceptions of teaching and social presence: A comparative analysis of face-to-face and online learning environments. In *Blended Learning: Concepts, Methodologies, Tools, and Applications* (pp. 1532-1550). IGI Global.

Bradley, P. (2014). Move over, MOOCs, competency-based education takes center stage as 'next big thing'. *Community College Week,* 6-7.

Breslow, L. B., Pritchard, D. E., DeBoer, J., Stump, G. S., Ho, A. D., & Seaton, D. T. (2013). Studying learning in the worldwide classroom: Research into edX's first MOOC. *Research & Practice in Assessment, 8*, 13-25.

Broadbent, J. (2017). Comparing online and blended learner's self-regulated learning strategies and academic performance. *The Internet and Higher Education*, *33*, 24-32.

Busato, V. V., Prins, F. J., Elshout, J. J., & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher education. *Personality and Individual Differences*, *29*(6), 1057-1068.

Byrne, J. A. (2015). Arizona State, edX to offer entire freshman year of college online. Retrieved from http://fortune.com/2015/04/22/arizona-state-edx-moocs-online-education/

Carr, N. (2012, 09 27). *The crisis in higher education*. (M. T. Review, Ed.) Retrieved July, 25, 2016, from MIT Technology Review: http://www.technologyreview.com/featuredstory/429376/the-crisis-in-higher-education/

Che, X., Luo, S., Wang, C., & Meinel, C. (2016). An attempt at MOOC localization for Chinese-speaking users. *International Journal of Information and Education Technology, 6*(2), 90-96.

Chew, S. W., Cheng, I. L., & Chen, N. S. (2017). Yet another perspectives about designing and implementing a MOOC. In *Open Education: from OERs to MOOCs* (pp. 117-133). Springer Berlin Heidelberg.

Choy, J. L. F., & Quek, C. L. (2016). Modelling relationships between students' academic achievement and community of inquiry in an online learning environment for a blended course. *Australasian Journal of Educational Technology*, *32*(4).

Christensen, C. M. (2012). Dr. Clayton Christensen discusses disruption in higher education. Retrieved from https://www.youtube.com/watch?v=yUGn5ZdrDoU

Christensen, C. M., & Weise, M. R. (May 09, 2014). MOOCs' disruption is only beginning. *The Boston Globe*. Retrieved from https://www.bostonglobe.com/opinion/2014/05/09/moocs-disruption-only-beginning/S2VlsXpK6rzRx4DMrS4ADM/story.html

Clark, R. E., & Estes, F. (2008). *Turning research into results: A guide to selecting the right performance solutions.* Atlanta, GA: CEP Press.

Cohen, M. D., March, J. G., Olsen, J. P. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly, 17*, 1-25.

Coursera. (2017). *About Coursera*. Retrieved from https://coursera.org

Crook, C., & Schofield, L. (2017). The video lecture. *The Internet and Higher Education*, 34, 56-64.

Cruz-Benito, J., Borrás-Gené, O., García-Peñalvo, F. J., Blanco, Á. F., & Therón, R. (2017). Learning communities in social networks and their relationship with the MOOCs. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaje*, *12*(1), 24-36.

Cunningham, J. A. (2017). Using traces of self-regulated learning in a self-paced mathematics MOOC to predict student success (Master's Thesis). Retrieved from https://www.researchgate.net/publication/316554776_Using_Traces_of_Self-Regulated_Learning_in_a_Self-Paced_Mathematics_MOOC_to_Predict_Student_Success

Dalipi, F., Yayilgan, S. Y., Imran, A. S., & Kastrati, Z. (2016, July). Towards understanding the MOOC trend: Pedagogical challenges and business opportunities. In *International*

Conference on Learning and Collaboration Technologies (pp. 281-291). Springer International Publishing.

Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox and possibility. *Journal of Interactive Media in Education*, *3*(0). Retrieved from http://www-jime.open.ac.uk/jime/article/view/2012-18

Davis, D., Jivet, I., Kizilcec, R. F., Chen, G., Hauff, C., & Houben, G. J. (2017, March). Follow the successful crowd: Raising MOOC completion rates through social comparison at scale. Paper presented at the *proceedings of the 7th International Conference on Learning Analytics and Knowledge,* Vancouver, Columbia, Canada.

Deng, R., Benckendorff, P., & Gannaway, D. (2017, May). Understanding learning and teaching in MOOCs from the perspectives of students and instructors: A review of literature from 2014 to 2016. In C. Delgado Kloos, P. Jermann, M. Pérez-Sanagustín, D. Seaton, S. White. (Eds,), *Digital Education: Out to the World and Back to the Campus. EMOOCs 2017.* Lecture Notes in Computer Science, vol 10254. (pp. 176-181). Springer, Cham. doi: 10.1007/978-3-319-59044-8_20

Dennis, M. J. (2017). Review changes in higher education. *Enrollment Management Report*, *20*(11), 1-3.

Dey, I. (2003). *Qualitative data analysis: A user friendly guide for social scientists*. New York, NY: Routledge.

Dellarocas, C., & Van Alstyne, M. (2013). Money models for MOOCs. *Communications of the ACM*, *56*(8), 25-28.

DeVellis, R. F. (1991). *Scale development: Theory and applications.* Newbury Park, CA: Sage Publications.

Duval, E., Sharples, M., & Sutherland, R. (Eds.). (2017). *Technology Enhanced Learning* (pp. 1-10). Springer International Publishing. doi:10.1007/978-3-319-02600-8

edX Blog. (2017, June). Celebrating 10 Million edX Learners Worldwide! Retrieved from http://blog.edx.org/celebrating-10-million-edx-learners-worldwide?track=blog

edX Insights. (2016). *Instructor Dashboard* [Enrollment Data].

El-Hmoudova, D. (2014). MOOCs motivation and communication in the cyber learning environment. *Procedia-Social and Behavioral Sciences, 131,* 29-34.

Engle, D., Mankoff, C., Carbrey, J. (2015). Coursera's introductory human physiology course: Factors that characterize successful completion of a MOOC. *International Review of Research in Open and Distributed Learning, 16*(2). 46-68.

Etzioni, A. (1967). Mixed scanning: A "third" approach to decision-making. *Public Administration Review, 27*, 385-392.

Evans, S. M., Ward, C., & Reeves, S. (2017). An exploration of teaching presence in online interprofessional education facilitation. *Medical Teacher*, 1-7.

Ferraro, G. P., & Briody, E. K. (2017). *The cultural dimension of global business* (7th ed.). New York, NY: Routledge.

Fini, A. (2009). The technological dimension of a massive open online course: The case of the CCK08 course tools. *International Review of Research in Open and Distance Learning, 10*(5), 1-26.

Fisher, D. H. (2012). Regional sections of massively open online courses, *Presentation to the 18th Annual Conference of the Coalition of Urban and Metropolitan Universities*,

Retrieved from http://www.vuse.vanderbilt.edu/~dfisher/CUMU-2012-MOOC-Abstract.pdf

Flavin, M. (2017). Free, simple and easy to use: Disruptive technologies, disruptive innovation and technology enhanced learning. In *Disruptive Technology Enhanced Learning* (pp. 19-52). Palgrave Macmillan, UK.

Frank, S. (2012). Review: MITx's online circuit and analysis course. IEEE Spectrum. Retrieved on March 28, 2017 from http://spectrum.ieee.org/at-work/ education/review-mitxs-online-circuit-design-and-analysis-course.

Frankola, K. (2012). *Why Online Learners Drop Out High dropout rates are e-learning's embarrassing secret. Here's what you can do about it*. Retrieved 24th March 2017, from http://www.c3l.uni-oldenburg.de/cde/support/readings/frankola.htm

Frymier, A. B., & Shulman, G. M. (1995). "What's in it for me?": Increasing content relevance to enhance students' motivation. *Communication Education*, *44*(1), 40-50.

Funieru, L. M., & Lazaroiu, F. (2016). Massive open online courses (MOOCs): A comparative analysis of the main platforms. *Informatica Economica*, *20*(2), 35.

FutureLearn Blog. (2017, June). Introducing degrees: you can now take a postgraduate degree on FutureLearn. Retrieved from https://about.futurelearn.com/blog/postgraduate-degrees-on-futurelearn/

Gallimore, R., & Goldenberg, C. (2001). Analyzing cultural models and settings to connect minority achievement and school improvement research. *Educational Psychologist, 31*(1), 45-56.

Gamage, D., Fernando, S., & Perera, I. (2015). *Factors leading to an effective MOOC from participants perspective.* 2015 8th International Conference on Ubi-Media Computing (UMEDIA): 230-235.

Garg, A., & Paepcke, A. (2017). Supporting the encouragement of forum participation. Retrieved from http://ilpubs.stanford.edu:8090/1153/1/forumPrompts.pdf

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education model. *The Internet and Higher Education, 2*(2–3), 87-105.

Garrison, D. R., Anderson, T., & Archer, W. (2003) A theory of critical inquiry in online distance education. M. G. Moore and W. G. Anderson (Eds.). *Handbook of Distance Education*. Mahwah, NJ: L. Erlbaum Associates.

Garrison, D. R., Cleveland-Innes, M., & Fung, T. (2010). Exploring causal relationships among cognitive, social and teaching presence: Student perceptions of the Community of Inquiry framework. *The Internet and Higher Education, 13*(1-2), 31-36.

Giacumo, L. A., & Bremen, J. (2016). Emerging evidence on the use of big data and analytics in workplace learning: A systematic literature review. *Quarterly Review of Distance Education*, *17*(4), 21.

Gladwell, M. (2007). *Blink: The power of thinking without thinking summary*. (Introduction, Chapter 1). Hachette Digital, Inc.

Goetz, T., Frenzel, A. C., Hall, N. C., & Pekrun, R. (2008). Antecedents of academic emotions: Testing the internal/external frame of reference model for academic enjoyment. *Contemporary Educational Psychology*, *33*(1), 9-33.

Green, K. C., & Gilbert, S. W. (2010) Great expectations: Content, communications, productivity, and the role of information technology in higher education. *Change: The Magazine of Higher Learning, 27*(2), 8-18.

Greene, J. A., Oswald, C. A., & Pomerantz, J. (2015). Predictors of retention and achievement in a massive open online course. *American Educational Research Journal*, *52*(5), 925-955. doi:10.3102/0002831215584621.

Guàrdia, L., Maina, M., & Sangrà, A. (2013). MOOC design principles. A pedagogical approach from the learner's perspective. *Journal of eLearning Papers*, *33*, 1-6.

Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. In *Proceedings of the first ACM conference on Learning@ scale conference* (pp. 41-50). ACM.

Gütl, C., Rizzardini, R. H., Chang, V., & Morales, M. (2014). Attrition in MOOC: Lessons learned from drop-out students. *Learning Technology for Education in Cloud. MOOC and Big Data,* (*446*), 37-48.

HarvardX and MITx. (2014). Two years of open online courses fall 2012-summer 2014. doi:10.2139/ssrn.2586847

Hashmi, A. R. (2015). Rapid growth of massive open online courses (MOOCs) and the market for university graduates. *Asian Journal of the Scholarship of Teaching and Learning, 5*(1), 24-39.

Head, K. (2015). The single canon: MOOCs and academic colonization. *MOOCs and open education around the world*, 12-20.

Head, K. J. (2017). *Disrupt this!: MOOCs and the promises of technology*. University Press of New England.

Herala, A., Knutas, A., Vanhala, E., & Kasurinen, J. (2017). Experiences from video lectures in software engineering education. *International Journal of Modern Education and Computer Science (IJMECS)*, *9*(5), 17.

Hew, K. F. (2016). Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCS. *British Journal of Educational Technology*, *47*(2), 320-341.

Hew, K. F. & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review*, *12*, 45-58.

Hill, P. (2012). Online educational delivery models: A descriptive view. (T. D. Diggs, Ed.) *Educause Review - Why IT Matters in Higher Education*, *47*(6), 84-97.

Ho, A. D., Chuang, I., Reich, J., Coleman, C., Whitehill, J., Northcutt, C., Williams, J. J., Hansen, J., Lopez, G., & Petersen, R. (2015). *HarvardX and MITx: Two years of open online courses* (HarvardX Working Paper No. 10).

Ho, A. D., Reich, J., Nesterko, S. O., Seaton, D. T., Mullaney, T., Waldo, J., & Chuang, I. (2014). *HarvardX and MITx: The first year of open online courses* (HarvardX and MITx Working Paper No. 1).

Hodges, C. B. (2004). Designing to motivate: Motivational techniques to incorporate in e-learning experiences. *The Journal of Interactive Online Learning*, *2*(3), 1-7.

Höfler, E., Höfler, E., Zimmermann, C., Zimmermann, C., Ebner, M., & Ebner, M. (2017). A case study on narrative structures in instructional MOOC designs. *Journal of Research in Innovative Teaching & Learning*, *10*(1), 48-62.

Hone, K. S., & El Said, G. R. (2016). Exploring the factors affecting MOOC retention: A survey study. *Computers & Education*, *98*, 157-168.

Hood, N., & Littlejohn, A. (2016). MOOC Quality: The need for new measures. *Journal of Learning for Development-JL4D*, *3*(3).

Huang, K., Lee, S. J., & Dugan, A. (2017). Leveraging teaching presence in online courses: strategies, technology, and student perspectives. In *Blended learning: Concepts, methodologies, tools, and applications* (pp. 1687-1711). IGI Global.

Ingolfsdottir, K. (2016). Winds of change in higher education. *Trends in Pharmacological Sciences*, *37*(12), 990-992.

Instructure. (2013). Qualtrics and instructure partner to reveal top motivations for MOOC students. Instructure Inc. Retrieved on March 28, 2017 from http://www.instructure.com/press-releases/qualtrics-and-instructure-reveal-mooc-students-top-motivations.

Jacobs, A. J. (2013). Two cheers for Web U! *New York Times*, 162(56113), 1-7.

James, M. (2017). The story of 'doing a MOOC' or knowing 'the beast' from within. In R. Bennett & M. Kent (Eds.), *Massive Open Online Courses and Higher Education: What Went Right, What Went Wrong and Where to Next?* (Part 2; Chapter 6 Autoethnography).

Jiao, J., Yang, Y., Zhong, H., & Ren, G. (2017). Improving learning in MOOCs through peer feedback: How is learning improved by providing and receiving feedback? In Lai, Feng-Qi & J. D. Lehman (Eds.), *Learning and Knowledge Analytics in Open Education* (pp. 69-87). Springer International Publishing. doi:10.1007/978-3-319-38956-1_6

Jordan, K. (2014). Initial trends in enrolment and completion of massive open online courses. *The International Review of Research in Open and Distributed Learning*, *15*(1), 133-160.

Joy, S., & Kolb, D. A. (2009). Are there cultural differences in learning style? *International Journal of Intercultural Relations*, *33*(1), 69-85.

Kangas, M., Siklander, P., Randolph, J., & Ruokamo, H. (2017). Teachers' engagement and students' satisfaction with a playful learning environment. *Teaching and Teacher Education*, *63*, 274-284.

Kanuka, H. (2011). Interaction and the online distance classroom: Do instructional methods effect the quality of interaction? *Journal of Computing in Higher Education, 23*, 143-156.

Kent, M., & Bennett, R. (2017). What was all that about? Peak MOOC hype and post-MOOC legacies. In R. Bennett & M. Kent (Eds.), *Massive Open Online Courses and Higher Education: What Went Right, What Went Wrong and Where to Next?* (Chapter 1).

Khalil, H., & Ebner, M. (2013). "How satisfied are you with your MOOC?" – A research Study on Interaction in Huge Online Courses*. In proceedings of the World Conference on Educational Multimedia, Hypermedia and Telecommunications, 2013*, 830-839.

Khalil, H., & Ebner, M. (2014). MOOCs completion rates and possible methods to improve retention: A literature review. In *World Conference on Educational Multimedia, Hypermedia and Telecommunications, 2014*, (1), 1305-1313.

Kirkpatrick, D., & Kirkpatrick, J. (2006). *Evaluating training programs: The four levels*. Oakland, CA: Berrett-Koehler Publishers.

Kirschner, A. (2012). A pioneer in online education tries a MOOC. *Chronicle of Higher Education*, *59*(6), B21-22.

Kizilcec, R. F., Piech, C., & Schneider, E. (2013, April). Deconstructing disengagement: analyzing learner subpopulations in massive open online courses. In *Proceedings of the third international conference on learning analytics and knowledge* (pp. 170-179). ACM.

Ko, S., & Rossen, S. (2017). *Teaching online: A practical guide* (3rd ed.). New York, NY: Routledge.

Kolowich, S. (2013). The professors who make the MOOCs. *Chronicle of Higher Education*, *59*(28), A20-A23.

Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into Practice, 41*(4), 212-218.

Kupczynski, L., Ice, P., Weisenmayer, R., & McCluskey, F. (2010). Student perceptions of the relationship between indicators of teaching presence and success in online courses. *Journal of Interactive Online Learning, 9*(1), 23–43. Retrieved from: http://eric.ed.gov/?redir=http%3a%2f%2fwww.ncolr.org%2fjiol%2fissues%2fpdf%2f9.1.2.pdf

Lazaroiu, G., Popescu, G. H., & Nica, E. (2016, July). Democratizing education: The potential of edX in revolutionizing learning. In *The International Scientific Conference eLearning and Software for Education* (Vol. 3, p. 34). "Carol I" National Defence University Publishing House.

Lee, K. (2017). Rethinking the accessibility of online higher education: A historical review. *The Internet and Higher Education, 33*, 15-23. doi:10.1016/j.iheduc.2017.01.001.

Levi, B. (2013). MOOCs change academic playing field, *The Leader (Elmhurst College)*, Retrieved on March 28, 2017 from http://ecleader.org/2013/11/08/moocs-change-academic-playing-field

Levy, D. (2011). Lessons learned from participating in a connectivist massive online open course (MOOC). Proceedings of the Chais conference on instructional technologies research 2011: Learning in the technological era. Eshet-Alkalai, Y., Caspi, A., Eden, S., Geri, N.

& Yair, Y. (Eds.), The Open University of Israel, Raanana, 31-36. Retrieved on March 28, from http://www.openu.ac.il/research_center/chais2011/download/f-levyd-94_eng.pdf

Levy, D., & Schrire, S. (2012) *The case of a massive open online course at a college of education.* Retrieved 30th August 2013, from http://conference.nmc.org/files/smkbMOOC.pdf

Lin, Y. N. (2012). Life experiences of dissatisfied science and engineering graduate students in Taiwan. *College Student Journal*, *46*(1), 51-66.

Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading &Writing Quarterly*, 19(2), 119-137.

Liu, O. L., Bridgeman, B., & Adler, R. M. (2012). Measuring learning outcomes in higher education: Motivation matters. *Educational Researcher*, *41*(9), 352-362. Retrieved from http://doi.org/10.3102/0013189X12459679

Liu, M., McKelroy, E., Kang, J., Harron, J., & Liu, S. (2016). Examining the use of Facebook and Twitter as an Additional Social space in a MOOC. *American Journal of Distance Education*, *30*(1), 14-26.

Loeckx, J. (2016). Blurring boundaries in education: Context and impact of MOOCs. *The International Review of Research in Open and Distributed Learning*, *17*(3).

Loizzo, J., & Ertmer, P. A. (2016). MOOCocracy: The learning culture of massive open online courses. *Educational Technology Research and Development*, *64*(6), 1013-1032.

Lombardi, M. M. (2013). The inside story: Campus decision making in the wake of the latest MOOC tsunami. *MERLOT Journal of Online Learning and Teaching*, *9*(2), 239-248.

Loya, A., Gopal, A., Shukla, I., Jermann, P., & Tormey, R. (2015). Conscientious behaviour, flexibility and learning in massive open on-line courses. *Procedia-Social and Behavioral Sciences*, *191*, 519-525.

Lund, D. B. (2003). Organizational culture and job satisfaction. *Journal of Business & Industrial Marketing*, *18*(3), 219-236.

McNeely, J. H. (1938). College student mortality. Bulletin 1937, No. 11. US Government Printing Office. Retrieved from http://files.eric.ed.gov/fulltext/ED542540.pdf

Macleod, H., Sinclair, C., Haywood, J., & Woodgate, A. (2016). Massive open online courses: Designing for the unknown learner. *Teaching in Higher Education*, *21*(1), 13-24.

Maeroff, G. I. (2004). *A classroom of one: How online learning is changing our schools and colleges*. England: Macmillan.

Malaga, R. A., & Koppel, N. B. (2017). A comparison of video formats for online teaching. *Contemporary Issues in Education Research (Online)*, *10*(1), 7.

Manathunga, K., Hernández-Leo, D., & Sharples, M. (2017, May). A social learning space grid for MOOCs: Exploring a FutureLearn Case. In *European Conference on Massive Open Online Courses* (pp. 243-253). Springer, Cham.

Margaryan, A., Bianco, M., Littlejohn, A. (2015). Instructional quality of massive open online courses (MOOCs). *Computers & Education*. *80*, 77-83.

Marshall, S. (2014). Exploring the ethical implications of MOOCs. *Distance Education*, *35*(2), 250-262.

Martin, F. G. (2012). Will massive open online courses change how we teach? *Communications of the ACM*, *55*(8), 26-28.

Masters, K. (2011). A brief guide to understanding MOOCs. *The Internet Journal of Medical Education*, *1*(2). Retrieved from http://ispub.com/IJME/1/2/10995

McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco CA: Jossey-Bass.

Meyer, D. K., & Turner, J. C. (2006). Re-conceptualizing emotion and motivation to learn in classroom contexts. *Educational Psychology Review*, *18*(4), 377–390. Retrieved from http://doi.org/10.1007/s10648-006-9032-1

Milligan, C., & Littlejohn, A. (2017). Why study on a MOOC? The motives of students and professionals. *The International Review of Research in Open and Distributed Learning*, *18*(2).

Montoya, M. S. R., & Hernández, D. D. C. R. (2016). Inverted learning environments with technology, innovation and flexibility: Student experiences and meanings. *Journal of Information Technology Research (JITR)*, *9*(1), 18-33.

Morris, T. A. (2011). Exploring community college student perceptions of online learning. *International Journal of Instructional Technology & Distance Learning, 8*(6).

Muijs, D. (2010). Doing quantitative research in education with SPSS. Thousand Oaks, CA: Sage Publications.

Nagrecha, S., Dillon, J. Z., & Chawla, N. V. (2017, April). MOOC dropout prediction: Lessons learned from making pipelines interpretable. In *Proceedings of the 26th International Conference on World Wide Web Companion,* (pp. 351-359). doi:10.1145/3041021.3054162

Nakano, N., Padua, M. C., & Jorente, M. J. V. (2017). MOOC as a complex system. In *First Complex Systems Digital Campus World E-Conference 2015* (pp. 125-131). Springer, Cham.

Ng, R. Y. K., Lam, R. Y. S., Ng, K. K., & Lai, I. K. W. (2017). Identifying the needs of flexible and technology enhanced learning in vocational and professional education and training's (VPET) workplaces. In *New Ecology for Education—Communication X Learning* (pp. 107-117). Springer, Singapore.

Orcher, L. T. (2017). *Conducting a survey: Techniques for a term project*. New York, NY: Routledge.

Ostashewski, N., Howell, J., & Dron, J. (2016). Crowdsourcing MOOC interactions: Using a social media site cMOOC to engage students in university course activities. Retrieved from http://oasis.col.org/bitstream/handle/11599/2528/PDF?sequence=4

Ou, C., Goel, A. K., Joyner, D. A., & Haynes, D. F. (2016, April). Designing videos with pedagogical strategies: Online students' perceptions of their effectiveness. In *Proceedings of the Third (2016) ACM Conference on Learning@ Scale* (pp. 141-144). ACM.

Payne, V. G., & Isaacs, L. D. (2017). *Human motor development: A lifespan approach*. New York, NY: Routledge.

Pekrun, R., & Linnenbrink-Garcia, L. (2012). Academic emotions and student engagement. In S. L. Christension et al. (Eds.), *Handbook of research on student engagement* (pp. 259-282). doi:10.1007/978-1-4614, 2018-7_12

Pekrun, R., & Linnenbrink-Garcia, L. (Eds.). (2014). Inter-national handbook of emotions in education. New York, NY: Taylor & Francis.

Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary educational psychology*, *36*(1), 36-48.

Pekrun, R., Lichtenfeld, S., Marsh, H., Murayama, K., & Goetz, T. (2017). Achievement emotions and academic performance: Longitudinal models of reciprocal effects. *Child Development*. doi:10.1111/cdev.12704

Pintrich, P. R. (2000). An achievement goal theory perspective on issues in motivation terminology, theory, and research. *Contemporary Educational Psychology, 25*(1), 92-104.

Poquet, O., Dawson, S., & Dowell, N. (2017, March). How effective is your facilitation?: Group-level analytics of MOOC forums. In *Proceedings of the Seventh International Learning Analytics & Knowledge Conference* (pp. 208-217). ACM.

Rana, J., Besche, H., & Cockrill, B. (2017). Twelve tips for the production of digital chalk-talk videos. *Medical Teacher*, 1-7.

Reiser, R. A. (2017). Eight trends affecting the field of instructional design and technology: opportunities and challenges. In *Learning and Knowledge Analytics in Open Education* (pp. 139-147). Springer International Publishing.

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. *Computers in Human Behavior*, *71*, 402-417.

Rolfe, V. (2015). A systematic review of the socio-ethical aspects of massive online open courses. *European Journal of Open, Distance and E-Learning*, *18*(1), 52-71.

Ross, J., Sinclair, C., Knox, J., Bayne, S., Macleod, H. (2014). Teacher experiences and academic identity: The missing components of MOOC pedagogy. *MERLOT Journal of Online Learning and Teaching, 10*(1), 57-69.

Rueda, R. (2011). *The 3 dimensions of improving student performance: Matching the right solutions to the right problems.* New York, NY: Teachers College Press.

Ruipérez-Valiente, J. A., Muñoz-Merino, P. J., Gascón-Pinedo, J. A., & Kloos, C. D. (2017). Scaling to massiveness with ANALYSE: A learning analytics tool for Open edX. *IEEE Transactions on Human-Machine Systems*.

Salmon, G., Pechenkina, E., Chase, A. M., & Ross, B. (2016). Designing massive open online courses to take account of participant motivations and expectations. *British Journal of Educational Technology,* 1-11. doi:10.1111/bjet.12497

Sankaran, S. R., & Bui, T. (2001). Impact of learning strategies and motivation on performance: A study in web-based instruction. *Journal of Instructional Psychology*, *28*(3), 191–198.

Schunk, D. H. (1996). *Learning theories*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Selmer, J. (2006). Language ability and adjustment: Western expatriates in China. *Thunderbird International Business Review, 48*(*3*), 347-368.

Sergis, S., Sampson, D. G., & Pelliccione, L. (2017). Educational design for MOOCs: Design considerations for technology-supported learning at large scale. In *Open Education: from OERs to MOOCs* (pp. 39-71). Springer, Berlin Heidelberg.

Shapiro, H. B., Lee, C. H., Roth, N. E. W., Li, K., Çetinkaya-Rundel, M., & Canelas, D. A. (2017). Understanding the massive open online course (MOOC) student experience: An examination of attitudes, motivations, and barriers. *Computers & Education*, *110*, 35-50.

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education, 9*(3), 175−190.

Shepherd, C. E., Bolliger, D. U., Dousay, T. A., & Persichitte, K. (2016). Preparing teachers for online instruction with a graduate certificate program. *TechTrends*, *60*(1), 41-47.

Shirvani Boroujeni, M., Hecking, T., Hoppe, H. U., & Dillenbourg, P. (2017). Dynamics of MOOC discussion forums. In *7th International Learning Analytics and Knowledge Conference (LAK17)* (No. EPFL-CONF-223718).

Siegel, D. J., & Carchidi, D. M. (2016). The meaning of MOOC-topia. *Academe*, *102*(3), 28.

Simpson, O. (2017). Innovations in distance education student support: What are the chances?. *The Envisioning Report for Empowering Universities*, 56-58.

Smith, N., Caldwell, H., & Richards, M. (2017). A comparison of MOOC development and delivery approaches. In *International Examples of Technologies and Pedagogies in Use*, 101.

Smith, P. A. (2001). Understanding self-regulated learning and its implications for accounting educators and researchers. *Issues in Accounting Education*, *16*(4), 663-700.

Song, S. H. (2000). Research issues of motivation in web-based instruction. *Quarterly Review of Distance Education*, *1*(3), 225-29.

Spector, J. M. (2017). A critical look at MOOCs. *Open Education: from OERs to MOOCs*, (pp. 135-147). doi:10.1007/978-3-662-52925-6_7

Starcher, K., & Proffitt, D. (2011). Encouraging students to read: What professors are (and aren't) doing about it. *International Journal of Teaching & Learning in Higher Education*, *23*(3), 396-407.

Stich, A. E., & Reeves, T. D. (2017). Massive open online courses and underserved students in the United States. *The Internet and Higher Education*, *32*, 58-71.

Stone, J. (2016). Awarding college credit for MOOCSs: The role of the American council on education. *Education Policy Analysis Archives*, *24*(38). doi: http://dx.doi.org/10.14507/epaa.24.1765

Swan, K., Garrison, D. R., & Richardson, J. (2009). A constructivist approach to online learning: The community of inquiry framework. In C. R. Payne (Ed.), *Information technology and constructivism in higher education: Progressive learning frameworks* (pp. 43-57). Hershey, PA: IGI Global.

Swan, K., Shea, P., Richardson, J. C., Ice, P., Garrison, D. R., Cleveland-Innes, M., & Arbaugh, J. B. (2008). *Validating a measurement tool of presence in online communities of inquiry. E-mentor, 2*(24), 1-12. Retrieved from: http://www.e-mentor.edu.pl/artykul/index/numer/24/id/543

Thai, T. N., De Wever, B., & Valcke, M. (2017). The impact of a flipped classroom design on learning performance in higher education: Looking for the best "blend" of lectures and guiding questions with feedback. *Computers & Education*. doi:10.1016/j.compedu.2017.01.003

The Economist. (2014). The digital degree: The staied higher-education business is about to experience a welcome earthquake. Retrieved from http://www.economist.com/news/briefing/21605899-staid-higher-education-business-about-experience-welcome-earthquake-digital

Thornton, S., Riley, C., & Wiltrout, M. E. (2017, April). Criteria for video engagement in a biology MOOC. In *Proceedings of the Fourth (2017) ACM Conference on Learning@ Scale* (pp. 291-294). ACM.

Tomkin, J. H., & Charlevoix, D. (2014, March). Do professors matter?: Using an a/b test to evaluate the impact of instructor involvement on MOOC student outcomes. In *Proceedings of the first ACM conference on Learning@ scale conference* (pp. 71-78). ACM.

Topala, I., & Tomozii, S. (2014). Learning satisfaction: Validity and reliability testing for students' learning satisfaction questionnaire (SLSQ). Procedia - Social and Behavioral Sciences, 128, 380e386. http://dx.doi.org/10.1016/ j.sbspro.2014.03.175.

Udacity, Inc. (2017). Jobs of tomorrow start here. Retrieved from https://www.udacity.com/?utm_source=google&utm_medium=cpc&utm_campaign=google_search_alpha_brand&gclid=CNmCidXynNMCFROUfgodobcOSA

Useem, J. (May 31, 2014) Business school, disrupted. *The New York Times*. Retrieved from http://www.nytimes.com/2014/06/01/business/business-school-disrupted.html?_r=0

Veletsianos, G. (2017). Toward a generalizable understanding of Twitter and social media use across MOOCs: who participates on MOOC hashtags and in what ways? *Journal of Computing in Higher Education*, *29*(1), 65-80.

Waard, I. (2011). Explore a new learning frontier: MOOCs. *Learning Solutions Magazine*, *25*.

Wang, J., & Antonenko, P. D. (2017). Instructor presence in instructional video: Effects on visual attention, recall, and perceived learning. *Computers in Human Behavior*, *71*, 79-89.

Wang, Y., & Baker, R. (2015). Content or platform: Why do students complete MOOCs? *MERLOT Journal of Online Learning and Teaching, 11*(1). 17-30.

Wang, Q., & Huang, C. (2017). Pedagogical, social and technical designs of a blended synchronous learning environment. *British Journal of Educational Technology*. doi:10.1111/bjet.12558

Waschull, S. B. (2005). Predicting success in online psychology courses: Self-discipline and motivation. *Teaching of Psychology*, *32*(3), 190-192.

Whitehill, J., Mohan, K., Seaton, D., Rosen, Y., & Tingley, D. (2017). Delving deeper into MOOC student dropout prediction. *arXiv preprint arXiv:1702.06404*.

Whitehill, J., Williams, J. J., Lopez, G., Coleman, C. A., & Reich, J. (2015). Beyond prediction: First steps toward automatic intervention in MOOC student stopout. Retrieved from http://www.educationaldatamining.org/EDM2015/uploads/papers/paper_112.pdf

Whitmer, J., Schiorring, E., & James, P. (2014). Patterns of persistence: What engages students in a remedial English writing MOOC? In *Proceedings of the Fourth International Conference on Learning Analytics and Knowledge*, 279-280.

Wigfield, A., & Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review, 30* 1-35.

Willingham, D. (2008). Learning styles don't exist. [*YouTube*; viewed 27 March 2016] http://www.youtube.com/watch?v=sIv9rz2NTUk

Wise, A. F., Cui, Y., Jin, W., & Vytasek, J. (2017). Mining for gold: Identifying content-related MOOC discussion threads across domains through linguistic modeling. *The Internet and Higher Education*, *32*, 11-28.

Wlodkowski, R. J. (2008). *Enhancing adult motivation to learn: A comprehensive guide for teaching all adults* (3rd ed). San Francisco, CA: Jossey-Bass.

Young, J. R. (2013). What professors can learn from 'hard core' MOOC students. *Chronicle of Higher Education*, *59*(37).

Yuan, L., & Powell, S. (2014). MOOCs and disruptive innovation: Implications for higher education. In *Proceedings of the e-learning paper.*

Zepke, N. (2017). A critique of mainstream student engagement. In *Student Engagement in Neoliberal Times* (pp. 95-112). Springer, Singapore.

Zheng, S., Han, K., Rosson, M. B., & Carroll, J. M. (2016, April). The role of social media in MOOCs: How to use social media to enhance student retention. In *Proceedings of the Third (2016) ACM Conference on Learning@ Scale* (pp. 419-428). ACM.

Zheng, S., Rosson, M. B., Shih, P. C. & Carroll, J. M. (2015). Designing massive open online courses as interactive places for collaborative learning. *In the Proceedings of the 2015 ACM Conference on Learning at Scale.*

Zheng, S., Wisniewski, P., Rosson, M. B., & Carroll, J. M. (2016, February). Ask the Instructors: Motivations and Challenges of Teaching Massive Open Online Courses. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 206-221). ACM.

Appendix A: Survey Protocol

The purpose of this survey is to analyze student engagement and retention in MandarinX's MOOC: Basic Mandarin Chinese (Level One)

Part 1: DEMOGRAPHICS

1. What is your gender?

__ Female
__ Male
__ Other
__ Decline to state

2. What is your age?

__ under 18
__ 18–25
__ 26–35
__ 36–45
__ Above 45

3. What is your predominant ethnic background?

__ Caucasian
__ African
__ Hispanic
__ Asian
__ Other

4. What languages do you speak fluently?

_____

5. What is your occupation?

_____

6. What education level have you completed?

__ None
__ Primary
__ Middle
__ Secondary
__ Associate
__ Bachelor's
__ Masters
__ Doctorate
__ Other

Part 2: SELF EVALUATION

1. Why did you choose to learn Mandarin Chinese?
__ Business opportunity
__ School requirement
__ Curiosity
__ Travel
__ Social
__ Other (Please specify _____)

2. What was your primary goal/expectation of this course?
__ Improve my ability to communicate at work, or with clients
__ Marriage/family communication
__ Solid foundation for further Mandarin language learning
__ Career marketability
__ Personal hobby
__ Other (Please specify _____)

3. How many hours did you spend on average with this course every week?
__ Less than 3 hours
__ 3-5 hours
__ 6-9 hours
__ 10-12 hours
__ 13-15 hours
__ More than 15 hours

4. How did you study while taking this course? (Check as many as apply)
__ Online study group members
__ Language buddy
__ Family members
__ School classmates
__ Random friends
__ Alone
__ I did not study
__ Other

5. What made you choose this Mandarin MOOC?
__ It is free
__ It works well with my school/work schedule
__ It is well-structured with adequate exercises
__ It is taught in English
__ It has a good reputation/affiliated with top-tier universities
__ Someone referred it to me
__ Other (Please specify _____)

6. If you had any trouble meeting course deadlines for submitting work, what impeded you from submitting assignments, completing video lectures, or exams?
__ Laziness/procrastination
__ Confusion about the instruction
__ Busy schedule
__ Personal emergency
__ Lack of interest
__ I don't think I would get a good grade (or helpful feedback)
__ Nothing impeded me
__ Other (Please specify _____)

7. How would you rate yourself in terms of being familiar with the courseware for accessing all of the units for the lessons?
Poor 1 2 3 4 5 6 Excellent

8. How would you rate your knowledge regarding the differences among accents/dialects/usages in various Mandarin-speaking countries and regions after the course?
Poor 1 2 3 4 5 6 Excellent

9. How would you rate your ability to seek additional resources to help with learning Mandarin?
Poor 1 2 3 4 5 6 Excellent

10. I reflected on my learning progress and adapted my strategies to assist with my learning.
Disagree 1 2 3 4 5 6 Agree

11. I am confident that I can complete all of the assignments and pass the final exam.

Disagree 1 2 3 4 5 6 Agree

12. I feel happy while taking this course, including watching videos, working on exercises, and interacting with peers.

Disagree 1 2 3 4 5 6 Agree

Part 3: COURSE EVALUATION

13. I stayed with this course because it covers everything that I am looking for while leaning Mandarin.

Disagree 1 2 3 4 5 6 Agree

14. I found the learning environment to be encouraging.

Disagree 1 2 3 4 5 6 Agree

15. I found that the feedback helps me adapt to an online learning environment.

Disagree 1 2 3 4 5 6 Agree

16. Cost-savings (travel, materials) were the main reason for me to register for this language MOOC.

Disagree 1 2 3 4 5 6 Agree

17. I enrolled in this MOOC because the certificate is issued by edX.

Disagree 1 2 3 4 5 6 Agree

18. I found the course design on the platform to be interactive and engaging.

Disagree 1 2 3 4 5 6 Agree

19. It was beneficial for me to learn Mandarin through live broadcasting and online meetings led by the instructor.

Disagree 1 2 3 4 5 6 Agree

20. It was helpful for me to use the discussion forum to interact with peers and support each other.

Disagree 1 2 3 4 5 6 Agree

21. The course allowed me to re-learn the concepts that I did not understand previously in other language programs/institutions.

Disagree 1 2 3 4 5 6 Agree

22. The videos were very much like just being in the classroom, where the teacher is talking and writing on the board.

Disagree 1 2 3 4 5 6 Agree

23. The instructor's manner of speaking and presentation skills are fluent, relaxed and natural.

Disagree 1 2 3 4 5 6 Agree

24. The instructor's attitude kept me interested in watching the videos.

Disagree 1 2 3 4 5 6 Agree

25. What did you find most engaging while taking this course? (Check all that apply)

__ High quality videos
__ Practical exercises and peer assessment
__ Online forum discussions
__ Explicit guidance (including weekly newsletter and cultural notes videos)
__ Technical support/course content assistance
__ Family/friend encouragement
__ Other (Please specify _____)

26. Please rate your satisfaction with the overall course design.

Poor 1 2 3 4 5 6 Excellent

Appendix B: Assumed Causes and Validation Items

Category	Assumed Cause	Survey	Question
Knowledge	1) Participants know reasons which prevent them from completing the course. (factual)	1. If you had any trouble meeting course deadlines for submitting work, what impeded you from submitting assignments, completing video lectures, or submitting exams? __ Laziness/procrastination __ Confusion __ Busy schedule __ Personal emergency __ Lack of interest __ Other (Please specify _____)	2-6
	2) Participants have the knowledge necessary to navigate the curriculum and the LMS. (procedural)	2. How would you rate yourself in terms of being familiar with the courseware for accessing all of the units for the lessons?	2-7
	3) Participants are aware that different Mandarin speaking countries have different language usages. (conceptual)	3. How would you rate your knowledge regarding the differences among accents/dialects/usages in various Mandarin speaking countries?	2-8
	4) Participants need to know where to find supplementary materials to assess their learning. (metacognitive)	4. How would you rate your ability in seeking additional resources to help with Mandarin learning?	2-9

Motivation	1) Participants have substantial interests to learn Mandarin. (intrinsic value)	1. Why did you choose to learn Mandarin Chinese? __ Business opportunity __ School requirement __ Curiosity __ Travel __ Social __ Other (Please specify _____)	2-1
	2) Participants learn Mandarin due to professional needs for work or travel to Mandarin-speaking countries. (goal)	2. What was your primary goal/expectation? __ Improve my ability to communicate at work, or with clients __ Marriage/family communication __ Solid foundation for further Mandarin language learning __ Career marketability __ Personal hobby __ Other (Please specify _____)	2-2
	3) The course has relevance to individual differences. (intrinsic)	3. What made you choose this Mandarin MOOC? __ It is free __ It works well with my school/work schedule __ It is well-structured with adequate exercises __ It is taught in English __ It has a good reputation/affiliated with top-tier universities __ Someone referred it to me __ Other (Please specify _____)	2-5
		4. I stayed with this course because it covers everything that I am looking for while leaning Mandarin.	2-13
	4) Participants receive emotional support from faculty members. (extrinsic)	5. I found the learning environment to be encouraging.	2-14
	5) Participants have instant feedback from the instructor, peers, and teaching staff. (extrinsic)	6. I found that the feedback helps me adapt to an online learning environment.	2-15

	6) Participants can audit the courses for free unless they would like to have a certificate. (cost/benefit)	7. Cost-savings (travel, materials) were the main reason for me to register for this language MOOC.	2-16
	7) Participants appreciate a certificate from an organization which has reputation/affiliation with top tier universities. (cost/benefit)	8. I enrolled in this MOOC because the certificate is issued by edX.	2-17
	8) Participants are aware of their own learning. (metacognition)	9. I reflected on my learning progress and adapted my strategies to assist with my learning.	2-10
	9) Participants are confident with their academic abilities. (high self-efficacy perceptions)	10. I am confident that I can complete all of the assignments and pass the final exam.	2-11
	10) Participants' academic emotions are closely related to their learning strategies and academic performances. (affect)	11. I feel happy while taking this course, including watching videos, working on exercises, and interacting with peers.	2-12

Organization	1) Interactive language course design	1. I found the course design on the platform to be interactive and engaging.	2-18
		2. What did you find most engaging while taking this course? __ High quality videos __ Practical exercises and peer assessment __ Online forum discussions __ Explicit guidance (including weekly newsletter and cultural notes videos) __ Technical support/course content assistance __ Family/friend encouragement __ Other (Please specify _____)	2-25
	2) Social networking activities	3. It was beneficial for me to learn Mandarin through live broadcasting and online meetings led by the instructor.	2-19
	3) Opportunities to interact with diverse groups of learners	4. How did you study while taking this course? (Check as many as apply) __ Online study group members __ Language buddy __ Family members __ School classmates __ Random friends __ Alone __ I did not study __ Other	2-4
		5. It was helpful for me to use the discussion forum to interact with peers and support each other.	2-20
	4) Time flexibility and convenience	6. How many hours did you spend on average with this course every week? __ Less than 3 hours __ 3-5 hours __ 6-9 hours __ 10-12 hours __ 13-15 hours __ More than 15 hours	2-3

		7. The course allowed me to re-learn the concepts that I did not understand previously in other language programs/institutions.	2-21
	5) Teaching presence influences learners' perceptions of the course	8. The videos were very much like just being in the classroom, where the teacher is talking and writing on the board.	2-22
		9. The instructor's manner of speaking and presentation skills are fluent, relaxed and natural.	2-23
		10. The instructor's attitude kept me interested in watching the videos.	2-24
	6) Positive culture and happy organization	11. Please rate your satisfaction with the overall course design.	2-26