Chinese Learners' Perceptions of MOOCs：A Case Study

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presented by

Yuqin Yin

Supervisor:
Prof. Dr. Heiner Barz
Prof. Dr. Bernhard Dieckmann

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1. Introduction

1.1. Background of the Study

With the development of information and communications technology, the use of digital tools to transmit knowledge have become more and more popular and E-learning is growing substantially. E-learning is to use electronic tools to facilitate learning (Horton, 2012). It is also defined as "learning facilitated and supported through the use of electronic media and information and communications technology (JISC, http://www.jiscdigitalmedia.ac.uk/guide/introduction-to-elearning)."

The early form of E-learning was distance learning, which has a long history and at first were based on correspondence courses and later radio and television courses (Mehrotra, Hollister & Mcgahey, 2001). Later, with the advent and widespread use of the network technology, E-learning has become a synonym for online learning, web-based training or distributed learning.

Online learning is learning supported by the Internet. It makes best use of the Internet and goes beyond traditional learning with merely a computer. It can facilitate learning by making course content accessible to everyone as long as Internet is accessible. Because of increasing Internet technology, the growth of E-learning and online learning has been spurred and developed unprecedentedly in recent years. Although there are different findings about distance learning, E-learning, and online learning, these three words are often interchanged (Moore, Dickson-Deane & Galyen, 2011).

According to Moore and Kearsley (2001), the main characteristic of distance education is that teachers and students are separated by distance and sometimes by time, which can provide students huge convenience and flexible learning opportunities.

Compared to traditional classroom teaching, E-learning can provide more flexible teaching and learning approaches, supply much accessibility and improve the reuse of the courses material. It has flexible schedules and convenience in location. It is self-directed and allows each student to work at his or her own pace. It has many delivery options and multiple tools. The benefits of E-learning may be described by

the slogan “any time, any place, any path, any pace ” (Scholley, 2001).

For the trainers or educators, E-learning can increase educational opportunities and reach a broader student audience. It can provide consistent and effective training content; better address student needs and save money (Tucker, 2001). It also decreases the cost of construction and resolve classroom crowding and thus net large profits with low investment.

According to Volery and Lord (2000), online learning has special advantages compared with traditional technologies. It provides synchronous communication tools that make interactions occur not only between an individual and technology but also among students and instructors. It provides collaborative tools that make students more active and cooperative. Lifelong learning means that people should keep learning throughout their lives. Few people will do only one job throughout their lifetime because of the social, cultural and technical change of the society is great. With the development of the Internet, online learning has become the key means of delivering lifelong learning.

The development of E-learning also provides instructors and educators many benefits. Instructors can integrate information and communication technology into their teaching practices. According a survey conducted by Golden, McCrone, Walker, & Rudd (2006), most lecturers in England used E-learning as a medium for facilitating teaching and learning by sharing course materials with learners and colleagues, communicating with learners outside the classroom, testing learners’ understanding and tracking learners’ progress. E-learning was also be used as a preparatory and presentational tool that can assist them to prepare and plan their courses and help them as a learning tool which develops student understanding. The majority of lecturers agreed that E-learning has the potential to provide perfect teaching and learning experiences by increasing the flexibility of learning provisions, stimulating better understanding and equipping learners more effectively for future employment.

Online learning environments have also received negative feedback. Isolation and lack of human interaction are the two biggest problems (Scholley, 2001). Kearsley (2002) pointed out that online courses require a lot of self-discipline and initiative and are not suitable for everybody. Some studies show that independent learners who can

control their study are more active and likely to be successful in online courses. Learners who are not self-motivated will find it difficult to be engaged and, therefore, have some impact on their satisfaction level (Rivera, McAlister & Rice 2002).

According to Arabasz, Pirani and Fawcett (2003), instructors need technical and pedagogical training for online learning environments. They need substantial time and effort to incorporate an E-learning element into their instruction. They should rethink the pedagogical aspects and teaching models to make them adaptable to an online learning environment. In addition, compared to the traditional class, many aspects of the instructional design such as performance evaluation and communication with the students also present huge challenges.

Although online learning has many limitations, more and more students seek courses and programs online. In the United States, the numbers of students who are learning online continues to grow at a fast rate.

The Babson Survey Research Group designed and administered a survey (Allen & Seaman, 2014, p. 15) about the online learning of higher education in America and analyzed the data from more than 2,800 colleges and universities. The survey showed that in fall 2012, the total number of students who took at least one online course was 7.1 million, which accounted for 33.5% of the total enrollment. Compared to fall 2011, the number increased by over 411,000. While in 2002, the number of students who took at least one online course was only 1.6 million, which is only accounted for 9.6% of the total enrollment.

Over this ten-year period from 2002 to 2012, the increase number from 1.6 million to 7.1 million shows an annual growth rate of 16.1 percent. While the number of overall enrollment of higher education student during the same period increased from 16.6 million in fall 2002 to 21.3 million for fall 2012, which grew only at an annual rate of 2.5 percent (Allen & Seaman, 2014, p. 15). Furthermore, nearly two-thirds of the academic leaders in the survey hold the opinion that it is very likely that online enrollments will continue to grow and most students will enroll in one online course over the next five years.

The annual national surveys of distance education programs in 2013 conducted by the Instructional Technology Council (ITC) also showed that the enrollment of students in online courses grow at a higher rate than the enrollment of overall student at

colleges and universities. From fall 2013 to fall 2014, the survey showed a 4.68 percent rate of growth in student enrollment in online courses (Lokken & Mullins, 2015, p. 3).

Student demand for online learning also brings universities many opportunities and challenges. In the United States, almost seventy percent of higher education institutions in 2013 reported that online education is important to their long-term strategy. While in 2002, the number was less than half that figure (Allen and Seaman, 2014, p. 8). In the annual national surveys of 2014 conducted by ITC (Lokken & Mullins, 2015, p. 15), the greatest challenges of distance education programs administrators face were reported. From 2004 to 2010, the number one challenge was "a lack of proper support staff to help them train faculty and provide technical assistance to faculty and students". In 2014, this challenge was in the second place and the first challenge distance education administrators faced was "providing adequate student services for distance education students". The survey respondents ranked "adequate assessment of distance education classes" as the number three challenge and number four was about "operating and equipment budgets".

In the digital age, online education has become an important media and instrument in higher education to offer various instruction models and provide flexible learning methods. In order to satisfy the growing demand for online learning, a large financial input and effort is needed to establish network infrastructure and an online course management system. In addition, instructors and teachers should be trained to obtain adequate technical skills and adapt themselves to online education. These factors all bring huge challenge to universities developing online learning education. Perhaps the greatest challenge the universities face is to "transform traditional universities into organizations delivering high quality lifelong online learning activities for very broad and complex target groups" (Lorentsen, 2009, p. 58).

In 2008, Stephen Downes and George Siemans led the online course "Connectivism and Connective Knowledge", which attracted more than 2200 online students. The concept of "Massive Online Open Course (MOOC)" was at that time introduced. In 2011 Stanford University launched more courses online and later platforms for

MOOCs such as Coursera, Udacity and edX were founded. They soon attracted many elite universities to join in and provide high quality courses free to the world. For the establishment of these platforms, 2012 was called “the year of the MOOC” (Pappano, 2012) and 2013 was still declared the year of MOOC for its explosion (Behbehanian & Burawoy, 2014).

A Massive Online Open Course (MOOC) is a kind of online course that is free and open to everyone. It is a new approach that uses the power of the Internet to make courses available to hundreds of thousands of individuals (Gyles, 2013). Online means people can access the courses online and massive means the courses are designed for massive enrollment. The open aspect of MOOCs refers to that everyone can attend the courses use the sources freely (Kay, Reimann, Diebold & Kummerfeld, 2013). In addition, the courses are provided by outstanding teachers from famous universities and they possess systematic sequences which traditional classes have such as giving lectures, assigning homework and evaluating performance. It’s free, credit-less and massive, which is quite different from traditional online courses (Pappano, 2012).

Since MOOCs were launched, they have attracted thousands of students all over the world for being free and high quality. They provide the opportunities to students, especially students from developing countries to experience world-class education from top universities. Coursera, the famous MOOC platform established by Stanford University in United States, cooperates with 115 top universities and organizations worldwide and offers about one thousand courses for free. Coursera “envision a future where everyone has access to a world-class education” and it aims to “empower people with education that will improve their lives, the lives of their families, and the communities they live in ” (www.coursera.org). By October 2015, more than 15 million students all over the world had registered on it and experienced world-class education. EdX, another famous MOOC platform in the United States, was founded by the MIT and Harvard University in May 2012. The mission of edX is that: “Increase access to high-quality education for everyone, everywhere, enhance teaching and learning on campus and online and Advance teaching and learning through research” (https://www.edx.org/about-us). By 2016, it has more than

90 global partners and offers more than 600 courses.

According the survey of Allen and Seaman (2014, p. 25), institutions in U.S. provide MOOCs mainly in order to "increase institution visibility", "drive student recruitment", attempt "innovative pedagogy" and provide "flexible learning opportunities". The percentage of higher education institutions that have a MOOC, increased from 2.6 percent in 2012 to 5.0 percent in 2013 (Allen & Seaman, 2014, p. 23).

In response to MOOC development in America, institutions and universities all over the world are attempting to establish their own MOOC platform or seek cooperation with an existing platform. In 2012, the Open University in UK established a MOOC platform, Futurelearn. Germany launched its MOOC platform, Iversity, which can provide both English and German courses. Later in 2013, the Open2Study was founded in Australia. In China, Qinghua University established the first Chinese MOOC platform "Xuetang zaixian" in 2013. Later, several other platforms such as "Zhongguodaxue MOOC" and "Haodaxue zaixian" were also established. In addition, many universities in China signed contracts with the platforms and provided courses on them.

The rapid development of MOOC provides huge opportunities to learners all over the world and meets a variety of educational demands. Through taking courses on MOOC platforms, traditional students can strengthen learning of a specialized subject and expand their sphere of learning. MOOCs also increase learning opportunities to those users who have no time or energy to go back to campus to continue studying and promote their experiences of lifelong learning. In addition, MOOCs increase access to higher education and equal opportunity in education and decrease the educational gap between developing and developed countries.

MOOCs have also brought opportunities and implications to higher education. MOOCs make universities use resources and facilities more efficiently and promote wider use of online learning. MOOCs help the universities build their brand and gain reputation. MOOCs waken online instruction consciousness (Salisbury, 2014) of institutions and universities and promote universities to provide more flexible curriculum design. In conclusion, MOOCs have the potential to expand higher

education and they are indeed complementing and supplementing of higher education.

Although MOOCs have many advantages and developed quickly, several unprecedented challenges exist. MOOCs certainly have the negative aspects that E-learning possesses. MOOCs are open and free; compared to traditional education, they are largely self-determined learning and lack interaction and supervision. These characteristics usually lead to a high dropout rate. MOOCs are also criticized for employing a teacher-centered instruction model and adopting behaviorist pedagogy.
In addition, assessment instrument of MOOC is also a controversial topic. Pappano (2012) raised the question of whether learning can be scaled up this much and pointed that grading in MOOCs is imperfect, especially for nontechnical subjects. Cooper & Sahami (2013) showed their worries of validating the original work and preventing plagiarism in online education. The quality of peer assessment is also a big problem. Since the participants of MOOCs are international and have various education and culture backgrounds, it is possible that the quality of peer assessment is uneven.

In China, MOOCs have attracted tens of thousands students and a large number of Chinese MOOCs projects were carried out. Many MOOC platforms are established by famous universities in China. Many learning communities and translations groups are established which could facilitate the study of Chinese-speaking students. However, the academic research is still insufficient in China.
Based on the discussion above, the purpose of this study is to investigate the satisfaction and learning experience of Chinese learners when they enroll in MOOCs. It uses the case study method and adopts a mixed data collection method.

1.2. Purpose of the Study and Research Questions

The purpose of this study is to conduct case study research and provide a deep and rich description and interpretation of Chinese learners who have enrolled in MOOCs. This study describes the impacts and challenges that MOOCs have brought to Chinese learners and interprets the their satisfaction with MOOCs. In addition, this study investigates how Chinese learners have adapted to an online learning environment and

achieved their goals.

The main questions of this study are what are the goals and satisfaction level of Chinese learners who enrolled in MOOCs and how can they adapt themselves and achieve their goals in an online learning environment. In order to address these explorative questions, a mixed research method that involves the combination of quantitative and qualitative data collection methods will be used.

The research questions in this study are separated into three groups:

1. What are the goals and expectations of Chinese learners when they enroll in MOOCs? What are the reasons for Chinese learners to quit MOOCs? Compared to other open online courses, why do Chinese learners choose MOOCs?
2. How satisfied are Chinese learners with the instructional design of MOOCs? Which aspects of MOOCs contribute most to learners' satisfaction? Which aspects contribute least?
3. How do Chinese learners finish MOOCs and adapt themselves to the online learning environment?

1.3. Significance of the study

The first significance of this study is the data collected.

This study adopts a mixed data collection method and obtains rich information about Chinese learners who enrolled in MOOCs. The data of this study shows the Chinese learners' satisfaction with the instructional design of MOOCs analyzes the extent of their satisfaction. This data can provide scholars and institutions who will provide courses on MOOC platforms a deep understanding of what aspects of the course design are preferable for Chinese learners and what aspects are weak points. The information will also provide those Chinese universities that want to establish their own MOOC platforms suggestions and help them establish Chinese MOOCs that are more suitable for Chinese learners.

This study also explores how Chinese learners adapt themselves to the online learning environment and achieve the goals they set for themselves. The data collected from this study will provide Chinese students who will enroll in MOOCs with the kinds of difficulties and challenges they will face and how can they overcome them. The

information can also help them find what kind of online learning strategies they can use and make them better prepared for future MOOCs.
This study also describes the reason why Chinese learners enroll in a MOOC and why they quit. The data can also provide reference for learners and institutions and provide information for researchers about why Chinese learners choose online learning and promote reform of traditional Chinese education.

The second significance is the case study research method that this study adopted.
According to Simons (2009, p. 5), "Qualitative case study is a particularly appropriate methodology for exploring problems of educational practice." In a case study, the description of the case allows for deep interpretation of the case and people can get rich information from it. This study uses case study and adopts a mixed data collection method that includes a questionnaire and interviews and obtains rich and valuable data about Chinese users who enrolled in MOOCs. The method this study used provides reference and experience for later study.

1.4. Structure of the Study

This study is organized into six chapters.
Chapter 1 provides an overview of this study. First, it introduces the background of this study. Then it describes the purpose and significance of this study. It also presents an overview of the research method of this study and clarifies the research questions. Finally, it summarizes the structure of this study.
Chapter 2 is a review of literature that is relevant to the current study. The first part of this chapter introduces the development of MOOCs first and then puts emphasis on the controversial issues regarding instructional design of MOOCs. The second part of this chapter first introduces the instructional design theory and several design models. Then through these instructional design models, a new model for E-learning program is designed, fundamental components of instructional design are summarized and guidelines of practice are presented.
Chapter 3 introduces the research method of this study. First it provides an overview of the case study method and introduces the data collection process of this study. This

study collects data including both quantitative data and qualitative data. Quantitative data is collected by questionnaire and qualitative data is collected through interviews and documents. It also provides the result of pilot research and the sampling process. At last, it introduces the process of analyzing data.

Chapter 4 provides the results of the study and answers the research questions. It first briefs the background of the participants and the information about their enrollment in MOOCs. Then it presents the results of the questionnaire and describes the satisfaction of the Chinese learners about MOOCs. At last, it analyzes the data from interviews and interprets how Chinese learners accomplished courses on MOOC platforms and adapted themselves to an online learning environment.

Chapter 5 provides a discussion of the results. If first summarizes the background of Chinese learners and compares with the background of learners all over the world. Then it provides comments on the satisfaction of Chinese learners with the instructional design of MOOC and points whether the results relate to the literature. At last, it provides a discussion of the learning strategies and learning style Chinese learners make to adapt to online learning environment.

Chapter 6 provides a summary of this study.

The appendixes include the questionnaire this study used, the interview guide, the backgrounds of the interviewees and the original data of questionnaire.

2. Literature Review

The purposes of this study are to investigate the Chinese learners' perceptions of the instructional design of MOOCs and explore their satisfaction and experience. The literature review consists of three parts. The first part provides a review of MOOCs. In this part, the development and the controversial issues of MOOCs are introduced. In addition, the impact MOOCs bring to higher education and the negative aspects of MOOCs are also discussed. The second part provides a review of instructional design theories and models. The third part introduces the fundamental components of instructional design and provides principles and guidelines of instructional design.

2.1. Massive Open Online Course (MOOC)

2.1.1. Understanding of MOOC

What is a MOOC?

A MOOC is the acronym of a Massive Open Online Course or MOOCs as its plural form. Wikipedia defines a MOOC as "an online course aimed at unlimited participation and open access via the web" (Wikipedia, 2016a). MOOC platforms offer courses taught by elite professors to large number of people all over the world online.

The characteristics of MOOCs are that they are massive, open and online. Massive means a course can accommodate numerous students. The artificial intelligence course, provided by Professor Thrun of Stanford University, attracted more than one hundred thousand students. Open means the courses are free and anyone can enroll in the courses. Online means the delivery of the courses is online and anyone can take the courses as long as the Internet is accessible.

MOOCs are not normal online courses. Compared to other online courses that provide only online lectures, MOOCs have a complete instructional process. The courses

provide lectures that mostly are produced specially for a MOOC platform; the professors assign various homework or tasks after class and students can receive feedback after the assignment is assessed. In addition, the courses provide online discussion forums in which students can interact with the teachers and other students. Finally, the courses provide exams and students will obtain certificate of the course if they pass the final evaluation. Lectures, assignments, evaluations and feedback, interactions, quizzes and exams constitute the integrity of an MOOC. Just as McAuley, Stewart, Siemens, and Cormier (2010, p. 4) stated, "A MOOC integrates the connectivity of social networking, the facilitation of an acknowledged expert in a field of study, and a collection of freely accessible online resources. Perhaps most importantly, however, a MOOC builds on the active engagement of several hundred to several thousand 'students' who self-organize their participation according to learning goals, prior knowledge and skills, and common interests. "

Compared to traditional courses, MOOCs are more flexible and students are able to study at their own pace by taking MOOCs. Also, MOOC platforms provide all kinds of courses from science to humanities with which students can expand their knowledge, not only the specialized knowledge but also subjects or area they are interested in. A MOOC is a good extension of traditional learning. In addition, "from a pragmatic perspective, MOOCs provide access to large numbers of people who might otherwise be excluded for reasons ranging from time, to geographic location, to formal prerequisites, to financial hardship (McAuley, Stewart, Siemens & Cormier, 2010, p. 6). "

MOOCs offer increased accessibility, enhance student engagement and encourage lifelong learning through open availability and low or no cost (Jurenas, 2014), as a result, MOOCs have attracted a large number students all over the world and are more popular and popular. According to a survey reported by Harvard and MIT (Ho et al., 2015), as of September 21, 2014, there were 1.03 million unique participants registered on edX. From July 24, 2012 to September 21, 2014, the participants enrolled in HarvardX and MITx courses increased steadily, with an average of 1,300 unique participants everyday.

CMOOC and XMOOC

"MOOC" are separated into edX MOOC (xMOOC) and connectivist MOOC (cMOOC). According to Siemens (as cited in Clem & Junco, 2015, p. 521), "CMOOC model emphasizes creation, creativity, autonomy and social networking learning" and focus on "knowledge creation" (Clem & Junco, 2015, p. 521). According to Daniel (2012, p. 2), cMOOC is "based on a philosophy of connectivism and networking".

XMOOCs, represented by Coursera, Udacity and edX and developed by elite US institutions, provide videos and quizzes online and students can obtain feedback by machine grade system or peer assessment after they finish the assignments. Bates (2014) summarized the design feature of xMOOC. He stated, "xMOOC use specially designed platform software that allows for the registration of very large numbers of participants; xMOOC provide video lectures weekly and participants can download supporting materials; xMOOC use computer-marked assignments and peer assessment; participants can share comment in discussion space and most xMOOC provide certificates." These characteristics show that xMOOC "focuses on content and follows a curriculum" (Schulmeister, 2014) and follow a more "behaviourist approach" (Daniel, 2012, p. 2). Siemens (as cited in Clem & Junco, 2015, p. 521) also criticized that xMOOC "emphasizes a more traditional learning approach through video presentations and short quizzes and testing" and a focus on " knowledge duplication " (Clem & Junco, 2015, p. 521).

Although there are many negative comments on xMOOC, the design features that represent xMOOCs "incorporate pedagogical concepts that differ from those that underpin traditional courses" (Gyles, 2013). Kay, Reimann, Diebold, and Kummerfeld (2013, p. 70) pointed out the potential of xMOOC and stated, "The xMOOCs are the new and well-publicized type that moves a traditional university learning paradigm into the online learning space." Schlmeister (2014) stated, "xMOOC aim at presenting and communicating knowledge from degree programs in small units. It is this type of MOOC that became a mass phenomenon."

There is much discussion about these two terms about MOOC, but "the recent media attention has popularized the term MOOC to refer to xMOOCs" (Kay, Reimann, Diebold, & Kummerfeld, 2013, p. 70). The MOOC used in this study is xMOOC.

Connectivism

With the development of Internet technology and its application in education, Siemens (2005) offered a new learning theory "connectivism" which is based on network and connection and provides a new pedagogical guide for a digital age.

He pointed out the limitation of behaviorism, cognitivism, and constructivism and stated, "these theories do not address learning that occurs outside of people and they fail to describe how learning happens within organizations" (Siemens, 2005, p. 2).

According to the theory of connectivism, learning is "focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing." In the online learning environment, constructing knowledge is accomplished through interaction and dialogue.

From his view, learning in the digital age is mostly dependent on the connection of learners with various sources of knowledge from the Internet and the interaction with others in communities or social networks. It is a "connected learning". Connectivism provided a foundation and guide for the web based learning and massive open online learning courses.

Siemens (2005, p. 4) stated the principles of connectivism:

"Learning and knowledge rests in diversity of opinions.

Learning is a process of connecting specialized nodes or information sources.

Learning may reside in non-human appliances.

Capacity to know more is more critical than what is currently known

Nurturing and maintaining connections is needed to facilitate continual learning.

Ability to see connections between fields, ideas, and concepts is a core skill.

Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities."

Connectivism encourages the participants to learn socially and connect with each other, share and create knowledge through various social media. It creates a connective learning community and promotes participants to search their own knowledge. In order to obtain the expected results, it promotes the discussion and debate among participants. According to Kop and Hill (2008), "In connectivism, the starting point for learning occurs when knowledge is actuated through the process of a learner connecting to and feeding information into a learning community."

2.1.2. Challenges and Issues of MOOC

Although researchers and educators have realized the advantages and rapid development of MOOCs, they still face some problems and challenges. The problems of MOOCs discussed in this study are the pedagogy of MOOC, high drop rate, student performance assessment, and lack of interaction.

Pedagogy

Since xMOOCs employ a teacher-centered instruction model mainly for transmitting knowledge and is similar to traditional courses, it has been criticized for being low quality and adopting behaviourist pedagogy. Downes pointed out those xMOOCs are placing less emphasis on "interactive and dynamic" but more on "static and passive" (Parr, 2013) education. Bates (2012) stated that, "the teaching methods used by most of the Coursera courses so far are based on a very old and outdated behaviourist pedagogy, relying primarily on information transmission, computer marked assignments and peer assessment." Daniel (2012) also criticized that, "the so-called elite universities that are rushing into xMOOCs gained their reputations in research. Nothing suggests that they are particularly talented in teaching, especially teaching online."

Learning based on behavior theory has its advantages, especially when students obtain information, facts or procedures. Feedback is also important in the learning process. However, according to Bates (2012), "it is extremely difficult if not impossible to teach higher order skills of critical thinking, creative thinking, and original thinking using behaviourist pedagogy, the very skills that are needed in a knowledge-based society."

Schulmeister (2014) stated, "xMOOCs demonstrate a large variety at the surface, seemingly implying a flexible method of instruction. However, the combination of online-mode with free and open access restricts the didactical potential to a spectrum in between behavioral components, Robert Gagné's 'Events of Instruction' and David Merrill's instructionalism. What remains are conveying of information and non-interactive instruction, similar to classical distance teaching."

Although some design feature of xMOOCs incorporate pedagogical elements, in order to formulate a long-term strategy, xMOOCs should put more emphasis on developing

pedagogical and didactic approaches.

High Drop Rate

High drop rate is always a difficult problem that online courses face. MOOCs are open and free, which means that no matter what education background the students have, they can easily enroll in a course and quit when they cannot continue. The learning process lacks discipline and supervision and the courses on MOOC platforms lack a curriculum system. Compared to traditional education, they are largely self-directed learning and usually lead to a high drop rate.

Patterson, a professor at the Computer Science department of UC Berkeley, conducted a MOOC "Software Engineering" on Coursera that attracted 50,000 students. In the end, only 3,500 students finished the course and passed. The drop rate was 93% (Meyer, 2012). Another example is the course "machine learning" provided by Dr. Andrew Ng, 104,000 students attended the course but only 13,000, about 12.5 percent, passed (Tamburri, 2012).

According to a survey conducted by HarvardX Research Committee at Harvard University and the Office of Digital Learning at MIT (Ho et al., 2014, p. 13), from fall 2012 to summer 2013, there were 841,687 registrations from 597,692 unique users enrolled in the first 17 courses launched on edX platform. Only 35,937 registrants explored half or more of course content without certification and only 43,196 registrants earned certificates of completion.

The problem of the high drop rate may not be avoided if the purpose of MOOC is to provide free and open education; however, it would be significant to find out the reason that students quit from the courses and take effective measures to decrease the drop rates.

Assessment

Compared with traditional classes, the scale of a MOOC is much larger--some MOOCs have tens of thousands students or more--it is impossible for the professor to assess every students' assignments and provide individualized guidance or supervision. For those reasons, the main instruments of assessment of most MOOCs are machine grading and peer assessment.

Machine grading is for quizzes or tests and usually consists of multiple-choice

questions and it provides an automated score for feedback. Peer assessment is for other forms of assignments, such as essays, design works and so on. It is based on social networking and every student should assess five other students' assignments and provide feedback. In order to handle the large number of assignments, peer assessment is a practical assessment method in a scaled massive course.

Suen (2014) summarized the difference between peer assessment in MOOCs and in the traditional instruction environment. Due to the large enrollment in a MOOC, the peer assessment in a MOOC is obviously more complex and there is little or no supervision from the instructor. In addition, the participants of a MOOC are international and have various education backgrounds, cultures and native languages and it is possible that the feedback is not worthwhile. All these factors make it possible for students to take the peer assessment process not so seriously and the feedback, perhaps, is not deep and rich enough. In summary, peer assessment cannot replace the evaluation and feedback provided by an expert.

On the other hand, identifying original work and preventing plagiarism in the process of evaluation is always a challenge in a MOOC. In online education, the most widely discussed challenge is "that of validating original work and preventing (or at least detecting) plagiarism" (Cooper & Sahami, 2013, p. 29). Since a MOOC has a massive number of students and its assessment system is carried out through machine scoring and peer assessment, it is more difficult to validate whether the students submit their original works or not.

Professor Patterson, in his software engineering course, found 20 students in his course providing identical homework (Pappano, 2012). Young (2012) reported that the students, who had enrolled in the humanities courses provided by Coursera, complained about the plagiarized assignments of other students when they conduct peer assessment. That is the reason Pappano (2012) raised the question regarding whether learning can be scaled up this much and pointed that grading in a MOOC is imperfect, especially for nontechnical subjects.

Although MOOC providers have responded by offering proctored exams, using plagiarism-detection software, and cooperating with testing centers, these measures will bring higher costs for students. How to balance the costs and benefits is an

important factor in the future success of MOOCs (Cooper and Sahami, 2013, p. 29). Further more, these measures are only effective for exams. How can professors prevent cheating and check for plagiarism in every assignment? It is a difficult problem to solve.

Lack of Interaction and Supervision

The learners in online learning environments have to be able to learn independently and be fairly autonomous (kop, 2011). In a traditional class, the teachers have to provide guidance and supervision. But in the online learning environment, the students must be responsible for themselves. In order to be successful, they have to choose learning material, identify learning goals, seek out cooperation with others, and manage their time to finish assignments by themselves.

On the other hand, some researchers believe that machines cannot simulate the interaction between students and teachers, which is a critical component of education (Carr, 2012). A MOOC can involve thousands of students. Although there are discussion forums for the students in which they can communicate with each other, most of the time, assistants manage the forum and students have few opportunities to interact with the instructor directly. Also, they cannot obtain feedback for their assignments from the instructor since a peer or machine evaluates the assignment.

Cary Nelson (as cited in Basu, 2012), the outgoing president of the American Association of University Professors, stated, “education calls for real interaction with faculty members and a consensus through which faculty members can design, manage, and evaluate degree programs. Online models such as Coursera can be terrific for delivering educational materials to retirement homes, but it’s not education, and it’s not even a reliable means for credentialing people.” Basu (2012) stated, “It’s fine to put lectures online, but this plan only degrades degree programs if it plans to substitute for them.”

Guthrie (2012) criticizes the fact that “the Coursera model doesn’t create a learning community; it creates a crowd. In most cases, the crowd lacks the loyalty, initiative, and interest to advance a learning relationship beyond an informal, intermittent connection.” He emphasizes, “Whether face to face or online, learning occurs when

there is a thoughtful interaction between the student and the instructor."
Lack of interaction is always a disadvantage of online learning. There is a need for research to improve the interaction and supervision in online learning, especially for a course that involves massive numbers of students.

2.1.3. Implications to Higher Education

Although MOOCs face many problems and challenges, it has brought opportunities and implications to higher education. MOOCs offer traditional students more flexible learning opportunities (Gaebel, 2013). They increase accessibility to higher education, expand university enrollment and extricate the university from limited campus facilities and resources. At the same time, they promote the development of online learning and urge universities to provide more blended and flexible learning opportunities. They foster the democracy and globalization of education and help universities build a reputation.

MOOCs promote the wider use of online learning and meet a variety of educational demand of not only traditional students, but also working adults. Through taking courses on a MOOC platform, they can intensify their specialized knowledge, expand their sphere of learning and pursue their interests. MOOCs also provide more learning opportunities to those adult users who have no time and energy to go back to campus to continue their studies. Through self-directed learning on a MOOC platform, they can increase their career opportunities and promote their experiences of lifelong learning. Since Coursera is launched, many students enrolled in courses on Coursera to improve skills that are necessary for their job or to change careers (Andrew Ng, 2012).
MOOCs also increase accessibility of higher education and decrease the cost of education. They have expanded university enrollment and extricate the university from limited campus facilities and resources. Christensen, Alcorn and Emanuel (2014) conducted a research to investigate whether the courses provided on MOOC platforms by elite business schools disrupt the existing program. The result shows that MOOCs run by elite business schools help attract more students that cannot attend traditional

business schools and expand the overall reach of business education. According to Batson (2013), MOOCs, with its massive online enrollment, “have broken the logistical barrier for higher education, in order to meet the surging demand for both more learning opportunities and for a lower-cost business model.”

Furthermore, the development of MOOCs increases institutional consciousness (Salisbury, 2014) around online instruction and encourages universities to design curriculum more flexibly and provide more blended learning opportunities. It creates more space for experimentation with online teaching and learning (Salisbury, 2014). Some universities have initiated hybrid degree programs in which MOOCs can replace some traditional instruction courses or some online courses and students are allowed to use courses on MOOC platforms to earn credits.

Georgia Tech cooperated with Udacity and AT&T and provided an online Master´s degree in Computer Science through the MOOC platform Udacity. Students can apply for a full degree through Georgia Tech or attend individual classes on Udacity (https://www.udacity.com/georgia-tech). In addition, Antioch University cooperated with Coursera to allow students in a program to use two of their courses, created by Duke University and the University of Pennsylvania, as part of an independent study option to earn credit. By taking this measure, Antioch University created new learning opportunities for students and reduced their costs (Hyun, 2013). EdX cooperated with Arizona State University and established Global Freshman Academy, which provides college students courses for credit. The purpose of the cooperation is to offer higher education to everyone in the world (edX, https://www.edx.org/gfa).

All of these facts show that many universities will rethink the position of MOOCs in the traditional education. This will also urge universities to combine MOOCs with traditional campus based education and provide more flexible curriculum design to meet the needs of various students. MOOC is becoming a tool that can connect various students and universities and universities and institutions are thinking more about the role of MOOCs and online learning in defining future models of higher education in a digital era (Salisbury, 2014).

MOOCs also provide more opportunities of higher education in developing countries (Bates，2012) and foster the democracy in education. In this process, universities build their brand and gain reputation globally. Many courses on MOOC platforms are provided by famous professors of elite universities. By taking courses on MOOC platforms, users in developing countries can experience first class education and hold a global perspective in a wide variety of fields that otherwise might not be available to them (Hyun, 2013). Dr. Sebastian Thrun, president of the MOOC provider Udacity, described the impact of free online courses and said, "I'm much more interested in bringing Stanford to the world, I see the developing world having colossal educational needs." Markoff (2011) stated, MOOCs can "change the world by bringing education to places that can't be reached today".

2.1.4. Negative Opinions on MOOC

While massive open online courses (MOOCs) may increase college accessibility and promote more flexible curriculum design, there are also negative opinions that challenge the sustainability of MOOCs and their position in higher education.

Whether the free model of MOOCs is sustainable is always a controversial topic. Although most of MOOCs are open and free for learners, institutions need to spend a lot to offer a course on a MOOC platform. For example, edX charges $250,000 per course from the partners who want to offer their courses on the platform and then $50,000 when the course is offered again (Kolowich, 2013). At the University of Washington, offering a MOOC on Coursera costs about $15,000 to $30,000 (Fain, 2013).

Most higher education institutions in the US still have no strategies to offer a MOOC on MOOC platforms. According to the report by Allen & Seaman (2014), only about 5 percent of institutions provided a MOOC, and only 9.4 percent had plans to provide them. With limited budget and cost saving, it is difficult for the institutions and professors to offer MOOCs for a long period.

Schulmeister (2014) analyzed the position of xMOOCs in America higher education and pointed, "It is open to debate, whether private MOOC providers can sustain their current position for long without developing entirely new business models. As an

individual offer of individual universities, which may fund the high cost of development, operation and sustainability of MOOCs, MOOCs are always a possibility. Therefore, it is important to discuss business models for xMOOCs, and their development."

In addition to the sustainability of MOOCs, there are also other negative comments regarding MOOCs. Many researchers question whether MOOCs pose a threat to the existing models of degree courses. Christensen, Alcorn and Emanuel (2014) conducted a study to investigate whether the courses provided on MOOC platforms threaten the existing program; Cusumano (2013) expressed his worries about the negative aspects that the "free" of MOOC has brought; Wiley (2012) stated the threat that MOOCs pose to the development of open courses. Daniel (2012, p. 10) doubts the quality of teaching of the universities offering courses on MOOC platforms and states: "A first myth is that university brand is a surrogate for teaching quality. It isn't. The so-called elite universities that are rushing into xMOOCs gained their reputations in research. Nothing suggests that they are particularly talented in teaching, especially teaching online."

Although MOOCs are the topic of many controversial discussions, many researchers hold the opinion that online education is not a competitor to universities and MOOCs can be a supplementary learning form to traditional education. The purpose of MOOCs is not to take the place of the interactions and activities in traditional education, but to offer more opportunities and experience to learners with the development of the technology (Andrew Ng, 2012).

In conclusion，with the rapid development of technology, learning today has become a life-long process which combines various forms of education. Attending a MOOC is a new and developing way for people to obtain knowledge. Although there are arguments against many aspects of MOOCs and the MOOCs still face huge challenges in future, there are also opportunities ahead. According to Johnson, et al. (2016), one trend that promotes technology adoption in higher education is providing viable methods, such as online learning, blended learning and MOOCs to deliver knowledge. The president of American Council of Education (ACE) Molly Corbett

stated: “MOOCs are an intriguing, innovative new approach that holds much promise for engaging students across the country and around the world, as well as for helping colleges and universities broaden their reach” (Lawrence, 2012). Institutes, universities and government should work together to resolve difficulties and meet challenges that MOOCs present.

2.1.5. Research on MOOC and Current Situation in China

Research on MOOCs

Since MOOCs were launched in 2008, they have attracted the attention of researchers and institutes all over the world.

Some research provided an introduction to MOOCs and described the history, definition, pedagogy and implications of MOOC in detail (e.g. Yuan & Powell, 2013; Daniel, 2012; McAuley, Stewart, Siemens & Cormier, 2012; Gaebel, 2013). Some discussed the impact of MOOCs on higher education (e.g. Kelly, 2014; Court, 2013; Skiba, 2012; Cooper, 2013; Martin, 2012; Waldrop, 2013).

Some research focused on case studies in which the author studied one particular course launched on MOOC platforms. For example, Breslow et al. (2013) conducted research and analyzed the data collected from “Circuits and Electronics” (6.002x)-the first MOOC of edX. They examined the background and achievement of students, students’ use of resources, and the contribution of interaction to the success of the course. Belanger and Thornton (2013) studied Duke University’s first MOOC: “Bioelectricity: A Quantitative Approach.” They introduced systematically the launch of the course and outcomes.

Some other research on MOOCs is learner-focused. Anderson, Huttenlocher, Kleinberg and Leskovec (2014) conducted a quantitative research about engagement with MOOCs. They defined and examined different engagement styles and patterns and investigated how forum participation relates to other parts of the course.

Mak, Williams and Mackness (2010) and Kop (2011) explored the learning experiences of participants in Connectivist MOOCs. Guetl, Hernandez Rizzardini,

Chang and Morales (2014) investigated the learning experience from drop-out students.

There is also some research related the assessment of MOOCs. Piech et al. (2013) and Kulkarnik et al. (2013) conducted research of peer assessment in MOOCs from the view of technology and discussed the accuracy and effectiveness of the large-scale peer grading systems. Sandeen (2013) and Suen (2014) discussed the role of assessment in the context of MOOCs at the point of application.

Current Situation in China

Although there has been a great deal of studies, MOOCs still presents many unprecedented problems and more research is necessary to meet the challenges. In China, MOOCs have attracted tens of thousands of students and a large number of Chinese MOOC projects were carried out. In 2013, Qinghua University established the first Chinese MOOC platform "Xuetang Zaixian". Later, several other platforms such as "Zhongguodaxue MOOC" and "Haodaxue Zaixian" were also established. Courses on those platforms cover various areas of study and are provided by famous universities in China. Take "Xuetang Zaixian" as an example. Courses on this platform cover areas such as computer science, economics, science, medical science, humanities and so on. Courses on "Zhongguodaxue MOOC" are provided by dozens of famous universities in China such as Peking University, Nankai University and so on. Chinese learners can take MOOCs on these platforms conveniently and freely. Since the courses cover various fields, it is easy for Chinese learners to seek courses they like on the platforms.

"Guokr" is an open community for science fans and is committed to transmitting science concept and technology to public. It established "MOOC Academy" in 2013 and provided a learning community for Chinese students who enrolled in MOOCs to discuss the courses and share their opinions and notes. In MOOC Academy, there are also translation groups and study groups which can facilitate the study of Chinese-speaking students. According a survey conducted by MOOC Academy, most Chinese MOOC users are from big cities or economically advanced areas. About 55% of Chinese MOOC users are students and about 40% are in-service staff. More

than 80% have bachelor degree or above. They enrolled in MOOCs mainly for obtaining knowledge, improving skills and experiencing outstanding educational resources.

Although MOOCs have been a popular topic of a variety of media in China, systematic academic research of high quality was still extremely insufficient (Hao, 2013). There were few quantitative studies that reflect the lack of variety of research. There was also relatively little understanding of the learners who engaged in MOOCs. In order to meet the challenges brought about by MOOCs, more in-depth and large-scale study should be conducted. Based on the above discussion, this study focuses on the impact MOOCs have brought to Chinese students and the perceptions of Chinese learners about MOOCs. It is learner-focused and puts emphasis on the learning experience and the satisfaction of Chinese users of the instructional design of MOOC.

2.2. Instructional Design Theories

2.2.1. Learning Theories and Implications for Instructional Design

In order to provide high quality online education and improve the interaction and effectiveness of online education, various learning theories and instructional designs should be considered in E-learning programs. Learning theories examine "how learning occurs" within the learner's mind (Reigeluth, 2009, p. 12) and different learning theories define learning as different processes. While some learning theories are similar and others are in conflict, all the theories put emphasis on good learning results.

Greeno, Collins and Resnick (1996, p. 16) identified three basic perspectives of learning that are the behaviorist perspective, the cognitive perspective and the situative perspective.

Behaviorist Perspective

Behavioral theory, usually noted by theorists such as Skinner and Thorndike, put emphasis on increase desirable behaviors and decrease undesirable behaviors by controlling conditions in the environment (Morrison, Ross, Kalman & Kemp, 2011, p. 384). It focuses on the establishment of stimulus-response connections and thinks of learning as the change of observable behavior and emphasizes reinforcement in the process of learning. Learning was regarded as a mechanistic process in which associations are increased or weakened according to environmental feedback and the "learner is a passive being whose repertoire of behaviors is determined by rewards and punishments encountered in the environment" (Mayer, 1992, p. 407). In the behavioral perspective, learning is a process that brought on the change in behavior and knowledge is the observed change after a new practice has been introduced and enforced. Learning outcomes in the behavioral perspective must be measurable and quantified.

The strengths of the behaviorist learning process is that the objectives and goals are precisely defined and the learner's response is quickly reinforced by the instructor and achieved goals (McLeod, 2003, p. 37). The principles of behavioral theories can

potentially affect instructional design in several aspects. Wilson and Myers (2000, p. 62) stated some points of contributions of behaviorism to instructional design. From a behavioral view, people learn more by actively attending in tasks, which is commonly called "practice" or "learning by doing"; instruction should be based on clear, behaviorally specified learning objectives and good explanations of learning objectives, instructional strategies, and assessment systems. People learn best when complicated assignments are separated into smaller tasks. People learn best when their behavior are evaluated and when they get feedback.

Cognitive Perspective

According to the growing philosophy of cognitive perspective, the learning process is viewed as an active process through which information can be organized and analyzed based on the learners' existing knowledge.

Cognitive theorists regard the learning process as "an internal and active mental process, which develops within a learner as increased mental capacity and skills to better learn" (McLeod, 2003, p. 38). They put emphasis on the process of thinking, obtaining information, remembering and forgetting, and communicating (Morrison, Ross, Kalman & Kemp, 2011, p. 388). According to this point of view, learning is to obtain more knowledge and learning result can be assessed through evaluating the amount of knowledge acquired (Mayer, 1992).

There are sub-areas of the cognitive perspective, such as Gestalt psychology, schema theory and information processing theories. Among all the branch of cognitive theory, the mainstream is constructivism (Mayes & de Freitas, 2007). Constructivism thinks that learning is the process in which learners construct their own knowledge based on the interaction with prior experiences and ideas. Constructivism is classified into two areas, cognitive or individual constructivism deriving from Peaget's theory and social constructivism based on Vygotsky's theory (Powell & Kalina, 2009).

Cognitive constructivism or individual constructivism holds the view that learners achieve understanding through a personal process and ideas are constructed through active discovery of the individual (Duffy & Cunningham, 1996). Learning is in the individual's activities when learners try to resolve the questions and obtain feedback.

Social constructivism holds the view that the process of learning is both a social and

cognitive process and social context has crucial effect for learning. It is based on the fact that learners achieve understanding through dialogue and collaboration (Duffy & Cunningham, 1996) and it puts emphasis on the important influence of social interaction and collaboration when constructing knowledge.

According to Mayes and de Freitas (2007, p. 17), the perspective of constructivism contributes to instructional design in several aspects. From the view of a constructivist, learners should be provided ill-structured problems and construct knowledge and concepts actively. Learning occurs in an interactive and collaborative environment and opportunities for discussion and reflection should be provided. In the process of teaching, skills such as metacognitive and social skills should be coached and modeled.

Situative Perspective

According to Geerno, Collins and Resnick (1996, p. 16), the situative perspective holds the views that knowledge is from people, communities and environments and practices they participate. This perspective focuses on processes of interaction and communication among people and systems and thinks that learning occurs when learner participate in activities and practices in communities.

People learn through participating in a community and "a learner will always be subjected to influences from the social and cultural setting in which the learning occurs, which will also, at least partly, define the learning outcomes" (Mayes & de Freitas, 2007, p. 18).

Lave and Wenger (2001, p. 29) called the process of situated activity "legitimate peripheral participation". They stated, "learners participate in communities of practitioners and the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community. 'Legitimate peripheral participation' provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artifacts, and communities of knowledge and practice."

According to Mayes and de Freitas (2007), implications of the situative perspective for teaching and learning include establishing social environment for participation, facilitating learning interaction and dialogues and elaborating authentic opportunities

for learning.

2.2.2. Instructional Theories

An instructional design theory, also called instructional theory, is “a theory that offers explicit guidance on how to better help people learn and develop” (Reigeluth, 2009, p. 5). While learning theories tend to be descriptive (Morrison, Ross, Kalman & Kemp, 2011, p. 381) and interpret what is likely to happen and why in a learning process, instructional theories are prescriptive and use the ideas of learning theory to develop instructional design strategies.

Reigeluth (2009, p. 6) pointed out the main characteristics of instructional design theories. He states that instructional design theory focuses on design and interprets the methods of instruction. Those methods are “probabilistic rather than deterministic” and provide guidance to the educators.

Merrill (2002) abstracted a set of instructional design principles named “First Principles of Instruction” that provides a guide for designing instruction and a foundation for various instructional theories. He stated that the principle of instruction should promote more “effective, efficient, or engaging” learning; the principle should be general and design-oriented and relate with how the instruction is designed to promote learning activities.

“First Principles of Instruction” provides five principles for problem-centered instruction and guides learners in four steps of learning: “activation of prior experience; demonstration of skill; application of skills and integration of these skills into real-world activities”.

According to Merrill, the five principles can be described as follows:

The first principle is problem-centered which means learning is developed when learners obtain skills in real environments.

The second principle is activation and means learning is developed when learners obtaining new knowledge based on the prior experience and skills.

The third principle is demonstration which means learners learn form observing

demonstrations of the skills.

The fourth principle is application that means learning is developed when learners use new skills to resolve problems.

The fifth principle is integration that means learning is developed when learners review and discuss actively the new skills.

Savery and Duffy (1995) summarized the characteristics of constructivism and present a set of instructional principles that can guide the practice of teaching and learning in constructivist learning environments. These principles are:

"1. Anchor all learning activities to a larger task or problem.

2. Support the learner in developing ownership for the overall problem or task.

3. Design an authentic task.

4. Design the task and the learning environment to reflect the complexity of the environment they should be able to function in at the end of learning.

5. Give the learner ownership of the process used to develop a solution.

6. Design the learning environment to support and challenge the learners thinking.

7. Encourage testing ideas against alternative views and alternative contexts.

8. Provide opportunity for and support reflection on both what is learned and on the learning activity. "

These instructional theories summarize the ideas and principles of the instructional design of and provide a guide for various instructional design models. Morrison, Ross, Kalman and Kemp (2011, p. 382) compared the function of learning theory, instructional theory and instructional design models and point out that learning theory explains how learning occurs; instructional theory is to ensure that the desired learning occurs and combined with the instructional design models, instructional theory is applied to create an effective lesson or unit.

2.2.3. Instructional Design Models

According to Ryder (2016), “An instructional design model gives structure and meaning to an I.D. problem, enabling the would-be designer to negotiate her design task with a semblance of conscious understanding. Models help us to visualize the problem, to break it down into discrete, manageable units.”

The following are some specific instructional design models, through which the fundamental elements of instructional design are abstracted.

ADDIE Model

ADDIE is an acronym for Analyze, Design, Develop, Implement and Evaluate. Kruse (2009) stated, “There are more than 100 different ISD models, but almost all are based on the generic ADDIE model”. The ADDIE model provides a guideline for teaching and learning in these five phases. According to Branch (2009, p. 20), “the application of ADDIE to instructional systems design facilitates the complexities of intentional learning environments by responding to multiple situations, interactions within and between contexts”.

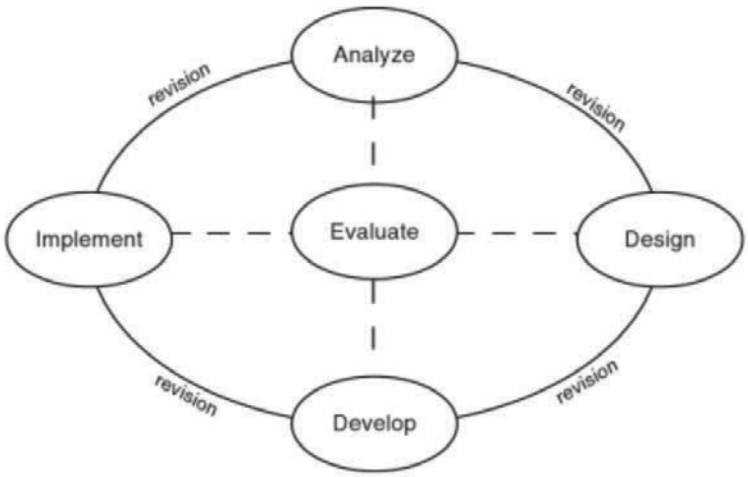


Figure 2.1 The ADDIE Concept (Branch, 2009, p. 2)

The ADDIE model has five phases—Analysis, Design, Development, Implementation,

and Evaluation (Figure 2.1).

According to Branch (2009, p. 17), The purpose of the **Analyze** phase is to clarify the instructional goals. The procedures of the Analysis phase include confirming the learning objectives, identifying the existing knowledge and skills of learners and determining the learning resources and the learning environment.

The purpose of the **Design** phase is to identify the learning performances and assessment instruments. The procedures of design include conducting learning objectives, determining a task list and identifying testing strategies.

The purpose of the **Develop** phase is to generate the learning resources and develop supporting media. The procedures combined with the Develop phase include validating the content, developing guidance for both students and teacher and selecting technologies.

The purpose of the **Implement** phase is to make the students engage in the learning environment. The procedures include preparing and training the teacher and the student.

The purpose of the **Evaluate** phase is to assess the learning processes and outcomes, both before and after implementation. The procedures include validating the evaluation standard, determining evaluation tools and conducting evaluation.

The Dick and Carey Model

The Dick and Carey Model, also known as The Dick and Carey Systems Approach Model, advocates a "systems point of view" (Dick, Carey & Carey, 2009, p. 1) of instruction design which means using the concept of systems to analyze learning problems when designing instruction.

Dick, Carey and Carey (2009, p. 1) stated, "A system is technically a set of interrelated parts, all of which work together toward a defined goal." The instructional process should be regarded as a system and the elements of the system must all interact effectively. The purpose of the instructional system is to bring about learning and the components, which include the learners, the instructors, the instructional materials, and the learning environment, interact with each other to conduct effective instruction and achieve the objectives. So the model is also viewed as "a systems approach model" (Dick, Carey & Carey, 2009, p. 3).

The systems approach model includes nine components: "Identify Instructional

Goal(s), Conduct Instructional Analysis, Analyze Learners and Contexts, Write Performance Objectives, Develop Assessment Instruments, Develop Instructional Strategy, Develop and Select Instructional Materials, Design and Conduct Formative Evaluation of Instruction, Revise Instruction, Design and Conduct Summative Evaluation" (Dick, Carey & Carey, 2009, p. 6). The systems approach model is based on these nine steps. With the set of the procedures in this model, the main elements interact with each other effectively and produce expected learning outcomes.

Constructivist Learning Environments (CLEs) Model

Based on constructivism, Jonassen (2009) established an instructional design model for constructivist learning environments (CLEs) that involve learners in knowledge construction.

The center of CLE is the problem, project, question or case that drive the learners to resolve. It is the learning objective that is different from objectivist instruction. The problem should be ill-defined so that it can urge the learners to develop a meaningful construction.

The second level of the model is related cases that can help novice learners develop a better understanding of the problem and provide related experience to them.

The third level of the model is information and resources that the learners need to investigate the problem. In order to resolve the problems, the learners need information to develop hypotheses and construct their own cognitive process. So when designing CLEs, the information and resources should be determined to help learners resolve the problem and achieve the objective.

The forth level of the model is cognitive tools. In order to accomplish the task in CLEs, cognitive tools should be provided to scaffold the learner's abilities. Cognitive tools are intellectual devices that can facilitate cognitive processing and thinking skills. They can help learners represent the problem and gather information. They can also help learners express what they are learning and manage their learning process.

The fifth level of the model is conversation and collaboration tools. While cooperation can promote more effective learning, CLEs should also provide tools that can promote learners to share information and reach out for collaboration.

The sixth level of the model is social or contextual support. In order to realize successful implementation, it is necessary to establish contextual support.

The learners participate a variety of activities in CLEs such as speculation, exploration, articulation and reflection. In CLEs, three strategies are provided to support learners participation these activities, which are modeling, coaching and scaffolding. Modeling means CLEs provide the performance of an expert that can guide the activities of learners. Coaching helps motivate learners and provide analysis and feedback that can improve learner performance. Scaffolding is the support provided by the system to help learners perform part of the task.

2.2.4. E-learning Instructional Design Model

Successfully designing E-learning enhances learning activities by involving and integrating technologies into practice (JISC, 2004) and decreases the disadvantages of online learning. In order to develop a high quality E-learning program and achieve prospective outcomes, an online learning program must be also effectively designed.

Beetham's Model

Beetham (2007, p. 26) held the opinion that learning activities and the outcomes of those activities play a fundamental role in the process of learning and instructional design should focus mainly on the learning activities and the material or environment that support them.

In an online learning environment, learning activities play a fundamental role in the whole instructional design. Beetham (2007, p. 28) defined learning activities as "a specific interaction of learner(s) with other(s) using specific tools and resources, orientated towards specific outcomes." Based on the definition, she developed a framework for planning E-learning activities and illustrates a good relationship between a learning activity and other elements (Figure 2.2).

A learning activity occurs within a particular environment and is designed based on the learner's prior experience. Through learning activities, learners interact with a learning environment and other people involved in achieving the learning outcomes. In this process, learner-centered approaches will be adopted and learning procedures will be designed to meet learning outcomes.

There are three kinds of learning activities based on different learning theories.

Behaviorist activities help learners obtain knowledge or rules of a skill. Cognitive activities put emphasis on the process of discovering and they enable learners to construct their own understanding and discover their own rules. Situative activities focus on the ability to participate in new situation.

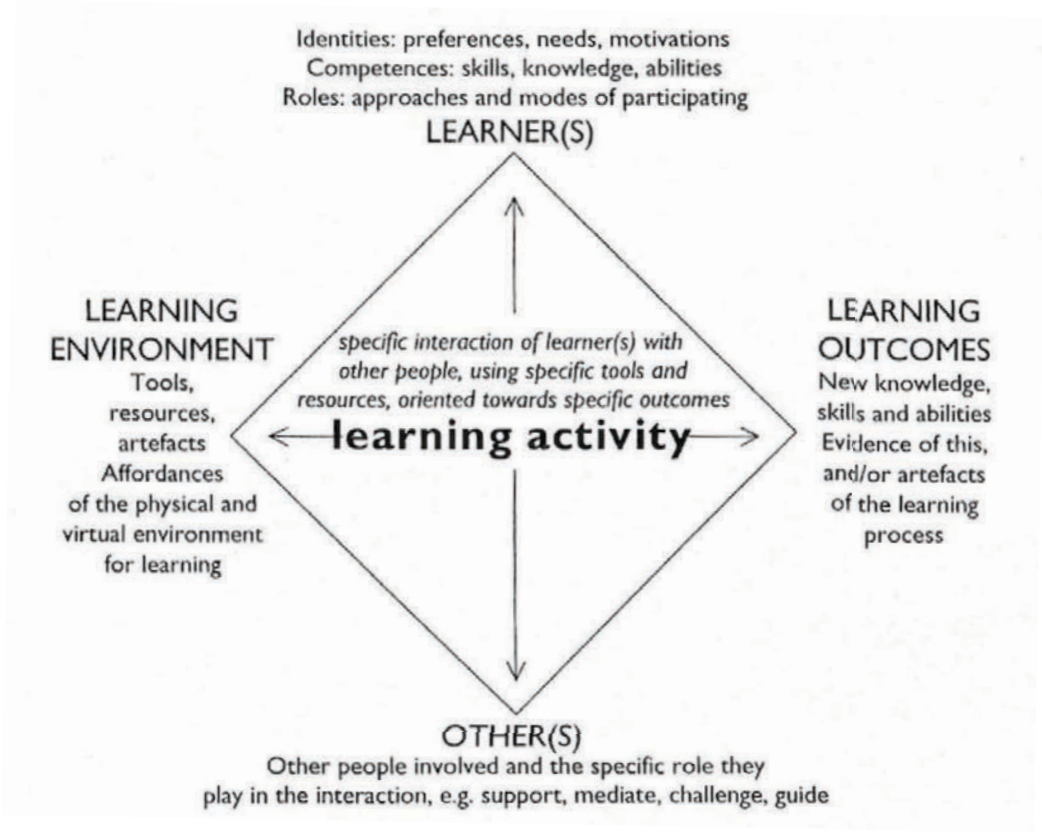


Figure 2.2 An outline for a Learning Activity (Beetham, 2007, p. 29)

Learning outcomes are the identifiable changes that are anticipated in the learner. Different activities can lead to different outcomes such as new knowledge and skill, new understanding or discovering of the rules, or the ability to participate in new activity.

Learners vary much from one another and it is necessary to consider learners' prior condition and experience in order to develop learning activities effectively. Depending on different tasks and activities, it should be necessary to analyze the learners' condition such as: their needs and motivations, prior experience and knowledge, their expectations and preference of learning approaches, their social or interaction skill and their competence in using new technology.

The learning environment is the tools and resources used in both the physical and virtual environment. The technologies available and how learners use them for effective learning activities are also important aspects of design.

In this model, the elements of design interact with each other to help learning activities develop effectively and obtain anticipated learning outcomes. The outline of the design illustrates a good relationship between learning activities and other elements.

2.3. Principles and Guidelines of Instructional Design

2.3.1. Fundamental Components of Instructional Design

Through the instructional design models discussed above, the fundamental components of instructional design can be summarized. According to Morrison, Ross, Kalman and Kemp (2011, p. 14), there are four fundamental components in instructional design that are addressed in almost every instructional design model. These four elements are learners, objectives, methods, and evaluation which form the framework for instructional design (Figure 2.3). The design model stated earlier such the Dick and Carey Model and Beetham's Model, all have these four fundamental elements.

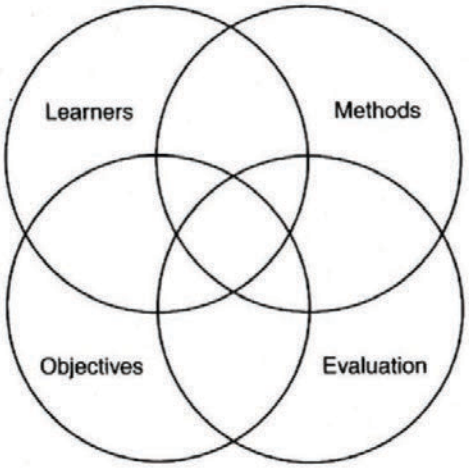


Figure 2.3 The Fundamental Components of Instructional Design (Morrison, Ross, Kalman & Kemp, 2011, p. 15)

In E-learning programs, instructional design must be applied at all levels of E-learning from whole curricula and courses or lessons and learning activities to media or tools (Horton, 2012). In addition to these four key elements, two other components - interaction and learning environment - are also important for the design of E-learning programs.

While instructors and students are usually separated in time and place in an E-learning program, establishing a learning environment to foster interactions for the online learners is more important. Berge (2002) emphasized the important position of interaction in E-learning instructional design and said "interaction is necessary to provide feedback and thus, is central to the expectations of teachers and learners in education and to that extent, it is a primary goal of the educational process. Interaction will continue to be seen as a critical component of formal education."

Hirumi (2013) designed a framework of E-learning interaction and defined three levels of interaction in a program. In the second level, the interactions occur between the learner and other human or nonhuman resources which include, learner-learner interaction, learner-instruction interaction, learner-other interaction, learner-content interaction, learner-tool interaction and leaner-environment interaction. All kinds of interaction connect the factors of instruction and the virtual learning environment must support all of those interactions to establish a successful and effective online learning program.

In Beetham's model of an E-learning program, tools, media and resources constitute the virtual E-learning environment. How students and instructors use technology to promote interactions and effective learning activities in this environment is also very important.

Based on the above description, it can be concluded that in an E-learning program, interaction and learning environment are also important for the design; they must be combined with other fundamental elements in order to promote effective learning. The relationships of the fundamental components in an E-learning program are illustrated in Figure 2.4.

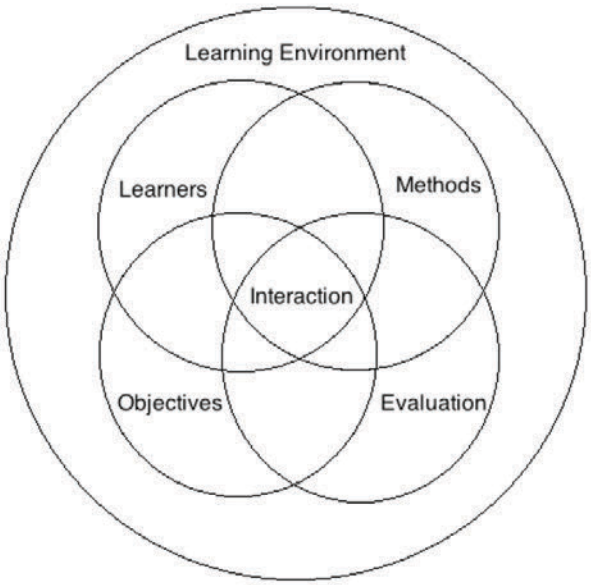


Figure 2.4 The Fundamental Components of Instructional Design of E-learning Program (Adapted from Morrison, Ross, Kalman & Kemp, 2011)

2.3.2. Principles and Guidelines of Instructional Design of E-learning Programs

In order to promote the effectiveness of E-learning programs, many institutes and researchers provide principles and criteria for the design of E-learning programs. These principles can improve performance and foster the effectiveness of E-learning programs.

In a macro view, many institutes developed handbooks to guide their online programs. The Institute for Higher Education Policy (IHEP) in United States conducted a study and developed "Quality on The Line: Benchmarks for Success in Internet-based Distance Education" (IHEP, 2000). They divided benchmarks of online learning into seven categories that include 24 benchmarks that are necessary to ensure quality in Internet-based distance education and provided reasonable judgments when evaluating the quality of Internet-based distance education.

Innovations in Distance Education (IDE), which was lunched by Penn State University, provided a report titled "An Emerging Set of Guidelines for the Design

and Development of Distance Education" (IDE, 1998). The report presents principles of design for distance education in five categories:

- Learning goals and content presentation;
- Interactions;
- Assessment and measurement;
- Instructional media and tools;
- Learner services and support.

There are also other such research projects conducted by different institutes. The report "Evaluating Online Learning", which was developed for Department of Education of United States (WestEd With Edvance Research, 2008), stated the challenges and recommendations of evaluating online learning. The Hanover Research Council (HRC) developed "Best Practices in Online Teaching Strategies" (HRC, 2009) and provides the best practice teaching strategies of online education.

In a micro view, many scholars conduct research and offer principles and guidelines for the design of online learning. These principles provide good practices for teaching and learning in online education.

Anderson and McCormick (2005) identified five broad and distinct categories of the design of E-learning and establish a framework for E-learning quality. Frydenberg (2002) summarized quality standards of E-learning and organizes them into nine domains. Govindasamy (2002) conducted research and illustrates some pedagogical principles for effective E-learning.

There are still other studies that provide many principles for the design of E-learning, Many of these studies are based on learning and instructional theories and offer good guidance to establish better E-learning environments.

For example, Graham et al. (2001) provided seven principles for evaluating online courses and present some examples of each principle in practice; Berge (2000) suggested an active, interactive and reflective E-learning environment; Brown and Brown and Voltz (2005) elaborated six elements of effective E-learning design and illustrate them with selected examples; Ragan (2000) discussed guiding principles and practices of distance learning based on five categories. Oliver (2000) provided some guidelines and strategies that have been used successfully for designing online learning.

Based on the fundamental components of online learning design discussed earlier, in this study, the principles and guidelines will be summarized in five categories:

- Course objectives and content;
- Methods and leaning activities;
- Interaction;
- Assessment and evaluation
- Learning environment or tools and media

Regarding these five areas, many scholars provide a great deal of guidelines and advices for best practices in order to design online learning programs effectively.

Table 2.1 illustrates a list of principles and guidelines developed from various studies. These guides and advices provide a foundation for establishing more effective learning environments with meaningful interactions and collaborative learning activities and offer a valuable guide to instructors and administrators.

Table 2.1 Guidelines for Online Learning Instructional Design

Guidelines and Principles	Authors
Guidelines for Course Objectives and Content	
Learning goals should be defined as part of the instructional design plan. The content or learning objectives should be clear, precise, worthy. The content should be comprehensive, authentic and researched. The course content should be sequenced and structured in order to enable learners to achieve the goals articulated in the learning outcomes.	Ragan (2000) Horton (2012) MacDonald et al. (2001) Ragan (2000)
Use a systematic approach to develop content and ascertain the congruence of the learning material with the learning objectives.	Govindasamy (2002)
Good practice emphasizes time on task and need deadlines.	Graham et al. (2001)

Guidelines for Methods and Leaning Activities	
Specific instructional activities should be directed toward providing learners with the necessary skills, knowledge, and experiences to meet the goals and objectives of the course.	Ragan (2000)
Learners should be required to participate and good practice of online courses encourages cooperation among students. Good practice encourages active learning. Providing challenging assignments to communicate high expectations for student performance.	Graham et al. (2001)
Based on the constructivism learning theory, learner-centered approaches such as collaboration learning, case-based learning, and problem-based learning would be the preferred instructional methods for online learning.	Beetham, (2007).
The pedagogy should engage and motivate learners. The pedagogy must be internally coherent and consistent in the way the objectives, content, student activity and assessment (where present) match to each other. Use a range of approaches and provide authentic and effective learning.	Anderson & McCormick (2005)
Creating effective E-learning relies on having tasks for students to undertake that provide an experience likely to lead them to the desired new understanding.	Brown & Voltz (2005)
Good practice of online courses respects diverse talents and ways of learning.	Graham et al. (2001)
Guidelines for Interaction	
Effective learning environments should involve frequent and meaningful interactions among the learners, the instructional materials, and between the learner and the instructor.	Ragan (2000)

Social interactions between learners enrich the learning community and should be encouraged and supported throughout the instructional design of educational programs.	Ragan (2000)
Good practice of online courses encourages student-faculty contact. Well-designed discussion assignments facilitate meaningful cooperation among students.	Graham et al. (2001)
A range of tools should be applied to promote interaction, such as responses via email, shared comments in online blogs, promote discussion in forums.	Oliver (2000)
E-learning environment should promote interaction with content, interaction with peers and interaction with instructor.	Berge (2000)
Students should be allowed to interact with learning materials and teachers and constructive and meaningful feedback are needed.	Govindasamy (2002)
Encourage a sense of class community and build opportunities for interaction with the instructor and with other students in the course.	Fredericksen, Pickett, Pelz, Swan, & Shea (1999);
Guidelines for Assessment and Evaluation	
Assessment instruments and activities should be congruent with the learning goals and should be consistent with the skills required of the learner throughout the distance education program.	Ragan (2000)
Assessment and measurement strategies should accommodate the special needs, characteristics, and situations of the distance learner.	Ragan (2000)
Evaluation and feedback is a critical component of interactivity in E-learning.	Berge (2000)
Good practice of online courses gives prompt feedback.	Graham et al. (2001)

Rapid feedback that helps learners to see how they can improve and what they must do to improve should be provided. Opportunities for peer assessment and self-assessment should be provided. The summative assessments must be valid and reliable; comprehensible by teachers, learners and parents; able to deal with a range of achievement levels; and free from adverse emotional impact on the learner.	Anderson & McCormick (2005)
The feedback should be prompt, continuous and with consideration of timeliness. Effective E-learning design will include provision for feedback, including reflective responses to prescribed questions, semi-automated responses by the system to student actions and work, shared comments in online forums and blogs, and personal responses via email, telephone, and post.	Oliver (2004) Brown & Voltz (2005)
Guidelines for Learning Environment or Tools and Media	
A comprehensive system of technical support services should be in place to ensure the effective use of technologies in distance education programming for learners, instructors, and staff.	Ragan (2000)
Regular feedback mechanisms should be designed and implemented to assess the success and failures of the various support systems created for the distance education system.	Ragan (2000)
The advantages and limitations of each tool should be considered and the technic support and service should be straightforward accessible and free available.	Ragan (2000)
Technology solutions need to be justifiable and affordable and the costs sustainable.	Anderson & McCormick

E-learning should be transparent in its ease of use through being open and accessible and being intuitive and not requiring guidance on use	(2005)
The appropriate delivery of E-learning should aim to maximize the engagement of the student with the activity, enable the communication of stimulating contexts, and maximize opportunities for feedback and reflection.	Brown & Voltz (2005)
Create navigational instructions that explicitly tell students where to go next and what to do.	Fredericksen et al. (1999)

2.3.3. Evaluation of E-learning Programs

In addition to these principles and guidelines for helping better design online learning programs, much research has been conducted concerning how to evaluate the effectiveness of online programs. Since the effectiveness of a learning program should be first measured when evaluating online education (Swan, 2003), much effort was focused on the research comparing the outcome and satisfaction of online learning programs with traditional classroom teaching.

Some research showed that there is “no significant difference” regarding outcome or grades between online learning program and traditional class (Swan, 2003).
Johnson, Aragon, Shaik and Plama-Rivas (2000) compared the grade of the students in a graduate online course with a traditional course and found the grade of the students in two courses for the most part were statistically equivalent and has no significant differences.
Rivera and Rice (2002) compared student learning results and satisfaction between traditional class, hybrid class and web based class offerings. The results showed that the average exam scores for all three classes were similar and there was no significant difference.
However when these two studies compared student satisfaction in traditional courses

with online courses, the data show that students who taking in online class were somewhat less satisfied with the course than other students (Rivera and Rice, 2002) and the face-to-face group provided more positive opinions than the online group (Johnson, Aragon, Shaik & Plama-Rivas, 2000).

Other research showed that there are some differences of the achievement students made in these two kinds of courses.

Vilardi and Rice (2014) analyzed the overall effectiveness of technology-assisted mathematics courses and found that students in the traditional courses achieved a higher grade point average. There are significant differences between technology-assisted and traditional courses.

Allen et al. (2004) conducted research and compared the performance of students between traditional and distance education. They found that students who took distance course obtained a little better grade than traditional students.

We cannot conclude whether E-learning or traditional learning is better and these studies do not claim to be the final answer to the issue of evaluating E-learning **(**Attwell, 2006). According to Swan (2003), "Comparing online education with traditional education encourages us to make it the same as traditional education. Online education has the potential to support significant paradigm changes in teaching and learning. " Scholars should put more effort on what E-learning program can do while traditional cannot and better promote the effectiveness and satisfaction of online learning program.

3. Research Method

The purposes of this study are to conduct a case study research and provide a deep and rich description and interpretation of Chinese MOOC learners. The research method this study adopts is case study. How this study is conducted as a case study is explained in the following six sections: (1) Methodology Overview; (2) Research Questions; (3) Data Collection Instruments; (4) Pilot Research; (5) Research Participants and Sampling; and (6) Data Analysis.

3.1. Methodology Overview

3.1.1. Case Study

Case study research is an effective tool to investigate people, events, issues, programs or processes through understanding each case by providing in-depth descriptions and explanations. Stake (1995, p. xi) defined a case study as "the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances". Simons (2009, p. 21) defined a case study as "an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a 'real life' context."

A case is a "bounded, integrated and specific system" (Stake, 1995, p. 2; Merriam, 2009, p. 40; Johnson & Christensen, 2012, p. 395). It is a "single entity around which there are boundaries" (Merriam, 2009). It is "a complex functioning unit, be investigated in its natural context with a multitude of methods, and be contemporary" (Johansson, 2003, p. 2).

The case could be a person, a school, an institution, a program, a policy, a community or a system (Simons, 2009, p. 21; Merriam, 2009, p. 40). It could also be a group, such as all the schools in a city or a country. Merriam (2009, p. 41) stated that the case could also be process, issue, or concern.

According to Yin (2009, p. 8), there are five main research methods: experiments, survey, archival analyses, histories, and case studies. The kinds of research methods that will be used depend on three conditions: the type of research question posed, whether an investigator has control over the behavioral events, and the degree of focus on the contemporary.

The questions are usually classified into five categories: “who,” “what,” “where,” “how” and “why” questions. Some types of “what” questions are exploratory and all of the five research methods can be used. Some types of “what” questions are forms of “how many” or “how much” and survey or archival methods can be used. "How" and "why" questions are more explanatory and case studies, histories, and experiments can be used. When the case is contemporary and the relevant behaviors cannot be controlled, a case study is preferred.

The main question this study poses is “What” and “How” questions. The researcher has no control of the behavioral event and it is contemporary. Based on the above description, the research strategy this study use is case study and the “case” is all the Chinese MOOC learners.

3.1.2. Purpose and Types of Case Study

The purpose of case study research is to describe and interpret the complexity and particularity of the case. Through an explanation of the experience, the thoughts and feelings of the people in the case, researchers can interpret and understand the complexity and particularity of the case. Merriam (2009, p. 43) stated that a case study has three special features: particularistic, descriptive, and heuristic. In order to provide the description of the case, Simons (2009, p. 5) proposed the concept of the “story of the case” and stated that researchers can tell “a coherent story” through analysis of the events in the case.

Stake (1995, p. 3) separated case studies into three types: intrinsic case study in which the researcher only investigates in the case itself because the researcher needs to describe the particular case; instrumental case study in which the case is an instrument for supporting the understanding of other cases or some general problem; and

collective case study in which the researcher chooses a number of cases rather than one to investigate.

Yin (2009, p. 8) had another set of classifications: exploratory, explanatory, and descriptive case study. A descriptive case study is to describe a phenomenon in the real environments in which it occurred.

This study tries to describe what are the goals and expectations of Chinese students when they enroll in MOOCs, their perceptions of MOOCs and how they try to achieve the goals they set for themselves in MOOCs. It concentrates only the case itself and only has intrinsic interest for Chinese students who have enrolled in MOOCs. Based on the above classification of case study, this study is defined as a descriptive intrinsic case study.

3.1.3. Strengths of Case Study

According to Simons (2009, p. 23) and Merriam (2009, p. 50), a case study has several key strengths.

Case study can interpret the complexity and particularity of a case, the "bounded system" and provide a rich, holistic, in-depth explanation of the event or process. It can document viewpoints and perspectives of the case and explore how and why things happened. It can also investigate the case completely and offer insight to the real-life situation. Case study is flexible. It is not dependent on time and can use multiple methods to collect data, whatever is appropriate in understanding the case.

Because of the particular advantages of case study, "qualitative case study is a particularly appropriate methodology for exploring problems of educational practice" (Simons, 2009, p. 5).

3.1.4. Design and Data Collection in a Case Study

The design of case study is similar to other qualitative research, including proposing research questions, conducting a literature review, choosing data collection and analysis method, collecting and analyzing data, drawing conclusions and providing

discussion topics and recommendations.

According to Simons (2009, p. 33), in order to facilitate in-depth description of the case, three qualitative data collection methods: “interview, observation and document analysis” are often used in case study. However, Simons (2009, p. 5) also pointed out, “Methodology does not define case study, case study does not claim any particular methods for data collection or data analysis. Any and all methods of gathering data can be used in case study. ”

It is possible to carry out a case study through collecting quantitative evidence (Yin, 2009, p. 19) or adopting a mix of methods. “The determining factors in deciding whether to use qualitative or quantitative methods are whether they facilitate an understanding of the particular case, what kind of inferences you can make from the data and how these are valued by different audiences for different purposes” (Simons, 2009, p. 5).

Based on the above discussion, in order to provide a complete description of the case, the main data collection methods this study adopts are qualitative and quantitative methods that include a questionnaire and interviews.

3.2. Research Questions

The research questions this study posed are separated into three groups:

1. What are the goals and expectations of Chinese learners when they enroll in MOOCs? What are the reasons for Chinese learners to quit MOOCs? Compared to other open online courses, why do Chinese learners choose MOOCs?

The purpose of the first group of questions is to identify why Chinese students enroll in MOOCs and why they quit from a MOOC. The data to answer this question comes from the analysis of the questionnaire.

2. How satisfied are Chinese learners with the instructional design of MOOCs? Which aspects of the instructional design of MOOCs contribute most to learners’ satisfaction? Which aspects contribute least?

The second group of questions is intended to figure out the level of satisfaction of Chinese learners regarding the pedagogic features of MOOCs. The data answering

this question comes from the analysis of questionnaire. By analyzing the results of the questionnaire, the aspects that learners are most and least satisfied with can also be investigated.

3. How do Chinese learners finish MOOCs and adapt themselves to the online learning environment?
The purpose of this question is to figure out whether Chinese learners can make good use of the opportunities that MOOCs provide and take advantage of the courses. The data answering this question mainly comes from the interviews. In addition, data from online documents including blogs, comments and discussions will also be collected to help answer this question.

3.3. Data Collection Instruments

Johnson and Christensen (2012, p. 398) advocated taking multiple methods of data collection in a case study and recommended collecting any data that will help develop understanding of the case and answer the research questions. Yin (2009, p. 8) suggested “what”, “who” and “where” questions are likely to favor survey strategies and states that a case study can be mixed with other methods.
The questions this study poses have both “what” questions and “how" questions. In order to address these questions, quantitative and qualitative data will be collected. Quantitative data will be collected by a structured questionnaire and qualitative data will be collected by interviews and documents.

3.3.1. Questionnaire

“A questionnaire is a set of carefully designed questions given in exactly the same form to a group of people in order to collect data about some topic(s) in which the researcher is interested ” (Mclean, 2006). It is a “useful instrument for collecting survey information, providing structured, often numerical data” (Cohen, Manion & Morrison, 2000, p. 245).

Questionnaires can be used to collect quantitative, qualitative and mixed data. Based on 15 key principles (Johnson & Christensen, 2012, p.164) needed for constructing a questionnaire and the guidelines and principle of online education discussed earlier, a questionnaire (see Appendix A) is designed in order to collect quantitative data and resolve the first and second groups of question of this study.

The questionnaire consists of three sections and twenty-one questions (Table 3.1). According to Cohen, Manion and Morrison (2000, p. 257), a questionnaire commonly commences with factual questions and then moves to closed questions (e.g. multiple choice, rating scales) that require opinions or attitudes; finally moving to more open-ended questions.

So the first part of the questionnaire is about the basic information of participants. Through this part, the demographic details and the background of the participants can be first collected. Then information about why they enroll in a MOOC was collected, including data about how many and what kind of courses they enrolled, what are their goals and expectations when they enroll in a MOOC and the reason they quit a MOOC.

The second part is intended to collect data about the satisfaction of Chinese learners of the instructional design of MOOCs. Based on the fundamental components of instructional design of online learning program discussed earlier, this part collects opinions from five categories of the instructional design: course content, teaching methods and design, evaluation and assessment, interaction and discussion forum, learning environment. The questions in this part were designed based on literature of the best guidelines and practices of instructional design. “Since rating scales build in a degree of sensitivity and differentiation of response and afford the researcher the freedom to fuse measurement with opinion, quantity and quality, they are widely used in research” (Cohen, Manion & Morrison, 2000, p. 253). In this questionnaire, a 7-point Likert scale ranging from 1 as strongly disagree to 7 as strongly agree is used for the measurement.

The third part of the questionnaire is an open-ended question and a question to collect contact information of participants. In addition, through the responses to the open-ended questions, “qualitative data can also be collected to explore the reasons for the closed-ended responses and identify any comments people might have that are

beyond the responses to the closed-ended questions" (Creswell, 2012, p. 220). There is an open-ended question in this questionnaire for the participants to write down their ideas and comments.

The questionnaire is edited on a Chinese online survey collection platform "Wenjuanxing" and the language of the questionnaire is Chinese. It is distributed online especially on some MOOC learning communities and study groups. The data collected through the questionnaire is analyzed by the program EXCEL and SPSS and the results are provided in English.

Table 3.1 Design of the Questionnaire

Part 1 Basic information	Demographic details	Q1—Q6
	Information of MOOC	Q7—Q13
Part 2 Satisfaction of instructional design	Course content	Q14
	Teaching methods and design	Q15
	Evaluation and assessment	Q16
	Interaction and discussion forum	Q17
	Learning environment	Q18
	Overall satisfaction	Q19
Part 3 Open ended questions	Open ended question	Q20
	Contact information of the participants	Q21

3.3.2. Interview

An interview is a structured and purposeful conversation (Kvale & Brinkmann, 2009, p. 3). Interviews enable participants to "discuss their interpretations of the world in which they live, to express how they regard situations from their own point of view" (Cohen, Manion & Morrison, 2000, p. 267), "to unfold the meaning of their experience, and to uncover their lived world prior to scientific explanations" (Kvale & Brinkmann, 2009, p.1).

Types of Interviews

According to Patton (2015, p. 437), there are four types of interviews, "informal conversational interview, interview guide approach, standardized open-ended interview and closed quantitative interview". Each of them has different characteristics and strengths.

The characteristics of interview guide approach are that interviewer prepares outlined topics and questions in advance and decides sequence and wording of questions in the interview. The advantage of interview guide approach is that the outline of the interview increases the comprehensiveness of the data and makes data collection somewhat systematic for each respondent.

In this study, interview guide approach will be conducted in order to collect qualitative data. The researcher will prepare the outlined questions based on the research questions of this study and in interviews the researcher will guide interviewees to answer the questions in sequence.

Creswell (2012, p. 218) classified interviews into "one-on-one interviews, focus group interviews, telephone interviews and E-mail interviews". With the development of technology, computer-assisted interviews are also popular. According to Kvale and Brinkmann (2009, p. 149), "computer-assisted interviews have advantages and are suitable for some purposes, but will be unsuitable for other research purposes, such as where the bodily presence and the sound of the voice are crucial for the conversation". In this study, since the researcher and the interviewees are separated by geography, online interviews were adopted to collect qualitative data.

Design of Interview

Brinkmann (2013) separated the process of interviews into four parts: preparation, interviewing, analysis and reporting. When preparing the interview, an interview guide (see Appendix B) was designed based on the purpose of this study.

Patton (2015, p. 444) defines six categories questions in an interview: experience and behavior questions; opinion and value questions; feeling questions; knowledge questions; sensory questions; background or demographic questions. In the interview guide, different types of questions were designed to help the interviewer figure out what is being asked and collect more information from the participants.

In this interview, the first part is about the background of the participants and basic information about MOOCs, such as when and how did they know about MOOCs and how many MOOCs have they finished. The questions used in this part are background and demographic questions.

The second part is about how the participants adapt themselves to online learning environments and finish MOOCs. It is about their experience and the learning strategies used when they learning online. Most of the questions are experience and behavior questions.

The third part is about the achievement of Chinese learners after they finish MOOCs and their suggestions to other learners. Questions in this part are mostly opinion and value questions.

Interview Strategies and Guidelines

Interview strategies should be used in order to conduct an effective interview and obtain in-depth responses. According to Merriam (2009, p. 99), "good interview questions are open-ended and yield descriptive and rich data". Open-ended questions can help interviewees choose the most salient responses among the full repertoire (Patton, 2015, p. 447) and promote participants to respond in their own way, thus open-ended questions should be used and some questions, such as multiple questions, leading questions and yes-or-no questions should be avoided (Merriam, 2009, p. 99).

Many other researchers also provide valuable suggestions and guidelines for conducting an effective interview, which are summarized in Table 3.2.

Table 3.2 Strategies and Guidelines of Interview

Strategies and Guidelines	Authors
Identify the purpose of the interview. Identify the interviewees and obtain consent. Determine the type of interview and have a plan, but be flexible. Locate a quiet, suitable place for conducting the interview.	Kvale & Brinkmann (2009) Creswell (2012)

Make sure all interviewers are well trained and do background homework on the interviewees.	Johnson & Christensen (2012)
Establish rapport and trust with your interviewee. Be sensitive to the differences between you and the interviewee and be empathy and remain neutral toward the content of what the interviewee says. Be courteous and professional when the interview is over. Maintain a respect for the interviewee's valuable time.	Simons (2009) Johnson & Christensen (2012) Creswell (2012)
Keep questions short and simple and avoid offering alternatives in question. Listen actively and learn. Try not to interrupt interviewees to summarize too soon. Make sure the interviewee understands exactly what you are asking. Use gentle nonverbal head nods and verbal "um-hms" to show your interest in what the interviewee says.	Simons (2009) Johnson & Christensen (2012)
Use probes to obtain additional information and gain depth of responses. Audiotape and take brief notes during the interview.	Creswell (2012)
Asking truly open-ended, singular and clear questions. Take care when asking "Why" questions. Asking neutral questions and establish rapport. Using illustrative examples in questions. Providing context for the questions and using role-playing and simulation questions.	Patton (2015)

Many researchers suggest use probes in the interview to obtain additional and deep responses. Probes are questions or comments that can promote interviewees to

provide more information and explanations. Many researchers provide examples for probes and some of them are abstracted in Table 3.3.

According to Patton (2015, p. 466), probes are some cues that are seldom written out in an interview. It is "a skill that comes from knowing what to look for in the interview, listening carefully to what is said and what is not said, and being sensitive to the feedback needs of the person being interviewed." In this interview, the strategies and probes discussed above will be adopted in order to conduct an in-depth interview.

Table 3.3 Examples of Probes

Examples of probes	Authors
What do you mean? Tell me more about that. Give me an example of that. Would you explain that?	Merriam (2009)
Anything else? Any other reason? Would you tell me what you have in mind? Why do you feel that way? Which would be closer to the way you feel?	Johnson & Christensen (2012)
"Tell me more." "Could you explain your response more?" "I need more detail." "What does 'not much' mean?"	Creswell (2012)

3.3.3. Documents

Documents are a valuable source for text data for a qualitative study (Creswell, 2012, p. 223). They can be used in a case study to help collect more information and data and analyze the case (Simons, 2009, p. 63). Merriam (2009, p. 155) summarized the

strength of documents and stated, “data from documents may be the best source of data on a special subject” and they can be used in the same way as interview. In addition, data from documents are stable and objective since the presence of the researcher does not affect what to be studied.

Creswell (2012, p. 223) provided some guidelines for collecting documents in qualitative research. Based on these guidelines, data from documents, especially online documents is also collected, including information and discussion in some websites of online learning communities and social networking websites. Online documents are abstracted from the following websites in this study:

- “MOOC Academy”: a big online learning community of MOOC.
  http://mooc.guokr.com
- “EduInfinity Translation Group (EduInfinity)”: an online translation community.
  http://www.edu-infinity.org/english-version.html
- “Sina Weibo”: a big social networking websites in China.
  http://www.weibo.com

Data from documents is transcribed into Microsoft Word and analyzed to help answer the questions of this study.

3.4. Pilot Research

In order to examine the validity of the data collection methods, a pilot research, including a pilot test of the questionnaire and a pilot interview, was conducted.

3.4.1. Pilot Test of the Questionnaire

In order to determining whether the questionnaire operates properly, a pilot test was conducted and 20 participants were invited to finish the questionnaire. The pilot questionnaire was in Chinese and all the 20 participants are Chinese learners who have enrolled in MOOCs. After that, the reliability and validity of the content of the questionnaire were examined. Modification of the questionnaire included the following steps:

First, the researcher talked with the participants and asked them to provide suggestions about the questionnaire. According to Johnson and Christensen (2012, p. 183), when conducting a pilot test, there is an effective technique called the "think-aloud technique". The think-aloud technique means the participants were asked to express their thoughts and perceptions about the questionnaire, including the reasons for their responses and their suggestions regarding the questions. After the pilot test, this technique was used and several issues (Table 3.4) about the questionnaire were discussed with several participants. According to the feedback obtain from the participants, several detail of the questionnaire were modified.

Table 3.4 Issues Discussed in Pilot Test of Questionnaire (Adapted from Cohen, Manion & Morrison, 2012, p. 260 and Johnson & Christensen, 2012, p. 184)

Appearance and layout	Are there too many questions on one page? Are there too many questions in the questionnaire? How long it takes to complete the questionnaire?
Clarity of the presentation	Whether the instructions were clear? Are the questions easily readable? Is there any confusing question or question difficult to understand?
Validity of the questionnaire items	Whether anything important was left out? Is there additional items should be added? Can you express your opinion by the rating scale question? Is there any question that easily to be misunderstood?

Secondly, through the program SPSS Cronbach's alpha of the second part of the questionnaire is calculated. The pilot test of the questionnaire yielded high internally consistent reliability (Cronbach's alpha = 0.903), which showed that the questionnaire has high reliability. In addition, the Cronbach's alpha of different parts of the instructional design were also calculated which showed that the internally consistent reliability are acceptable (Table 3.5).

Table 3.5 Reliability Coefficient of the Pilot Questionnaire

Cronbach's Alpha / Different part of the questionnaire	Cronbach's Alpha	Cronbach's Alpha based on standardized items	N of items
Instructional design (the second part)	0.903	0.911	36
Course content (Q 14)	0.686	0.697	7
Teaching methods and design (Q 15)	0.748	0.782	7
Evaluation and assessment (Q 16)	0.798	0.816	9
Interaction and discussion forum (Q 17)	0.815	0.861	6
Learning environment (Q 18)	0.727	0.741	6

Thirdly, The validity of the questionnaire is tested and evidence is obtained based on content and response (Creswell, 2012, p. 162). At first, the author have experts evaluated the questionnaire to see whether the questions and items are valid and represent what they are intend to measure. Then the author discussed with the respondents and investigated their opinions about the questions and items. The response of the respondents were also analyzed and discussed to make sure that the questions and items can represents their real opinions and ideas. At last, the coefficient alpha of each dimensions of the questionnaire was analyzed to investigate the internal structure. Based on the discussion with participants and experts, the validity of the questionnaire was improved.

Lastly, the content of the questionnaire was optimized in several details. In order to figure out the participants' geographical position, question 3 was added; in order to figure out why Chinese learners choose MOOCs rather than other open online courses, question 13 was added. The first item of question 14 in the old version of questionnaire was "a course description or summary is provided". Since the respondents said that all the MOOCs they attended provide a description or a syllabus, this item is deleted. Two items of question 15 were deleted, because that the meaning of these two items of was similar with other items. Two items of question 16 were deleted because these two items can be combined into other items. In addition, several

points of the questionnaire were reworded.

Based on the feedback of the respondents that some items they are not totally agree or disagree, but somewhat agree or somewhat disagree, the Likert scale of the second part was changed from a five to a seven scale in order to better measure the level of satisfaction. The final version of the questionnaire is in Appendix A, which include both a Chinese and English version.

3.4.2. Pilot Interview

According to Marriam (2009, p. 95), "pilot interviews are crucial for trying out the questions." A pilot interview was conducted after the pilot test of the questionnaire. Through a pilot interview, the interview guide is practiced and the validity of the questions is identified.

After the pilot interview, the result was transcribed and analyzed. According to Kvale and Brinkmann (2009, p. 164), "the quality of the original interviews is a decisive factor for the quality of the subsequent analysis, verification, and reporting of the interview findings". They (Kvale & Brinkmann, 2009, p.164) provided six quality criteria for interviews (Table 3.6). Based on these criteria, the pilot interview was analyzed and after that the interview guide was optimized.

First, several details were added in interview question 1.2.1 in order to obtain more information regarding how the interviewees know MOOCs and start to enroll in MOOCs. Secondly, one item in question 1.2.2 was added in order to know the opinions of the interviewees about the difference between MOOCs and other open online courses. Lastly, in question 2.3 one item about offline study group was added because that the interviewee said there are not only online study group but also offline study group. The final interview guide is in Appendix B.

Table 3.6 Quality Criteria for an Interview (Kvale and Brinkmann, 2009, p. 164)

• The extent of spontaneous, rich, specific, and relevant answers from the interviewee
• The extent of short interviewer questions and longer interviewee answers
• The degree to which the interviewer follows up and clarifies the meanings of the relevant aspects of the answers
• To a large extent, the interview being interpreted throughout the interview
• The interviewer attempting to verify his or her interpretations of the subject's answers over the course of the interview
• The interview being "self-reported," a self-reliant story that hardly requires additional explanations

3.5. Research Participants and Sampling

3.5.1. Sampling Strategies

According to Johnson and Christensen (2012, p. 216), sampling is the process of drawing a sample from a population and the population is the set of all elements. There are two main strategies of sampling, random sampling and nonrandom sampling. According to Cohen, Manion and Morrison (2012, p. 99), nonrandom sampling means, "every member does not have an equal chance of being included in the sample and some members will be definitely excluded and others definitely included". There are five types of nonrandom sample: convenience sampling, quota sampling, dimensional sampling, purposive sampling and snowball sampling (Cohen, Manion and Morrison, 2012, p. 102).

This research adopts case study method and the "case" is the Chinese MOOC learners. The research population in this study is all the Chinese MOOC learners. The data collection methods include a questionnaire for quantitative data and interviews for qualitative data.

The sampling strategy adopted for the questionnaire is convenience sampling. According to Cohen, Manion and Morrison (2012, p. 102), "convenience sampling -or

as it is sometimes called, accidental or opportunity sampling- involves choosing the nearest individuals to serve as respondents and continuing that process until the required sample size has been obtained. ” In this study, the questionnaire is distributed in Chinese MOOC online learning communities and online MOOC discussion groups. Chinese MOOC learners who have attended those communities and discussion groups serve as “nearest respondents”. The process continues until the required number of effective questionnaires has been received in the end.

Purposive sampling is adopted when selecting the participants for interview. Since the main purpose of the interview is to collect data about the learning experience of Chinese MOOC learners, the interviewees should have rich online learning experience and have enrolled in many MOOCs.

Sampling in interviews is identified based on the following selection criteria:

- Rich online learning experience on MOOC platforms;
- Finish at least 10 MOOCs and get course certificates;
- Willing to participate in a lengthy online interview.

By applying these criteria, selection focused on individuals who have finished a number of MOOCs and have rich experiences from online learning.

Maximal variation sampling is a “purposeful sampling strategy in which the researcher samples cases or individuals that differ on some characteristic or trait” (Creswell, 2012, p. 207). In order to provide multiple perspectives of participants and collect adequate data for the study, maximal variation sampling strategy is used when select participants to interview. The participants differ in their educational background, their learning areas and the subject areas of MOOCs. This difference is helpful for collecting variable data of online learning experiences.

3.5.2. Sample Size

Krejcie and Morgan (1970) suggested that the sample size should be 384 to be representative of the given population one million or more. In this study, the population is all the Chinese learners who have enrolled in MOOCs. In China, there are more than one million learners of MOOC (http://mooc.guokr.com/post/605193/), so the sample size recommended is at least 384. In the end, 414 effective

questionnaires are collected.

When collecting qualitative data, there is no answer for the question of how many interviews should be conducted. It depends on the number of questions, how much data has been gathered, the analysis of the data, and the resources related the study (Marriam, 2009, p. 80). What is needed is to collect adequate data from adequate interviews and answer the questions posed by the study. Kvale and Brinkmann (2009, p. 113) suggested "interviewing as many subjects as necessary to find out what you need to know and the number of subjects necessary depends on the purpose of a study". In this study, seven interviews are conducted to collect adequate data to resolve the questions posed at the beginning of the study.

3.6. Data Analysis

According to Johnson and Christensen (2012, p. 538), mixed data analysis means that the researcher uses both quantitative and qualitative data analysis methods in one research study. Since this study collect both qualitative data and quantitative data, data analysis includes quantitative data analysis and qualitative analysis.

3.6.1. Quantitative Data Analysis

Quantitative data analysis includes four steps: prepare and organize the data analysis; begin the data analysis; report the results and interpret the results (Creswell, 2012, p. 200).

Before analyzing the quantitative data, the researcher first prepares and organizes it. The quantitative data in this study is collected through an online questionnaire. The raw data is online and will be first downloaded. Then the raw data is examined. Invalid questionnaires, such as the answers of which are not complete, are deleted. Since the purpose of this study is to investigate the Chinese MOOC learners' perception with the instructional design of MOOC, only answers from those MOOC learners who have finished at least one course are effective. Answers from respondents that did not finish at least one MOOC are also deleted.

The quantitative data collected in this study is put into the program EXCEL and SPSS and then a descriptive statistics analysis is conducted. In the descriptive statistics, the frequency and percentage of the variables are calculated to illustrate the satisfaction of Chinese learners with the instructional design of MOOCs.

After that, mean and standard deviations are calculated and statistical tests of significant differences are conducted to figure out whether there are significant differences among the means of the variables. In addition, Pearson correlations among the variables and multiple regression analysis are conducted to see how much the variables can predict the satisfaction of Chinese learners.

At last, the results are reported and interpreted using tables, figures or graphs.

3.6.2. Qualitative Data Analysis

Creswell (2012, p. 423) defined a grounded theory design as "a systematic, qualitative procedure used to generate a theory that explains, at a broad conceptual level, a process, an action, or an interaction about a substantive topic. " The purpose of the third question of this study is to interpret the process that Chinese learners adapt to the online learning environment and achieve MOOCs. It is suitable to use grounded theory to explain this process and generate a theory.

There are three kinds of design for grounded theory: the systematic design, the emerging design and the constructivist design. According to Creswell (2012, p. 424), the systematic design uses three steps of open, axial and selective coding to analyze data and generate the theory and it is "widely used in educational research". Qualitative data analysis of this study adopt the systematic design of grounded theory and use open, axial and selective coding and at last generate the theory.

Open Coding

The first step is open coding. In this step, the initial categories are developed based on the qualitative data collected from interview or documents. The subcategories or properties of the categories are identified. Also, the examples and details that can support the properties are organized.

Axial Coding

The second step is axial coding. In this step, a main category of open coding is selected and regarded as the core phenomenon of the process being explained. Other categories are：causal conditions, which are factors influence the core phenomenon; strategies, which are actions resulting from core phenomenon; contextual and intervening conditions, which are specific and general situational factors that influence the strategies and consequences, which are the consequences of using the strategies. Figure 3.1 illustrates the process from open coding to axial coding and the relationship of the categories.

Selective Coding

The third step is selective coding. In this step, the relationships of the categories are analyzed and a theory is generated to explain the core phenomenon. In order to present the theories, a theoretical model that is expressed by a "visual coding paradigm " is created and a series of propositions are put forward.

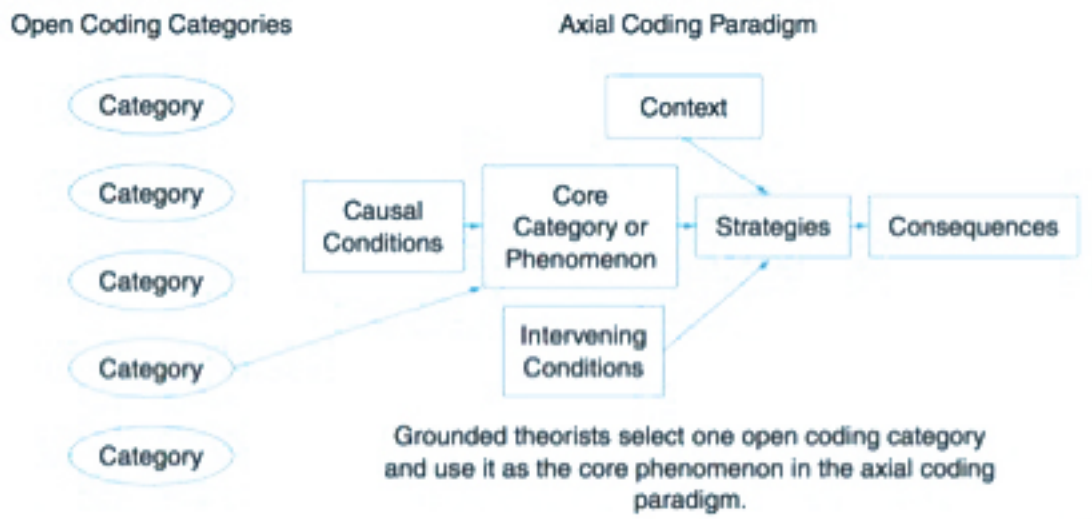


Figure 3.1 From Open Coding to Axial Coding (Creswell, 2012, p. 428)

Through these three steps, the researcher analyzes the data and develops a theory to interpret the process of how Chinese learners adapt to the online learning environment and finish many MOOCs.

4. Results

This chapter begins to analyze the data collected from the questionnaires, interviews and online documents and provides the results of the study. The first part of this chapter describes the background of the participants of the questionnaire and the interview. The second part indicates the goals and expectations when Chinese learners enroll in MOOCs, why they quit a MOOC and why they choose to take MOOCs rather than other open online courses. The third part explains the satisfaction of Chinese learners with the instructional design of MOOCs from five aspects: course content, teaching method, evaluation system, discussion forums and learning environments. In addition, statistical analysis is conducted to illustrate which aspects of the instructional design contribute the most satisfaction and which aspects contribute the least. The fourth part analyzes the qualitative data based on grounded theory and interprets the process that Chinese learners use to adapt to the online learning environment.

4.1. Background of the Research Participants

4.1.1. Background of Respondents of the Questionnaire

A total of 414 effective questionnaires were received. More than 90% of the respondents are between 19 and 40 years old and most of the respondents come from the economically developed areas of China. About 50% of the respondents have a Bachelor degree and the MOOC platforms they usually use are the Chinese University MOOC, Xuetang Zaixian and Coursera. About 80% of the respondents finished at least one MOOC and about 20% of the respondents finished more than five MOOCs. The following discussion summarizes the demographic details and descriptive statistics of the background of the respondents.

Demographic Profile and Educational Background of the Respondents

Figure 4.1 shows the distribution of ages of the respondents. Of the total 414

respondents, only 1% (n=6) are younger than 18 and 2% (n=9) are older than 41. 15% (n=61) of the respondents are between 19 and 22 years old. 30% (n=122) of respondents are between 23 and 26 years old and 27% (n=111) are between 27 and 30. There are still 25% (n=105) of respondents are between 31 and 40 years old. In sum, 338 respondents are between 23 and 40 years old, accounting for 82% of the total.

Figure 4.1 Ages of the Respondents (N=414)

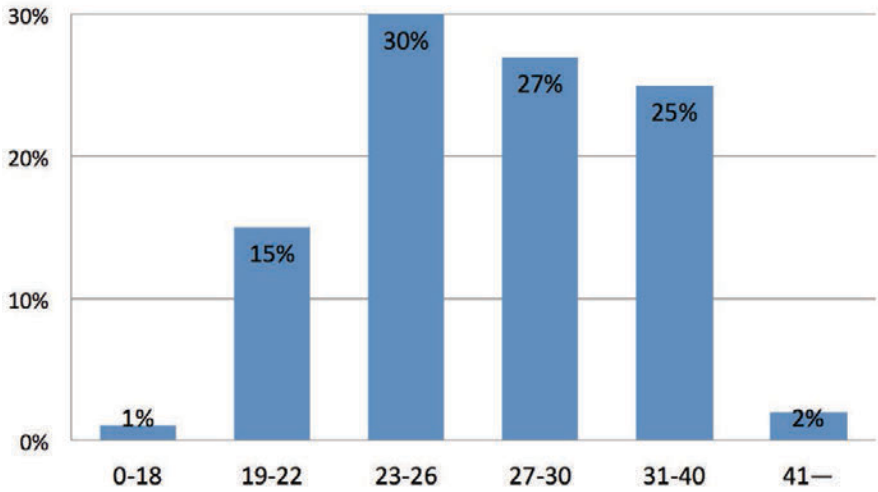


Figure 4.2 indicates the gender of the respondents. Of the 414 respondents, 43% (n=178) are male and 57% (n=236) are female.

Figure 4.2 Gender of the Respondents (N=414)

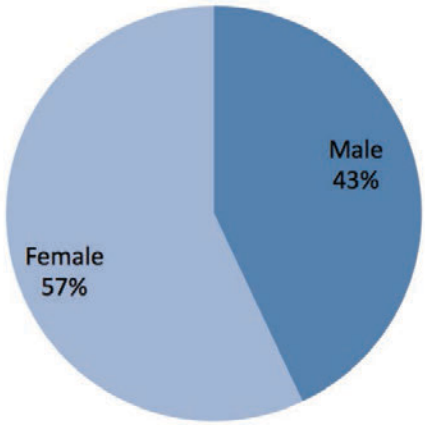


Figure 4.3 shows the geographic location of the respondents. Most of the respondents are from the economically developed areas of China such as several big cities and some southeast provinces of China. 17% (n=69) respondents are from Guangdong Province, 12% (n=49) are in Peking and 11% (n=45) are in Shanghai.

8% (n=32) respondents are in Zhejing Province, 6% (n=24) are in Jiangsu Province and 6% (n=23) are in Shandong Province. In the central provinces of China, such as Sichuan, Hubei and Fujian, there are about 5% respondents in each. In Henan Province, Hebei Province and Hunan Province, there are about 2% respondents in each. In the west and north province of China, such as Jilin, Liaoning and Guizhou, there are only several respondents. There are no respondents in provinces such as Xizang, Yunnan and Guangxi.

Figure 4.3 Geographic Locations of Respondents (N=414)

Figure 4.4 shows the career that the respondents are engaged in. 20% (n=84) of respondents are students and 18% (n=73) of respondents are occupied in area of scientific research and education. 22% (n=92) of respondents work in IT industry and 18% (n=75) are engaged in area of business and commerce. 7% (n=29) of respondents work in medicine industry and 5% (n=20) of respondents are public employees. 6% (n=25) of respondents work in service industry and 4% (n=16) are engaged in other area.

Figure 4.4 Careers of the Respondents (N=414)

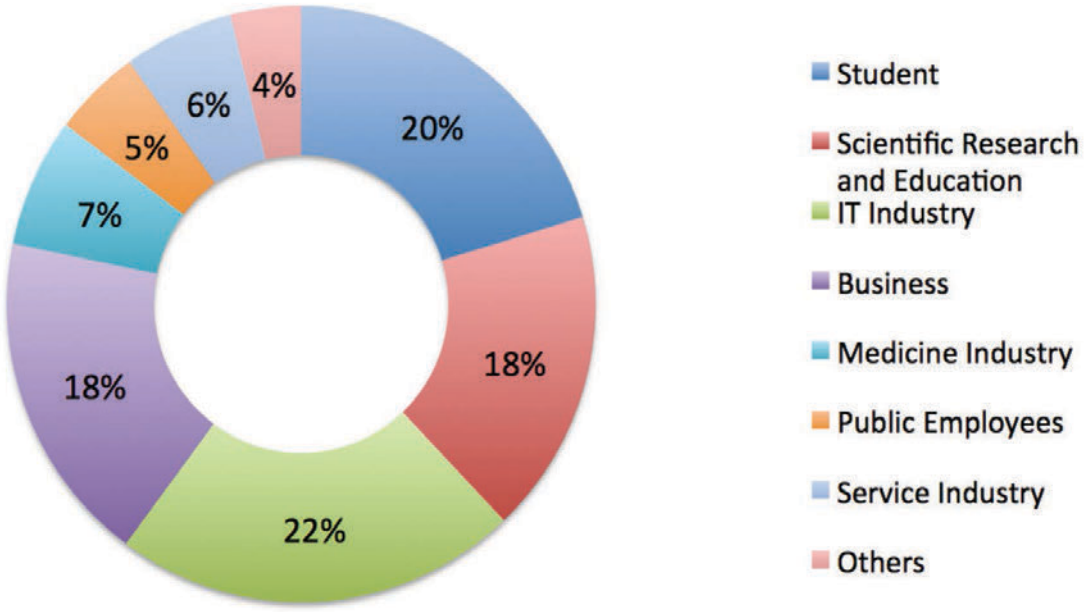
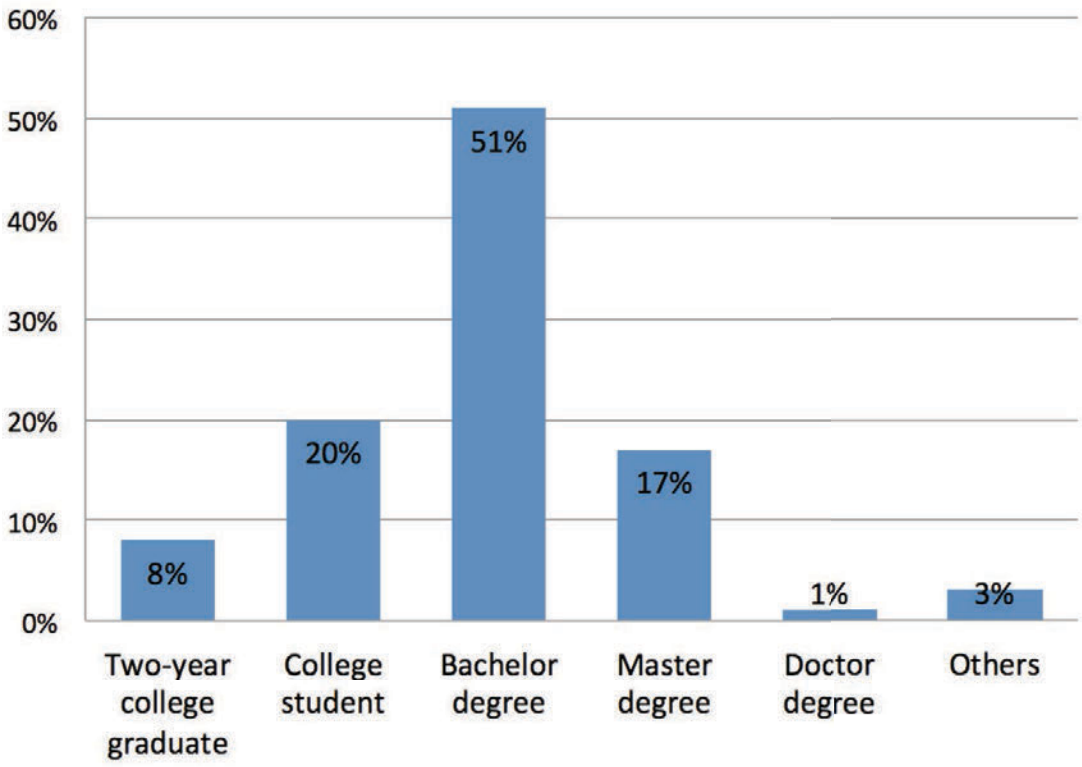


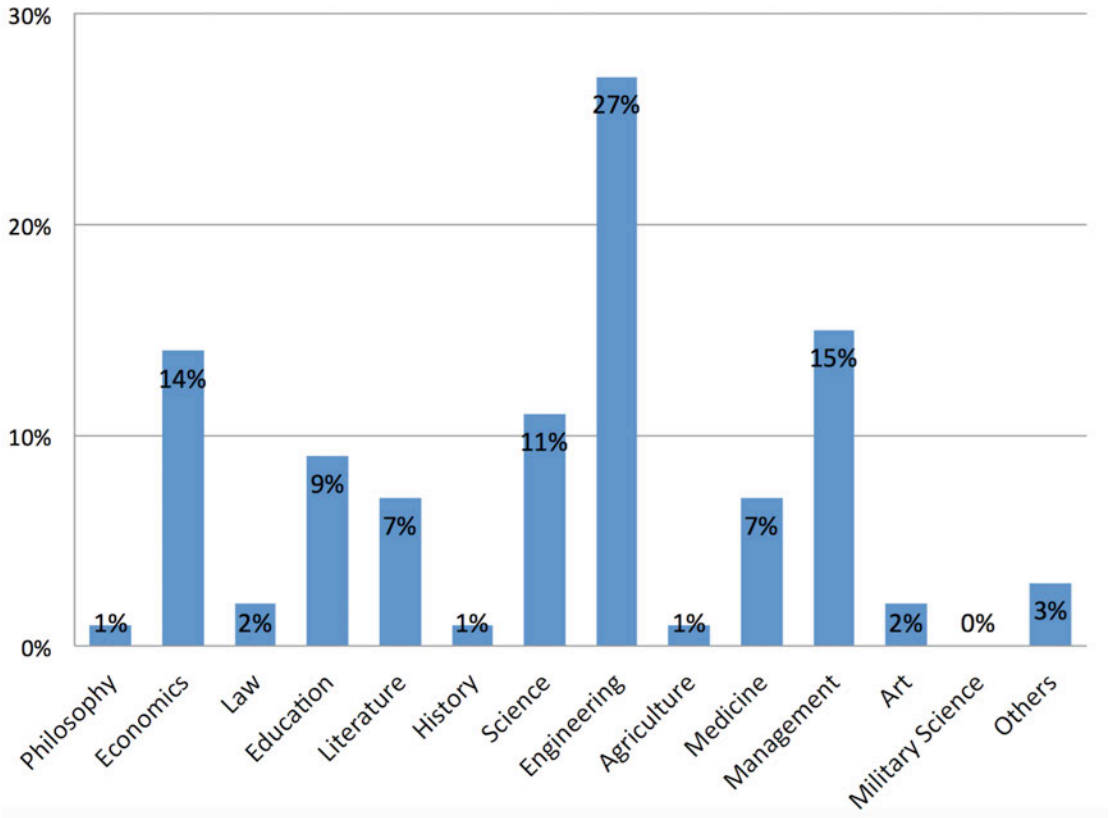
Figure 4.5 indicates the educational backgrounds of the respondents. 51% (n=213) of respondents hold a Bachelor degree and 20% (n=81) of respondents are college students. 17% (n=69) of respondents hold a Master degree and 1% (n=5) of respondents hold a Doctor degree. 8% (n=34) of respondents are two-year college graduate. There are only a little amount of high school students or graduates and two-year college students, accounting for 3% of the total.

Figure 4.5 Educational Backgrounds of the Respondents (N=414)



With regard to the major of the respondents (Figure 4.6), 27% (n=111) of respondents focus on engineering, followed by management (15%, n=62) and economics (14%, n=59). 11% of respondents (n=47) major in the area of science and 9% (n=39) of respondents major in education. 7% (n=29) of respondents' learning field is medicine and literature. There are still some respondents who focus on the area of art (2%, n=7), agriculture (1%, n=4)，history (1%, n=4) and philosophy (1%, n=2). There are 3% (n=12) of participants who focus on other areas. No respondents focus on the area of military science.

Figure 4.6 Major of the Respondents (N=414)



Basic Information about MOOC of the Respondents

Figure 4.7 indicates the MOOC platforms that the respondents usually use. The first three platforms that participants usually use are the Chinese University MOOC (62%, n=256), Xuetang Zaixian (43%, n=176) and Coursera (37%, n=152). 23% (n=94) of respondents also use Edx and 16% (n=65) of respondents use Xuetang Zaixian. 15% (n=64) of respondents use Future Learn. There are also some respondents who use other platforms, such as Udacity (12%, n=48), Iversity (12%, n=48), Open2study (10%, n=42) and Qinghua MOOCs (8%, n=34).

Figure 4.7 The Platforms the Respondents Usually Use (N=414)

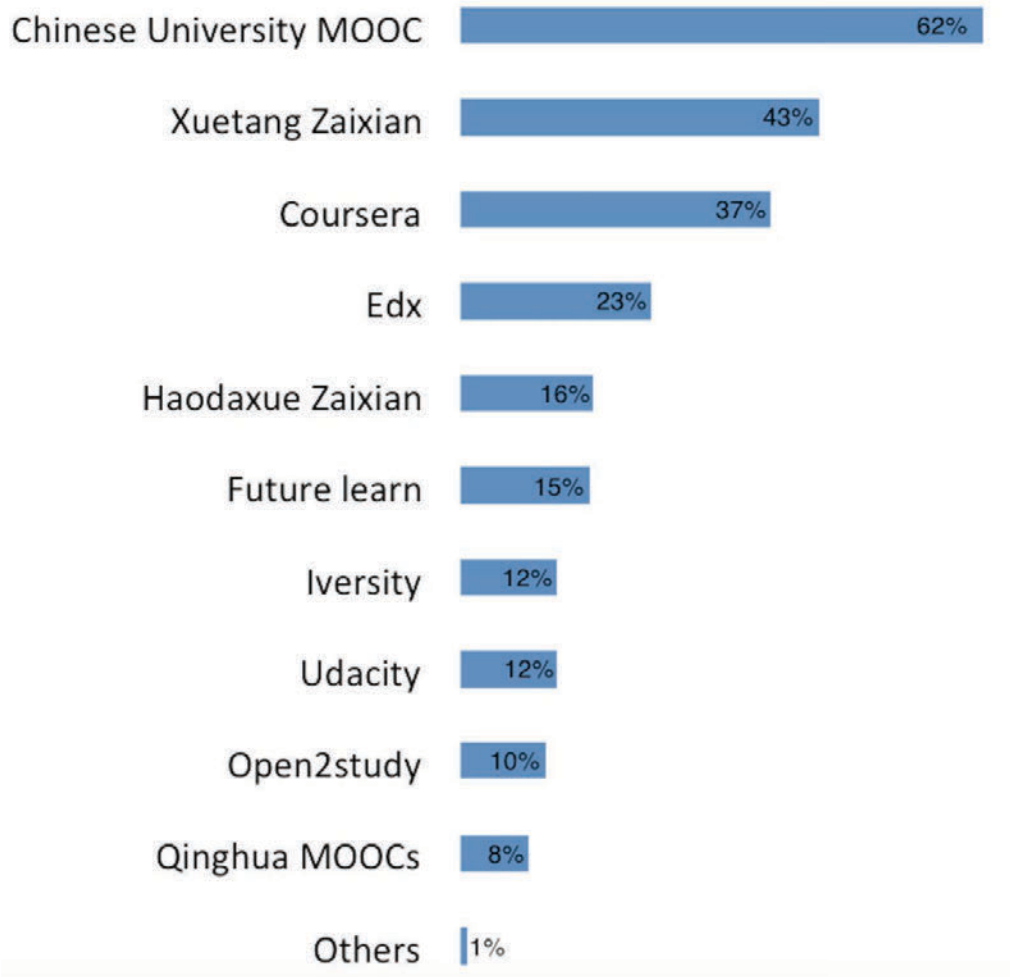


Figure 4.8 shows the courses that the respondents usually attend. The first three kinds of courses respondents attend are economics (42%, n=173), business administration (38%, n=156) and computer science (37%, n=154). A significant number of respondents also enroll in courses such as humanities (27%, n=113) and social science (26%, n=108). There are also respondents who attend courses of engineering (16%, n=67), education (16%, n=67), science (15%, n=62), statistics (15%, n=62) and art (12%, 50 respondents). A small percentage of the respondents also enroll in courses such as life science (10%, n=40), health and nutrition (9%, n=39) and medical science (8%, n=31).

Figure 4.8 The Courses the Respondents Attend (N=414)

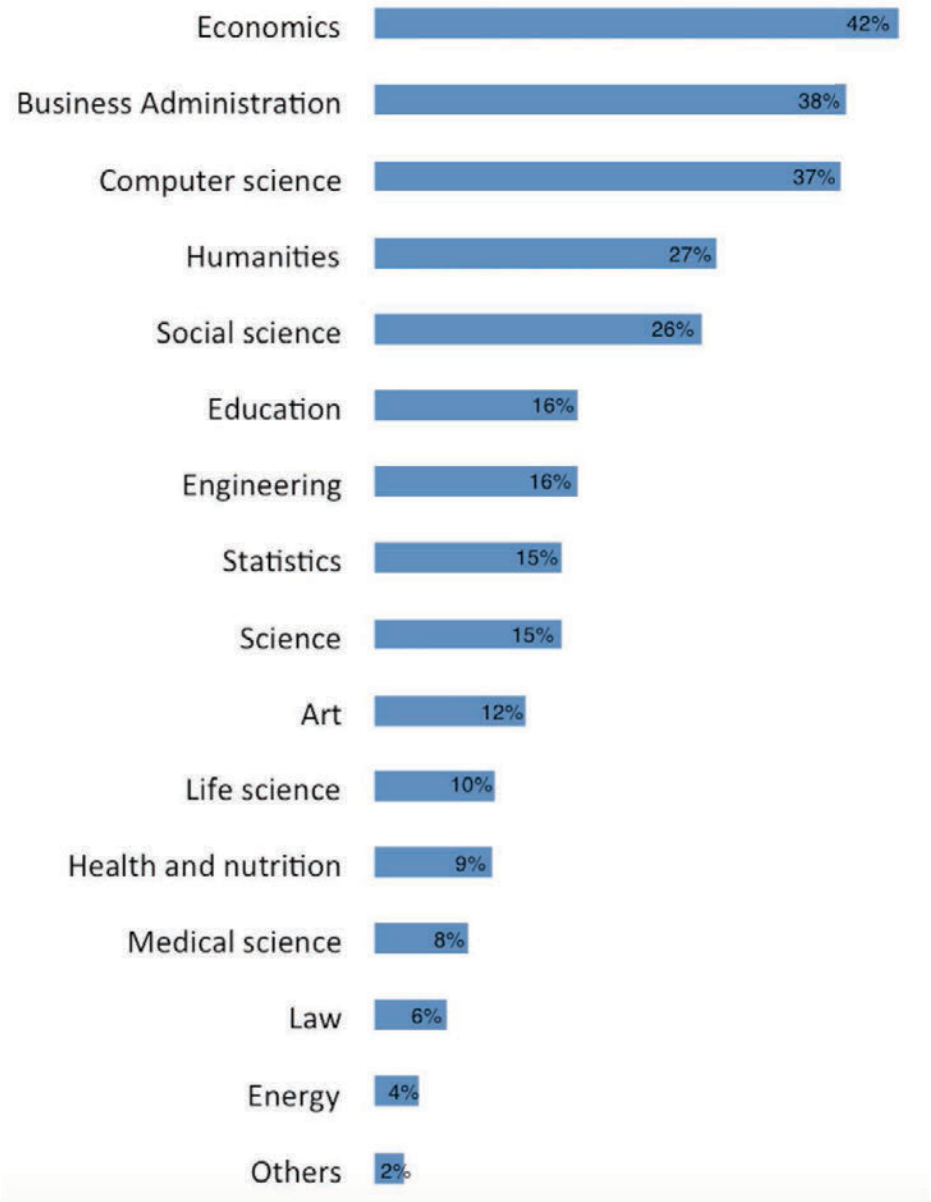


Figure 4.9 indicates the number of courses that the respondents attend. Most of the respondents (59%, n=243) enroll in 2-4 courses and 30% (n=126) of respondents enroll in 5-10 courses. 5% (n=19) of respondents enroll in only one course and 3% (n=12) of participants enroll in 11-20 courses. There are still a small percentage of the participants (3%, n=14) who enroll in more than 20 courses.

Figure 4.9 The Number of Courses the Respondents Enroll (N=414)

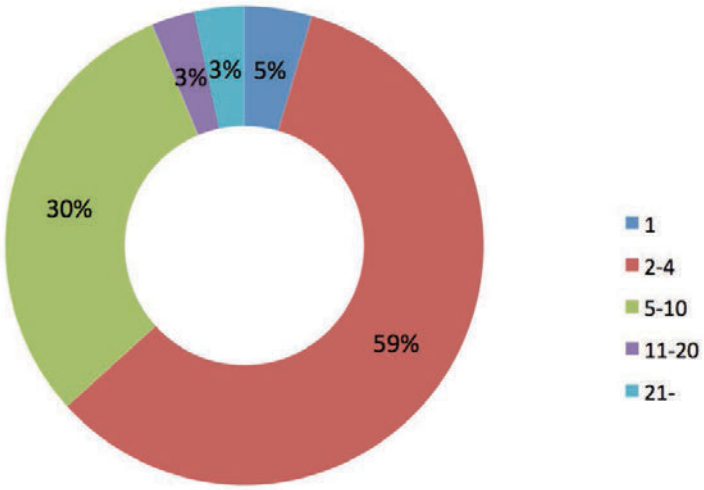
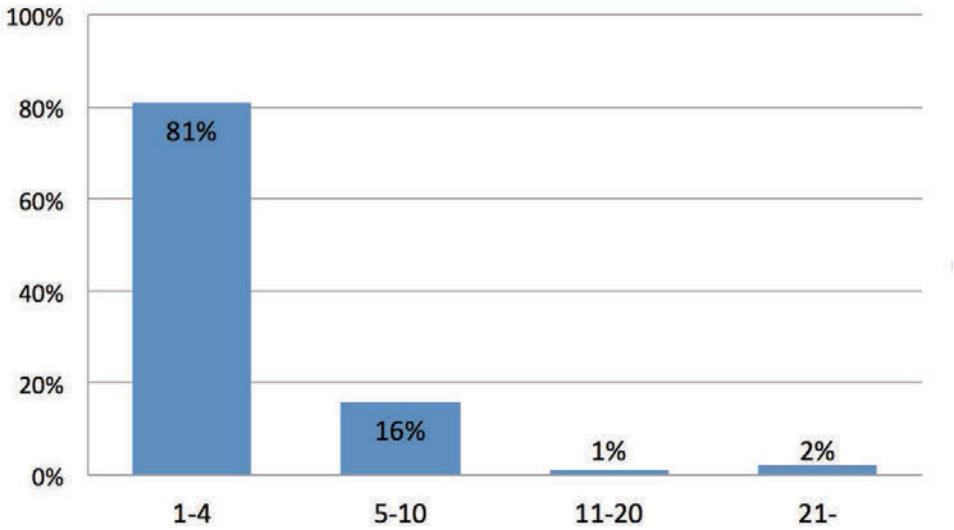


Figure 4.10 shows the number of courses the respondents finish. Most of the respondents (81%, n=335) can finish 1 to 4 courses and 16% (n=66) of respondents finish 5-10 courses. Only 1% (n=3) of respondents finish 11-20 courses and 2% (n=10) finish more than 20 courses.

Figure 4.10 The Number of Courses the Respondents Finish (N=414)



4.1.2. Background of Participants of the Interview

A sample of seven Chinese learners of MOOC platforms was selected purposefully to conduct interviews. Four of the seven interviewees are college students and one is a graduate student. One of the interviewees has a Bachelor degree and one has a Master degree. The MOOC platforms they usually use are Coursera, edX and Xuetang zaixian. They enroll in a wide range of courses including computer science, social science, humanities, economics and art. Six of them have finished dozens of courses and the other one has finished sixteen. All of them have rich learning experience on MOOC platforms. Participants were first asked about the demographic questions and about the details of MOOC. Then they were asked to describe their experience of taking courses on MOOC platforms and how they are able to so many MOOCs in an online learning environment. The background of the interviewees is summarized in Table 8.1 in Appendix C. The detailed background of the interviewees are as following.

Interviewee 1 is a college student in Zhejing province and majors in Economics. He knew MOOC from Internet and enrolled in the first MOOC 2013. The platforms he usually uses are Coursera and Edx and he has finished 28 courses and got the certificates. He usually takes humanities and art courses. Although he is an economics student, he is interested in music very much and most of the courses he takes are music course. This is also a main reason that he enrolls in MOOCs. Before taking MOOCs, he has taken many other online courses to obtain music knowledge. He likes online courses and thinks it is a good way for autonomic learning.

Interviewee 2 is an editor who is working in Beijing. He graduated from Nanjing University of Aeronautics and Astronautics and later got a master degree in Bei Hang University. His major is engineering science. He knew MOOC from Internet in 2012. He usually uses Coursera, Edx and Xuetang Zaixian. He has finished 16 courses and got the certificates. He takes courses in the area of computer science, science, humanities and Statistics. He takes MOOCs because he cannot go back to university and he wants to continue study. He has taken other online courses before and thinks that online learning is flexible and convenient.

Interviewee 3 is retired because that she is not very healthy. She graduated from University of International Business and Economics. Her major is Economics. After

graduation, she went back to her hometown, Xinjiang City. She knew Coursera online and enrolled in the first course in 2013. She usually uses Coursera, Edx and Future Learn and takes courses in the area of economics, humanities, social science, natural science and art. She has finished 67 courses and got the certificates. She likes MOOCs and is addicted to them. Through taking MOOCs, she enjoys the pleasure of learning and obtains huge sense of achievements.

Interviewee 4 is a college student in Northwest A&F University, which is in Xian City. He majors in Biology Science. He knew MOOC from Internet in 2013 and in 2014 he started to take MOOCs. He usually uses Coursera, Edx, Open2Study and Xuetang Zaixian and taking courses in the area of computer science, social science, life science and biology. He has finished 41 courses and got the certificates. He majors in biology but he likes also computer science and psychology very much. So he takes MOOCs to obtain knowledge of these three area. He likes online learning and thinks that online learning provides him a new learning method and has changed his learning habits.

Interviewee 5 was a college student in Guangxi Normal University and then transferred in America to continue his study. He majors in Mathematics. He knew MOOC from his classmate and then enrolled in the first MOOC in 2013. He usually uses Coursera, Edx, Xuetang Zaixian and takes courses in the area of natural science, social science, and humanities. He has finished 27 courses. He enrolls in mathematic courses because he wants to do some preview. He enrolls in other kind of courses because he wants to obtain more knowledge. He experiences a new learning method through taking MOOCs.

Interviewee 6 was a college student in Nanjing Technology University and now he is a master student in Peking University. He knew MOOC from Internet in 2013 and then he enrolled in the first MOOC. He usually uses Coursera, Edx. Xuetang Zaixian and Stanford Online. He takes courses in the area of computer science, economics, humanities and statistics. He has finished 37 courses and got the certificates. Through taking courses related to computer science, he expands specialized knowledge. He thinks that it is very convenient to take computer courses online and through taking MOOCs, he experience courses from first rank university.

Interviewee 7 is a college student in Australia. He majors in Chemistry, but he is interested in music very much. He read an online article that introduced Coursera in

2012. Then he enrolled in MOOCs in 2013. He usually uses Coursera, Edx and Open2Study and takes courses in the area of humanities, music and chemistry. He has finished 40 courses and got certificates. He likes music very much and wants to take jobs related to music. MOOCs provide him good chances to learn music by himself.

4.2. Reasons Why Chinese Learners Enroll in MOOCs and Quit

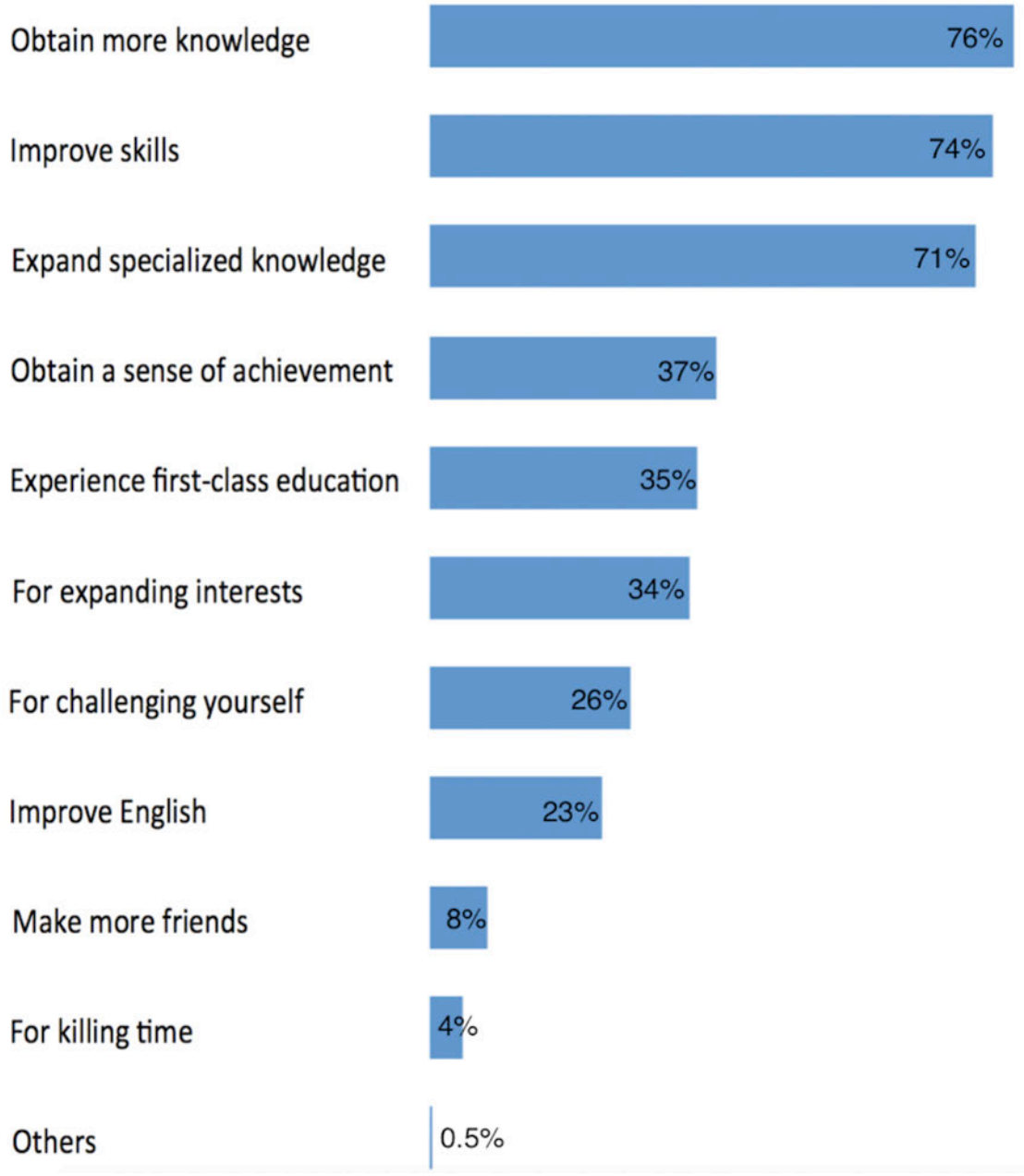
4.2.1. The Goals and Expectations of Chinese Learners

Figure 4.11 shows the goals and expectations of Chinese learners when they enroll in MOOCs. The first three reasons they take MOOCs are obtaining more knowledge (76%, n=314), improving skills (74%, n=303) and expanding specialized knowledge (71%, n=294).

In addition, 37% (n=154) of respondents enroll in MOOCs because they like learning and want to obtain a sense of achievement. 35% (n=144) of respondents want to experience the first-class education that MOOC platforms provide. 34% (n=140) respondents enroll in MOOCs for expanding their interests.

There are still more respondents who enroll in MOOCs because they want to challenge themselves (26%, n=108) and improve their English (23%, n=93). There are also a few respondents who want to make more friends (8%, n=32) and kill time (4%, n=18) through learning on MOOC platforms.

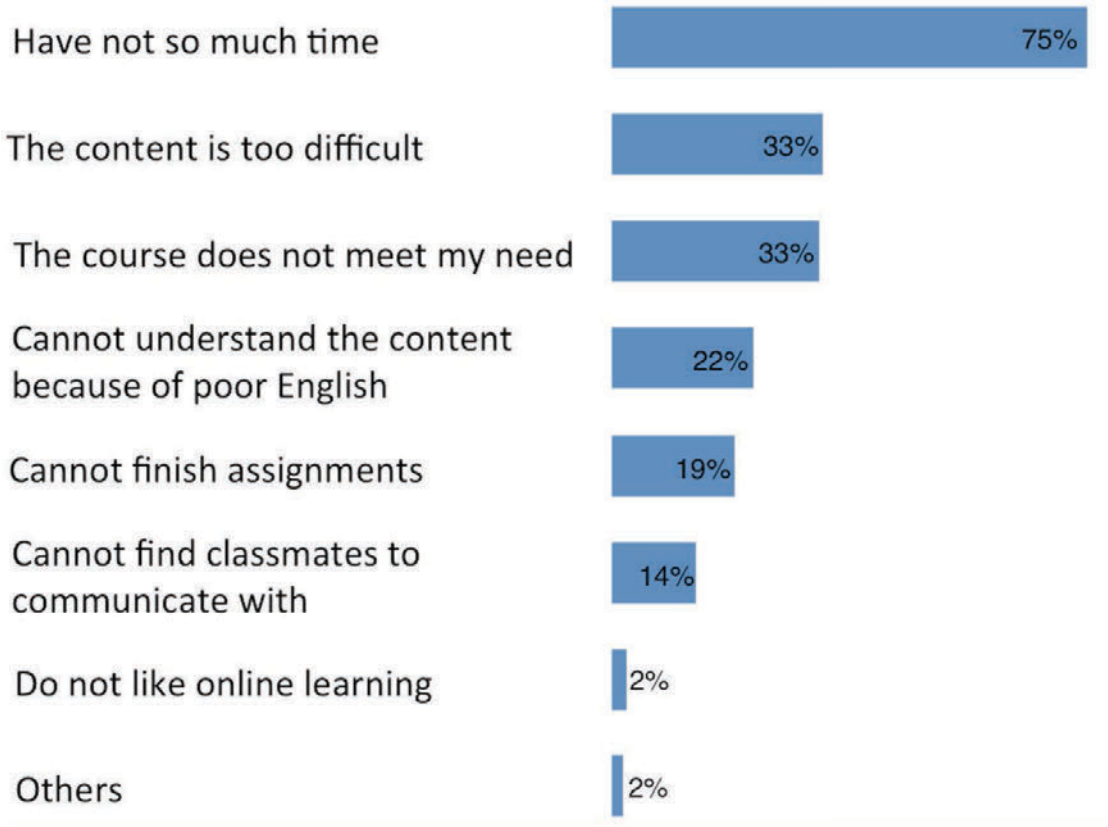
Figure 4.11 Goals and Expectations of the Participants (N=414)



4.2.2. Reasons Why Chinese Learners Quit

Why do Chinese learners quit a MOOC? Figure 4.12 indicates the reasons that Chinese learners quit a MOOC. The main reason is that the respondents do not have much time (75%, n=309). 33% (n=137) of respondents quit a course because the course content is too difficult and 33% (n=135) of respondents think that the course they quit do not meet their needs. 22% (n=92) of respondents quit the courses because they could not understand the course due to their poor English and 19% (n=80) of respondents quit the course because they could not finish the assignments. There are still a few respondents who quit the course because they could not find classmates to communicate with (14%, n=55) and they did not like online learning (2%, n=10).

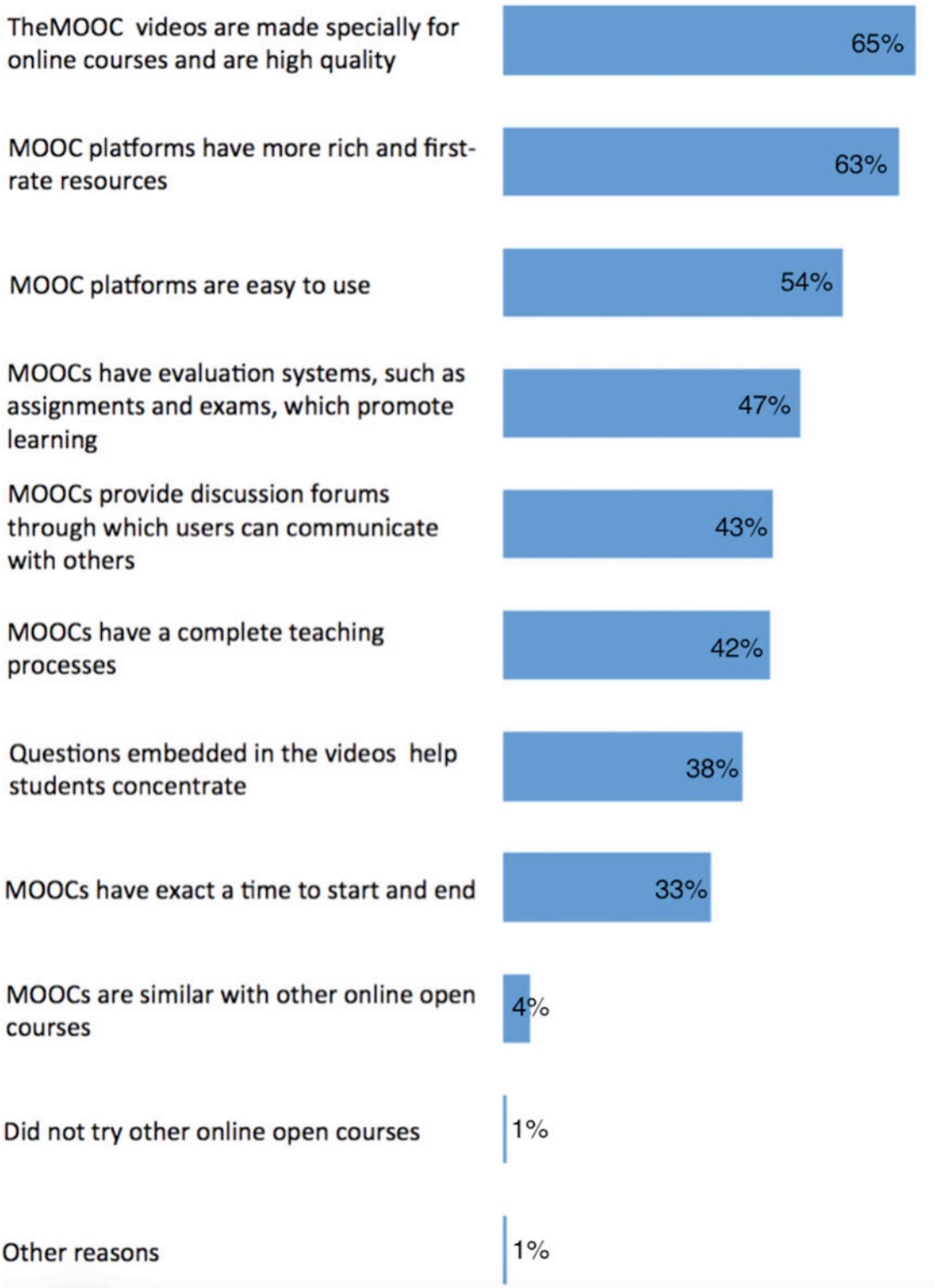
Figure 4.12 Reasons Why Chinese Learners Quit (N=414)



4.2.3. Reasons for Enrolling in MOOCs Rather Than other Online Open Courses

Figure 4.13 shows the reasons that Chinese learners choose to attend MOOCs rather than other online open courses. The first reason that the Chinese learners choose MOOCs is that the videos are made especially for online courses (65%, n=270) and are high quality. The second reason is that there are more rich and first-rate resources on MOOC platforms (63%, n=260). In addition, 54% of respondents (n=223) take MOOCs because the MOOC platforms are easy and convenient to manage and 47% of respondents (n=195) think MOOCs have evaluation systems, such as assignments and exams, which can promote learning. 43% (n=177) of respondents choose MOOCs because MOOCs provide discussion forums through which users can communicate with others and 42% (n=175) choose MOOCs because MOOCs have complete teaching process and stages. Only 4% (n=18) of respondents think MOOCs are similar with other online open courses and only 1% (n=3) of respondents did not try other online open courses before.

Figure 4.13 Reasons of Taking MOOCs Rather Than other Online Courses (N=414)



4.3. Satisfaction with the Instructional Design of MOOCs

How satisfied are Chinese learners with the instructional design of MOOCs? Which aspects of the instructional design of MOOCs contribute the most to users' satisfaction? Which aspects contribute least? The following discussions will answer these several questions.

The figures in the following tables show the statistical data that represents the extent of the satisfaction of the participants about the instructional design of MOOCs. The mean scores are derived from a 7 point Likert scale which represents the extent of the agreement (7 indicates strong agreement, 1 signifies strong disagreement). Correlation analysis and regression statistics are also conducted to show which aspects of MOOCs contribute the most and least to Chinese users' satisfaction. The original data from the questionnaire is in Appendix D.

4.3.1. Satisfaction with the Instructional Design of MOOCs

The following discussion and table show the satisfaction of Chinese learners on six dimensions of MOOCs: the content of the courses, the teaching methods the courses used, the evaluation systems of MOOCs, the discussion forum, the online learning environment and the overall satisfaction.

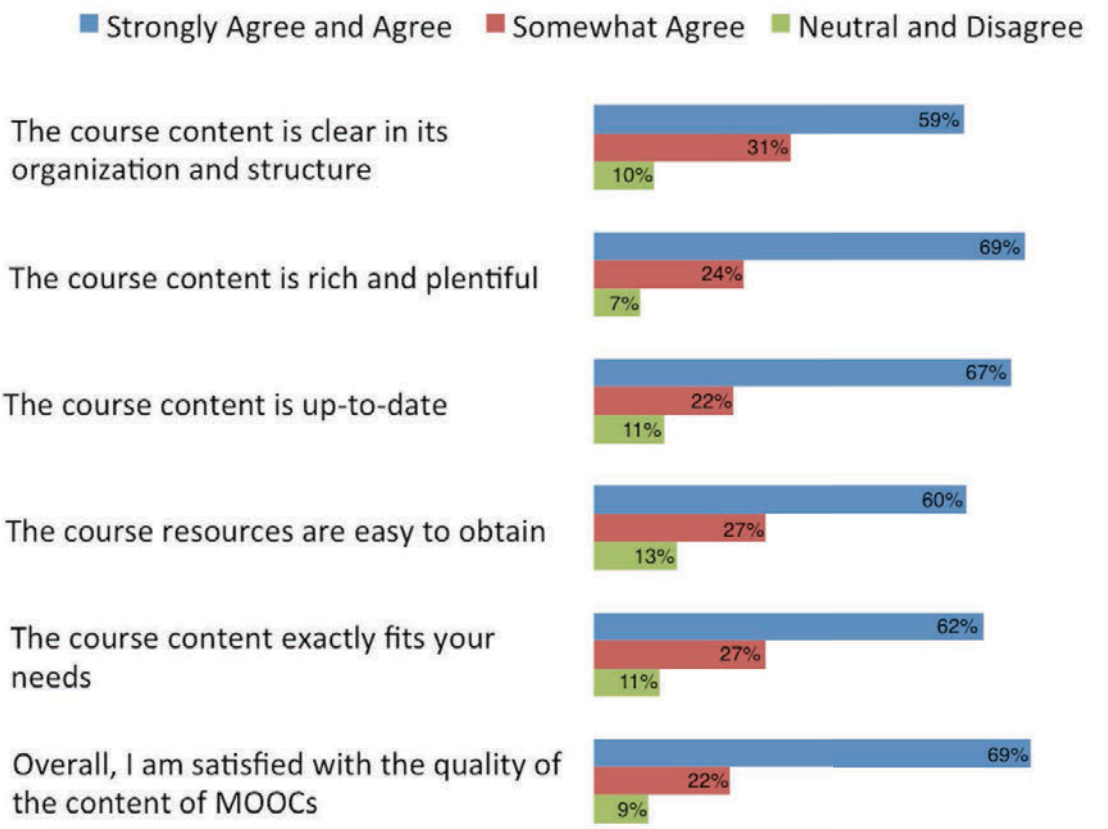
Satisfaction with Course Content

Figure 4.14 shows the satisfaction of Chinese learners with the course content of MOOCs. The questionnaire investigates the satisfaction with course content from six aspects: the organization and structure, the richness of the content, whether it is up to date, whether the resources related to the courses are easy to obtain, whether the content meets the needs of users and the overall satisfaction with content.

Of the 414 respondents, 59% (n=244) of respondents agree or strongly agree that the course content is clear in its organization and structure and only 10% (n=40) of respondents are neutral or disagree with this opinion; 69% (n=284) of respondents agree or strongly agree that the course content is rich and plentiful and only 7% (n=31) of respondents are neutral or disagree; 67% (n=275) of respondents agree or strongly agree that the course content is up-to-date; 60% (n=246) of respondents agree or strongly agree that the course resources are easy to obtain; 62% (n=257) of

respondents agree or strongly agree that the course content can meet their needs; 69% (n=288) of respondents agree or strongly agree that they are satisfied with the course content and only 9% (n=36) of respondents are neutral or disagree with the opinion.

Figure 4.14 Satisfaction with Course Content (N=414)



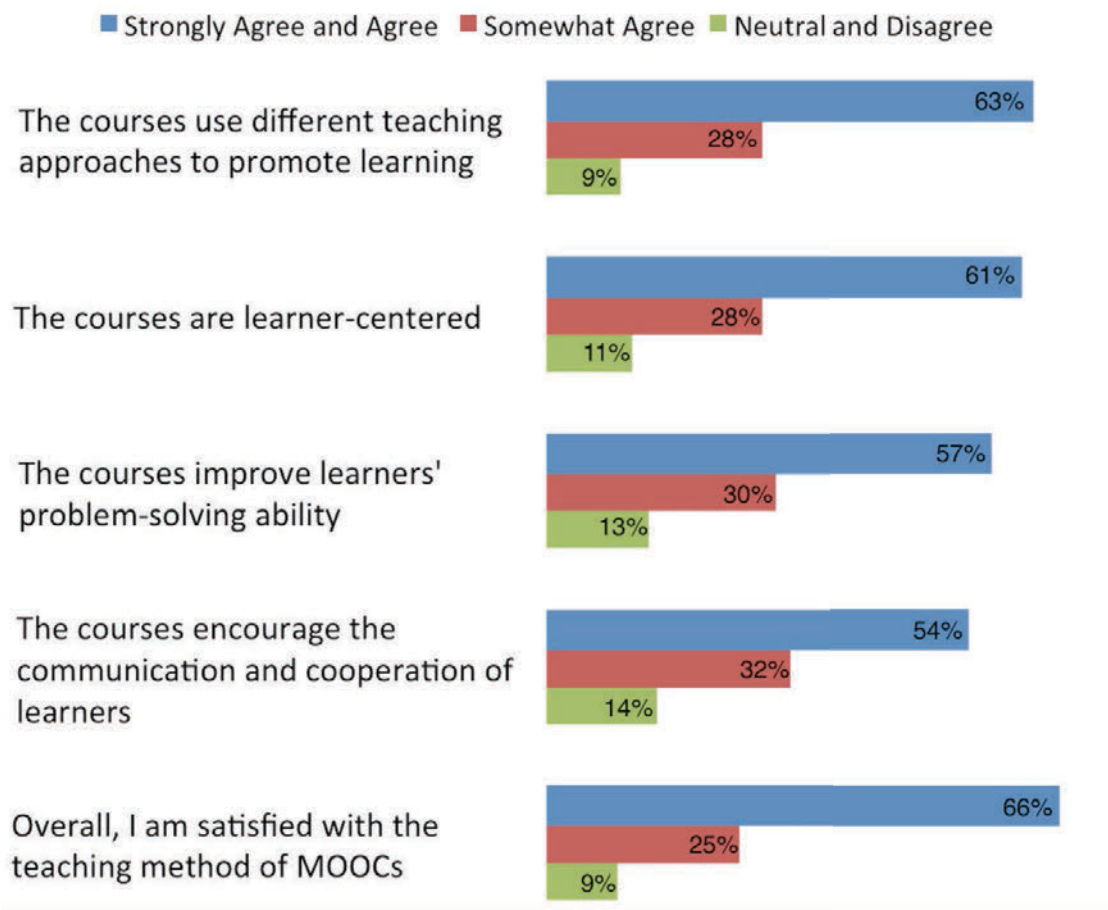
Satisfaction with the Teaching Methods

Figure 4.15 shows the satisfaction of Chinese learners with the teaching methods utilized by MOOCs. The questionnaire investigates the satisfaction with teaching methods from five aspects: the variety of teaching methods, whether the methods are learner-centered, whether the courses focus on improving ability, whether the courses encourage cooperation and communication and the overall satisfaction with teaching

methods.

Of the 414 respondents, 63% (n=259) of respondents agree or strongly agree that the courses use different teaching approaches to promote learning; 61% (n=253) of respondents agree or strongly agree that the courses are learner-centered; 57% (n=237) of respondents agree or strongly agree that the courses improve learners' problem-solving ability; 54% (n=225) of respondents agree or strongly agree that the courses encourage the communication and cooperation of learners; 66% (n=273) of respondents agree or strongly agree that they are satisfied with the teaching method of the MOOCs.

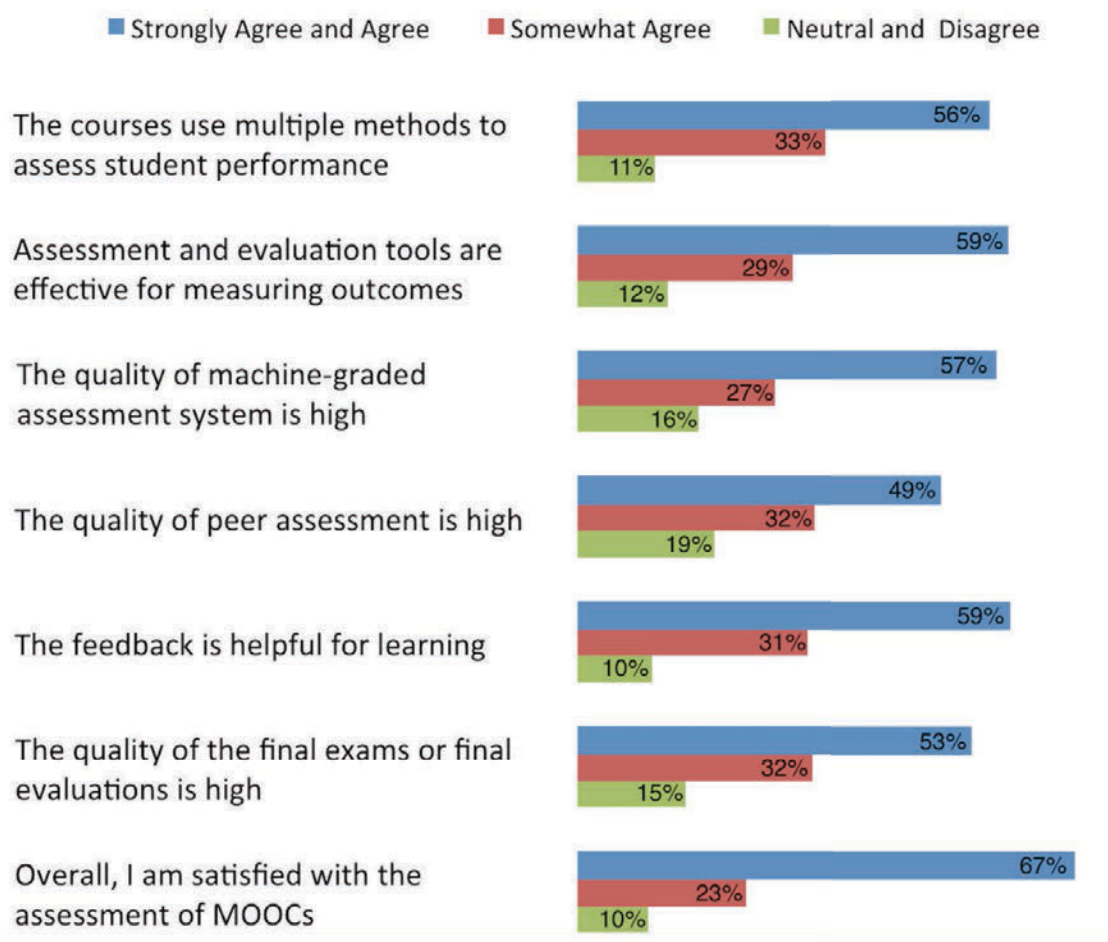
Figure 4.15 Satisfaction with Teaching Methods (N=414)



Satisfaction with Evaluation and Assessment

Figure 4.16 shows the satisfaction of Chinese learners with the evaluation and assessment systems of MOOCs. The questionnaire investigates the satisfaction with evaluation systems from seven aspects: the variety of evaluation methods, the effectiveness of evaluation methods, the quality of machine-grading system, the quality of peer assessment, the quality of feedback, the quality of the final exam or final evaluation and the overall satisfaction of evaluation system.

Figure 4.16 Satisfaction with Evaluation Systems (N=414)



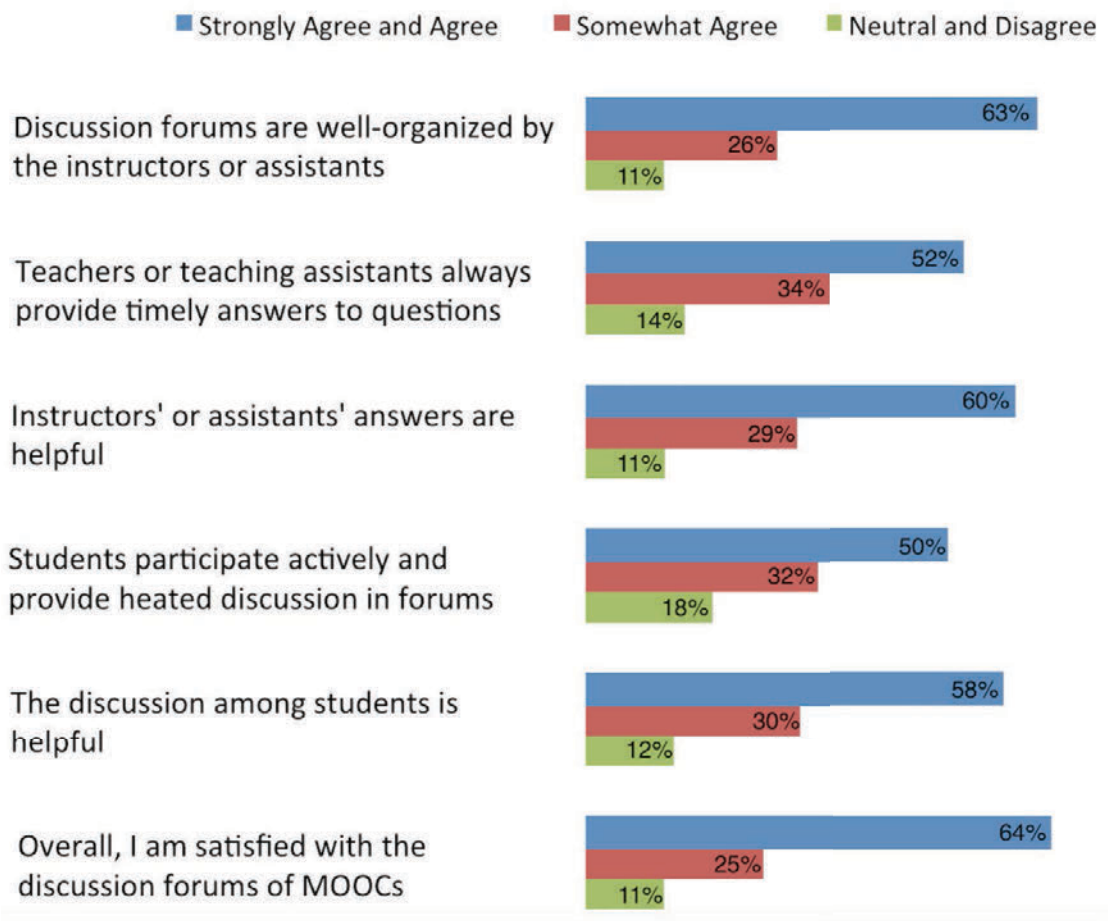
Of the 414 respondents, 56% (n=231) of respondents agree or strongly agree that the courses use multiple methods to assess student performance; 59% (n=242) of respondents agree or strongly agree that the assessment and evaluation tools of MOOCs are effective for measuring learning outcomes; 57% (n=235) of respondents agree or strongly agree that the quality of machine-grading assessment system is high; 49% (n=204) of respondents agree or strongly agree that peer assessment has high quality; 59% (n=243) of respondents agree or strongly agree that the feedback is helpful for achieving learning outcomes; 53% (n=221) of respondents agree or strongly agree that the quality of the final exam or final evaluation is high; 67% (n=279) of respondents agree or strongly agree that they are satisfied with the assessment of MOOCs.

Satisfaction with Discussion Forums

Figure 4.5 shows the satisfaction of Chinese learners with discussion forums links to their MOOCs. The questionnaire investigates the satisfaction with discussion forums from six aspects: well organization of the forum, whether instructors or assistants provide timely answers to inquiries, whether the answer is helpful, whether students participate actively, whether the discussions among students are helpful and the overall satisfaction of the discussion forum.

Of the 414 respondents, 63% (n=259) of respondents agree or strongly agree that the discussion forums are well-organized by instructors or assistants; 52% (n=217) of respondents agree and or strongly agree that teachers or teaching assistants always provide timely answers to the questions; 60% (n=247) of respondents agree or strongly agree that the answers from instructors or assistants are helpful; 50% (n=208) of respondents agree or strongly agree that the students participate actively and provide heated discussion in forums; 58% (n=240) of respondents agree or strongly agree that the discussions among student are helpful; 64% (n=267) of respondents agree or strongly agree that they are satisfied with the discussion forums of MOOCs.

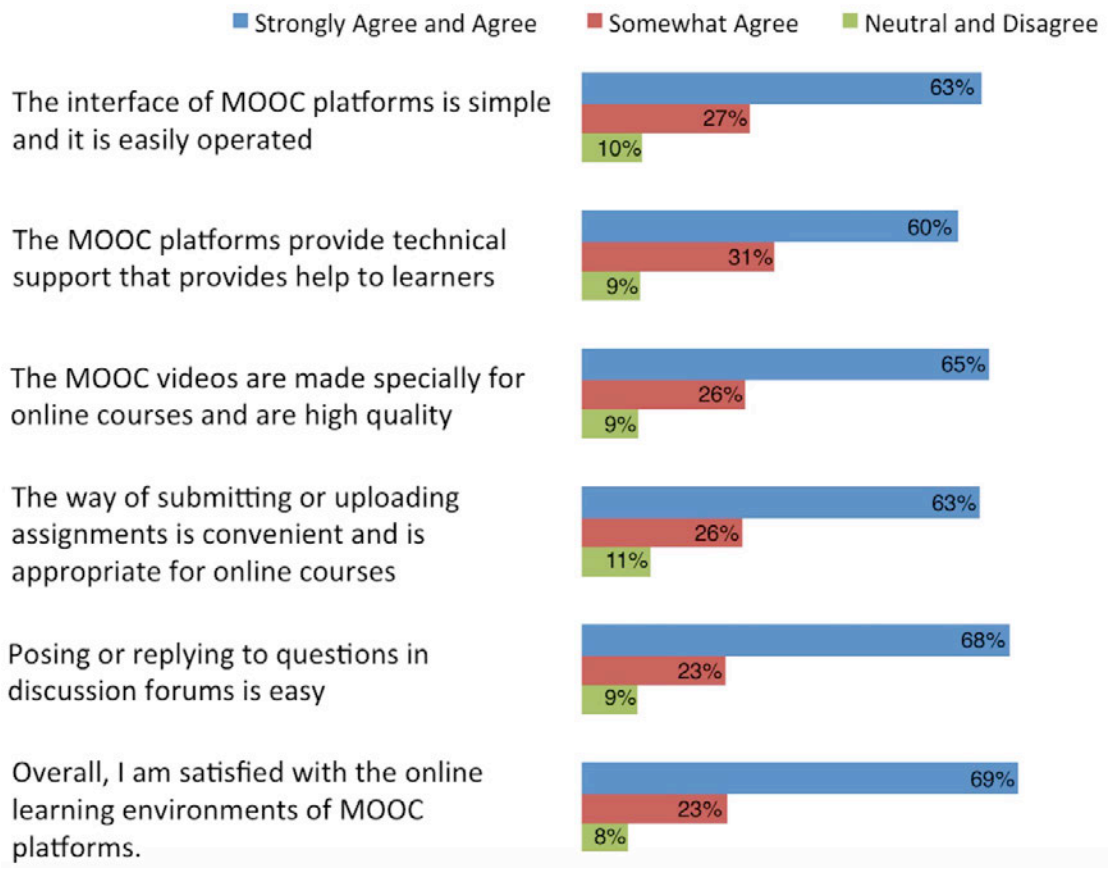
Figure 4.17 Satisfaction with Discussion Forums (N=414)



Satisfaction with Online Learning Environments

Figure 4.18 shows the satisfaction of Chinese learners with the online learning environments of MOOC platforms. The questionnaire investigates the satisfaction with the online learning environments from six aspects: the simple interface, the technical support, the quality of the videos, the methods for submitting assignments, ease of use for discussion forums and the overall satisfaction with the learning environments.

Figure 4.18 Satisfaction with Online Learning Environments (N=414)

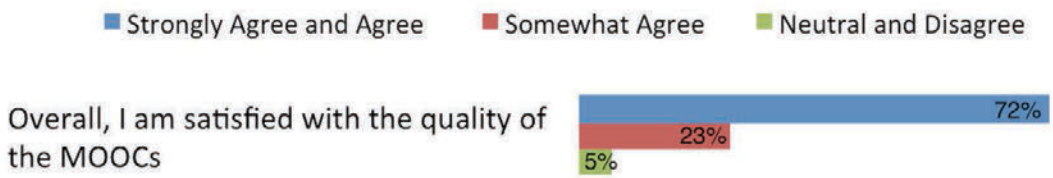


Of the 414 respondents, 63% (n=263) of respondents agree or strongly agree that the interface of MOOC platforms is simple and it is easily operated; 60% (n=248) of respondents agree or strongly agree that the MOOC platforms provide technical support that can assist learners; 65% (n=268) of respondents agree or strongly agree that the videos on MOOCs are made specially for online courses and are high quality; 63% (n=262) of respondents agree or strongly agree that the methods for submitting or uploading assignments are convenient and appropriate for online courses; 68% (n=282) of respondents agree or strongly agree that it is easy to use discussion forums to pose or reply to a question; 69% (n=287) of respondents agree or strongly agree that they are satisfied with the online learning environments found on MOOC platforms.

Overall Satisfaction

Figure 4.19 shows the overall satisfaction of Chinese learners with MOOCs. Of the 414 respondents, 72% (n=297) of respondents agree or strongly agree that they are satisfied with the design of MOOCs. 23% (n=96) of respondents somewhat agree with this statement. Only 5% (n=21) are neutral or disagree with it. These figures show that most Chinese users are satisfied with the design and quality of MOOCs.

Figure 4.19 Overall Satisfaction With MOOCs (N=414)



4.3.2. Aspects Contributing Most and Least to Satisfaction

Which aspects of the instructional design of MOOCs contribute the most to learners' satisfaction? Which aspects contribute least? Statistical tests of significant differences of means, correlation and regression statistics are conducted and the results provide answer for this questions.

Aspects Contributing Most and Least to Satisfaction with Course Content

Table 4.1 shows the means, standard deviations and Pearson correlations among the variables of course content.

Table 4.1 Statistics of Variables of Course Content (N=414)

	Mean	SD	Pearson Correlations				
			Clear structure	Richness of content	Up to date	Resource	Fit needs
Clear structure	5.60	0.995	1				
Richness of content	5.83	1.037	.561**	1			
Up to date	5.79	1.110	.525**	.550**	1		
Resource	5.64	1.076	.520**	.470**	.538**	1	
Fit needs	5.69	1.017	.503**	.498**	.508**	.510**	1
Overall satisfaction	5.78	1.048	.625**	.525**	.489**	.439**	.598**

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

Statistical tests of significant differences are conducted to figure out whether there are significant differences among the means of the variables. The results indicate that the satisfaction with the richness of content is significantly higher than the satisfaction

with the clearness of the structure ($p < .001$), the satisfaction of obtaining resources ($p < .001$) and the satisfaction of whether the courses fit student needs ($p < .01$). There is no significant difference between the satisfactions regarding the richness of content and whether the course is up-to-date ($p > .05$). There is also no significant difference between the satisfactions with the clearness of the structure of the courses and whether the resources are easy to obtain ($p > .05$).

Table 4.1 also presents the correlations between variables of course content. All of the variables exhibited significant relationships with the overall satisfaction with course content. The overall satisfaction with course content has the highest correlation to the clear structure and organization of content ($r = .625$, $p < .01$). The overall satisfaction also highly correlated with whether the course content fit the needs of users ($r = .598$, $p < .01$) and whether the course has rich and plentiful content ($r = .525$, $p < .01$) in comparison with whether the course is up to date ($r = .489$, $p < .01$) and whether the resources of course are easy to obtain ($r = .439$, $p < .01$).

Table 4.2 Multiple Regression of Variables of Course Content (N=414)

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.683	.255		2.673	.008		
Clear structure	.378	.049	.359	7.780	.000	.558	1.792
Richness of content	.129	.046	.128	2.792	.005	.565	1.770
Up to date	.068	.044	.072	1.551	.122	.553	1.807
Resource	-.011	.044	-.011	-.244	.807	.589	1.697
Fit needs	.332	.046	.322	7.270	.000	.605	1.654

Dependent Variable: overall satisfaction of course content

Multiple regression analysis is conducted to see how much the variables can predict the overall satisfaction with course content. Table 4.2 presents the multiple regressions of five variables of course content and the dependent variable is the overall satisfaction with course content.

The result shows that the combination of the independent variables significantly predicts the overall satisfaction with course content ($F(5, 408) = 86.580$, $p < .001$). Approximately 51 % of the variance in the overall satisfaction with course content can be explained by the five predictors. The tolerances are larger than .10 and VIFs smaller than 10, so there is no multicollinearity for the predictors.

The clear structure of content ($t(408)=7.780$, $p < .001$), rich and plentiful course content ($t(408) = 2.792$, $p < .01$) and whether the course fit the needs of users ($t(408) = 7.270$, $p < .001$) are significant predictors in explaining overall satisfaction with course content. Whether the course is up to date ($t(408) = 1.551$, $p > .05$) and whether the resources are easy to obtain ($t(408) = -.244$, $p > .05$) do not significantly contribute to the prediction of the overall satisfaction with course content.

Aspects Contributing Most and Least to Satisfaction with Teaching Methods

Table 4.3 shows the means, standard deviations and Pearson correlations among the variables of teaching methods.

Statistical tests of significant differences are conducted to figure out whether there are significant differences among the means of the variables. The results indicate that the satisfaction of a variety of methods is significantly higher than the satisfaction with cooperative methods ($p < .01$) and the satisfaction with ability improving ($p < .05$). The satisfaction of learner-centered methods is also significantly higher than the cooperative methods ($p < .01$) and ability improving ($p < .05$). There is no significant difference between the satisfactions of variety of methods and learner-centered methods ($p > .05$). There is also no significant difference between the satisfaction of cooperative methods and ability improving ($p > .05$).

Table 4.3 also presents the correlations between variables of teaching methods. All the variables exhibited significant relationships with the overall satisfaction with teaching methods. The overall satisfaction with teaching methods has the highest correlation to the variety of methods the course used ($r = .629$, $p < .01$). The overall satisfaction also highly correlated with whether the course can improve ability (r

= .560, p < .01) and whether the course is learner-centered (r = .548, p < .01) in comparison with whether the courses encourage cooperation (r = .496, p < .01). In addition, whether the teaching method is learner-centered has a comparatively high correlation to the variety of teaching methods (r = .565, p < .01).

Table 4.3 Statistics of Variables of Teaching Methods (N=414)

	Mean	SD	Pearson Correlations			
			Variety of methods	Learner centered	Ability improving	Cooperation
Variety of methods	5.68	1.063	1			
Learner centered	5.67	.995	.565**	1		
Ability improving	5.57	1.064	.494**	.532**	1	
Cooperation	5.51	1.104	.449**	.490**	.511**	1
Overall satisfaction	5.72	1.033	.629**	.548**	.560**	.496**

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

Multiple regression analysis is conducted to see how much the variables can predict the overall satisfaction of the teaching methods. Table 4.4 presents the multiple regressions of the four teaching method variables and the dependent variable is the overall satisfaction with teaching methods.

The result shows that the combination of the independent variables significantly predicts the overall satisfaction with teaching methods (F(4, 409) = 106.887, p < .001). Approximately 51 % of the variance in the overall satisfaction with teaching methods can be explained by the four predictors. The tolerances are larger than .10 and VIFs smaller than 10, so there is no multicollinearity for the predictors.

Table 4.4 Multiple Regression of Variables of Teaching Methods (N=414)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.845	.242		3.485	.001		
Variety of methods	.359	.043	.370	8.373	.000	.613	1.632
Learner centered	.155	.048	.150	3.265	.001	.568	1.761
Ability improving	.218	.043	.225	5.060	.000	.605	1.652
Cooperation	.133	.040	.142	3.323	.001	.655	1.527

Dependent Variable: Overall satisfaction with teaching methods

All of the variables including satisfaction with variety of methods ($t(409) = 8.373$, $p < .001$), whether the methods are learner-centered ($t(409) = 3.265$, $p < .01$), whether the methods focus on ability improving ($t(409) = 5.060$, $p < .001$) and whether the course encourages cooperation and communication ($t(409) = 3.323$, $p < .01$) are significant predictors in explaining the overall satisfaction with teaching methods.

Aspects Contributing Most and Least to Satisfaction with Evaluation Systems

Table 4.5 shows the means and the standard deviations of the variables of evaluation systems.

Statistical tests of significant differences are conducted to figure out whether there are significant differences among the means of the variables. The results indicate that the satisfaction with the quality of peer assessment is significantly lower than a machine-grading system ($p < .01$) but has no significant difference with the quality of final exam ($p > .05$). The satisfaction with the help of feedback is significant higher than the quality of peer assessment ($p < .001$), but has no significant difference with the satisfaction of a machine-grading system ($p > .05$). There is no significant difference between the satisfaction with a machine-grading system and final exam ($p > .05$). There is also no significant difference between the satisfaction with the variety of evaluations and the effectiveness of evaluations ($p > .05$).

Table 4.5 Mean and SD of Variables of Evaluation Systems (N=414)

	Mean	Std. Deviation
Variety of evaluation	5.55	0.982
Effectiveness of evaluation	5.55	1.047
Machine-grading system	5.55	1.099
Peer assessment	5.39	1.131
Help of feedback	5.64	1.029
Final exam	5.49	1.043
Overall satisfaction with evaluation systems	5.71	0.993

Table 4.6 Correlations Between Variables of Evaluation Systems (N=414)

	Variety of evaluation	Effectiveness	Machine-grading system	Peer assessment	Help of feedback	Final exam
Variety of evaluation	1					
Effectiveness of evaluation	.552**	1				
Machine-grading system	.444**	.522**	1			
Peer assessment	.495**	.539**	.510**	1		
Help of feedback	.554**	.494**	.457**	.523**	1	
Final exam	.504**	.530**	.523**	.526**	.467**	1
Overall satisfaction	.551**	.588**	.473**	.547**	.544**	.543**

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

Table 4.6 presents the correlations between variables of evaluation systems. All of the variables exhibited significant relationships with the overall satisfaction with evaluation. The overall satisfaction with evaluation systems has the highest correlation to the effectiveness of evaluation ($r = .588$, $p < .01$). The overall satisfaction also highly correlated with the variety of evaluation methods ($r = .551$, $p < .01$) and the quality of peer assessment ($r = .547$, $p < .01$). The overall satisfaction has comparatively low correlation to the quality of machine-grading systems ($r = .473$, $p < .01$).

Table 4.7 Multiple Regression of Variables of Evaluation Systems (N=414)

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.930	.242		3.840	.000		
Variety of evaluation	.156	.047	.154	3.281	.001	.554	1.805
Effectiveness of evaluation	.216	.045	.228	4.757	.000	.532	1.879
Machine-grading assessment	.042	.041	.046	1.027	.305	.596	1.678
Peer assessment	.132	.041	.151	3.211	.001	.552	1.811
Help of feedback	.164	.044	.170	3.710	.000	.578	1.730
Final exam	.153	.044	.161	3.471	.001	.567	1.765

Dependent Variable: Overall satisfaction with evaluation systems

Multiple regression analysis is conducted to see how much the variables can predict the overall satisfaction with the evaluation systems. Table 4.7 presents the multiple regressions of six variables of evaluation systems and the dependent variable is the overall satisfaction with evaluation systems.

The result shows that the combination of the independent variables significantly predicts the overall satisfaction with evaluation systems ($F(6, 407) = 68.753$, $p < .001$). Approximately 50 % of the variance in the overall satisfaction with an evaluation system can be explained by the predictors. The tolerances are larger than .10 and VIFs smaller than 10, so there is no multicollinearity for the predictors.
The variety of evaluation methods ($t(407) = 3.281$, $p < .001$), effectiveness of evaluation ($t(407) = 4.757$, $p < .001$), quality of peer assessment ($t(407) = 3.211$, $p < .001$), help of feedback ($t(407) = 3.710$, $p < .001$) and the quality of final exams ($t(407) = 3.471$, $p < .001$) are significant predictors in explaining the overall satisfaction with evaluation systems. The machine-grading assessment ($t(407) = 1.027$, $p > .05$) does not significantly contribute to the prediction of the overall satisfaction with evaluation systems.

Aspects Contributing Most and Least to Satisfaction with Discussion Forums

Table 4.8 shows the means and the standard deviations of the variables of discussion forums. Statistical tests of significant differences are conducted to figure out whether there are significant differences among the means of the variables.
The results indicate that the satisfaction with the organization of the discussion forums is significantly higher than the satisfaction with timely answers the instructors or assistants provide ($p < .001$) and the active participation of the students ($p < .001$).
There is no significant difference between the satisfaction with the organization of the forums and the help of answers ($p > .05$) or the help of the discussions among students ($p > .05$). There is also no significant difference between the satisfaction with timely answers and active participation and discussion among students ($p > .05$).

Table 4.8 Mean and SD of Variables of Discussion Forums (N=414)

	Mean	Std. Deviation
Good organization	5.68	0.990
Timely answers	5.49	1.020
Helpful answers	5.62	1.087
Active discussion	5.41	1.107
Helpful discussion	5.59	1.044
Overall satisfaction with forums	5.67	0.999

Table 4.9 presents the correlations between variables of discussion forums. All of the variables exhibited significant relationships with the overall satisfaction with discussion forums. The overall satisfaction with discussion forums has the highest correlation to the help of discussions among students ($r = .611$, $p < .01$). The overall satisfaction also highly correlated with good organization of forums ($r = .584$, $p < .01$) and timely answers from the instructors or assistants ($r = .584$, $p < .01$). The overall satisfaction has comparatively low correlation to the heated discussions among students ($r = .570$, $p < .01$).

Table 4.9 Correlations Between Variables of Discussion Forums (N=414)

	Good organization	Timely answers	Helpful answers	Active discussion	Helpful discussion
Good organization	1				
Timely answers	.553**	1			
Helpful answers	.520**	.622**	1		
Active discussion	.458**	.493**	.562**	1	
Helpful discussion	.487**	.499**	.506**	.613**	1
Overall satisfaction with forum	.584**	.584**	.574**	.570**	.611**

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

In addition, whether the instructors provide answers in a timely fashion has comparatively high correlation to the help of the answers ($r = .622$, $p < .01$). Whether the students participate in the discussion actively has a comparatively high correlation to the help of the discussion ($r = .613$, $p < .01$).

Multiple regression analysis is conducted to see how much the variables can predict the overall satisfaction with the discussion forums. Table 4.10 presents the multiple regressions of the five variables of discussion forums and the dependent variable is the overall satisfaction of discussion forums.

Table 4.10 Multiple Regression of Variables of Discussion Forums (N=414)

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.651	.228		2.857	.004		
Good organization	.226	.043	.224	5.251	.000	.604	1.655
Timely answers	.171	.045	.175	3.797	.000	.518	1.931
Helpful answers	.126	.043	.137	2.933	.004	.503	1.988
Active discussion	.133	.041	.147	3.234	.001	.529	1.891
Helpful discussion	.244	.043	.255	5.680	.000	.546	1.832

Dependent Variable: Overall satisfaction with discussion forums

The result shows that the combination of the independent variables significantly predicts the overall satisfaction with discussion forums ($F(5, 408) = 100.286$, p

< .001). Approximately 55 % of the variance in the overall satisfaction with discussion forums can be explained by the five predictors. The tolerances are larger than .10 and VIFs smaller than 10, so there is no multicollinearity for the predictors. All of the five variables, including good organization of the discussion forums ($t(408) = 5.251$, $p < .001$), timely answers from the instructors or assistants ($t(408) = 3.797$, $p < .001$), help of the answers from instructors or assistants ($t(408) = 2.933$, $p < .01$), active participation and discussion among students ($t(408) = 3.234$, $p < .01$) and the help of the discussion among students ($t(408) = 5.680$, $p < .001$) are significant predictors in explaining the overall satisfaction with discussion forums.

Aspects Contributing Most and Least to Satisfaction with Learning Environments

Table 4.11 shows the means and the standard deviations of the variables of learning environments. Statistical tests of significant differences are conducted to figure out whether there are significant differences among the means of the variables. The results indicate that every two variables of learning environments have no significant differences ($p > .05$).

Table 4.12 presents the correlations between variables of learning environments. All the variables exhibited significant relationships with the overall satisfaction with learning environments. The overall satisfaction with learning environments has the highest correlation to whether the forum is easily operated ($r = .663$, $p < .01$). The overall satisfaction also highly correlated with the method of submitting assignments ($r = .577$, $p < .01$) and the quality of video ($r = .560$, $p < .01$). The overall satisfaction has comparatively low correlation to the help of technical support ($r = .542$, $p < .01$). In addition, the method of submitting assignments has comparatively high correlation to whether the forum is easily operated ($r = .631$, $p < .01$). Whether the platform has a simple interface has comparatively high correlation to the method of submitting assignments ($r = .628$, $p < .01$)

Table 4.11 Mean and SD of Variables of Learning Environments (N=414)

	Mean	Std. Deviation
Simple interface	5.70	1.026
Technical support	5.68	0.977
High quality video	5.75	0.960
Assignments submitting	5.69	1.051
Easily operated forum	5.74	1.049
Overall satisfaction of environment	5.77	0.968

Table 4.12 Correlations Between Variables of Learning Environments (N=414)

	Simple interface	Technical support	High quality video	Assignment submitting	Easily operated forum
Simple interface	1				
Technical support	.448**	1			
High quality video	.498**	.438**	1		
Assignment submitting	.628**	.439**	.572**	1	
Easily operated forum	.579**	.540**	.552**	.631**	1
Overall satisfaction of environment	.552**	.542**	.560**	.577**	.663**

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

Multiple regression analysis is conducted to see how much the variables can predict the overall satisfaction with the learning environments. Table 4.13 presents the multiple regressions of the five variables of learning environment and the dependent variable is the overall satisfaction with learning environments.

The result shows that the combination of the independent variables significantly predicts the overall satisfaction with learning environments ($F(5, 408) = 98.279$, $p < .001$). Approximately 54 % of the variance in the overall satisfaction with learning environment can be explained by the five predictors. The tolerances are larger than .10 and VIFs smaller than 10, so there is no multicollinearity for the predictors.

All of the five variables, including the simple interface of MOOC platforms ($t(408) = 2.690$, $p < .01$), the help of technical support ($t(408) = 4.553$, $p < .001$), the quality of video ($t(408) = 3.977$, $p < .001$), the methods of submitting assignments ($t(408) = 2.350$, $p < .05$) and the ease of operating the forum($t(408) = 6.630$, $p < .001$) are significant predictors in explaining the overall satisfaction with learning environments.

Table 4.13 Multiple Regression of Variables of Learning Environments (N=414)

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.742	.238		3.118	.002		
Simple interface	.116	.043	.123	2.690	.007	.530	1.885
Technical support	.185	.041	.186	4.553	.000	.664	1.507
High quality video	.174	.044	.173	3.977	.000	.588	1.700
Assignment submitting	.106	.045	.115	2.350	.019	.461	2.169
Easily operated forum	.298	.045	.323	6.630	.000	.469	2.131

Dependent Variable: Overall satisfaction with environments

Aspects Contributing Most and Least to Satisfaction with Overall Satisfaction

Table 4.14 shows the means and the standard deviations of the overall satisfaction with different parts and the overall satisfaction with MOOCs. Statistical tests of significant differences are conducted to figure out whether there are significant differences between the overall satisfaction with MOOCs and the satisfaction with different parts.

Table 4.14 Mean and SD of Overall Satisfaction (N=414)

	Mean	Std. Deviation
Overall satisfaction with content	5.78	1.048
Overall satisfaction with teaching methods	5.72	1.033
Overall satisfaction with evaluation	5.71	0.993
Overall satisfaction with discussion forum	5.67	0.999
Overall satisfaction with environment	5.77	0.968
Overall Satisfaction with MOOCs	5.83	0.853

The results indicate that the overall satisfaction with MOOCs is significant higher than the satisfaction with teaching methods ($p < .01$), the satisfaction with evaluation systems ($p < .01$) and the satisfaction with discussion forums ($p < .001$), but has no significant difference with the satisfaction with course content ($p > .05$) and satisfaction with learning environment ($p > .05$).

Table 4.15 presents the correlations between the overall satisfaction with MOOCs and satisfaction with other parts. All of the variables exhibited significant relationships with the overall satisfaction regarding MOOCs. The overall satisfaction has the highest correlation to the overall satisfaction with the learning environment ($r = .655$, $p < .01$). The overall satisfaction also highly correlated with overall satisfaction with teaching methods ($r = .615$, $p < .01$) and the overall satisfaction with evaluation

systems (r = .593, p < .01). The overall satisfaction has comparatively low correlation to the overall satisfaction with discussion forums (r = .569, p < .01). In addition, the overall satisfaction with course content has comparatively high correlation to the overall satisfaction with teaching methods (r = .671, p < .01).

Table 4.15 Correlations Between Overall Satisfaction and Satisfaction with Different Parts (N=414)

	Overall satisfaction with content	Overall satisfaction with methods	Overall satisfaction with evaluation	Overall satisfaction with forums	Overall satisfaction with environment
Overall satisfaction with content	1				
Overall satisfaction with methods	.671**	1			
Overall satisfaction with evaluation	.555**	.602**	1		
Overall satisfaction with forum	.618**	.600**	.664**	1	
Overall satisfaction with environment	.601**	.586**	.661**	.609**	1
Overall satisfaction with MOOC	.588**	.615**	.593**	.569**	.655**

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

Multiple regression analysis is conducted to see how much the satisfaction of different parts can predict the overall satisfaction with MOOCs. Table 4.16 presents the multiple regressions of the overall satisfaction of different parts and the dependent variable is the overall satisfaction with MOOCs.

Table 4.16 Multiple Regression of Overall Satisfaction with MOOCs (N=414)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.563	.199		7.872	.000		
Overall satisfaction with content	.109	.041	.133	2.665	.008	.451	2.219
Overall satisfaction with methods	.178	.041	.216	4.317	.000	.453	2.208
Overall satisfaction with evaluation	.109	.044	.126	2.469	.014	.432	2.317
Overall satisfaction with forum	.069	.043	.080	1.595	.112	.444	2.252
Overall satisfaction with environment	.279	.044	.316	6.388	.000	.460	2.172

Dependent Variable: Overall Satisfaction with MOOCs

The result shows that the combination of the independent variables significantly predicts the overall satisfaction with MOOCs ($F(5, 408) = 95.438$, $p < .001$). Approximately 53 % of the variance in the overall satisfaction with MOOCs can be explained by the five predictors. The tolerances are larger than .10 and VIFs smaller than 10, so there is no multicollinearity for the predictors.

The overall satisfaction with course content ($t(408) = 2.665$, $p < .01$), overall satisfaction with teaching methods ($t(408) = 4.317$, $p < .001$), overall satisfaction with evaluation systems ($t(408) = 2.469$, $p < .005$) and overall satisfaction with the learning environment ($t(408) = 6.388$, $p < .001$) are significant predictors in explaining the overall satisfaction with MOOCs. The overall satisfaction of discussion forums ($t(408) = 1.595$, $p > .05$) does not significantly contribute to the prediction of the overall satisfaction with MOOCs.

4.3.3. Reliability Analysis of the Questionnaire

The internal consistency of reliability of the questionnaire is assessed by calculating Cronbach's Alpha. The alpha reliability was highly accepted (a = 0.97) which indicates the instruments are reliable in this study. The alpha of the questionnaire and different parts are presented in Table 4.17.

Table 4.17 Reliability Coefficient of the Questionnaire (N=414)

Dimensions	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Course content	.868	.868	6
Teaching methods	.847	.848	5
Evaluation system	.882	.883	7
Discussion forum	.879	.880	6
Learning environment	.879	.879	6
Overall	.966	.966	31

4.4. Adaptation to The Online Learning Environments

The third group of question of this study is, how do Chinese learners adapt to the online learning environment and achieve the goals they set for themselves in MOOCs? Analysis of the data based on the grounded theory interprets the process that Chinese learners used to adapt to the online learning environment. The first step is open coding, through which six categories are developed. The second step is axial coding, through which a core phenomenon is identified. The last step is selected coding, through which the explanation is generated. The results show that, in order to adapt to the online learning environment, on the one hand, the Chinese users gather and establish many online learning communities in which they can discussion and help each other; on the other hand, as an individual, Chinese users have their own strategies to cope with online learning difficulties and adapt themselves to the different learning culture.

4.4.1. The Case as a Whole: Establish Learning Communities

With the rapid development of MOOCs, more and more Chinese learners are interested in this new mode of online learning. They are not only engaged in MOOCs by themselves, but also seek cooperation and communication with others. With this background, Chinese learners establish many learning communities in which they can obtain more information about MOOCs, exchange opinions and share experiences. With the help of these learning communities, Chinese users adapt to the online learning environment more easily and quickly.

MOOC Academy

Guokr.com was established by a Chinese science company that is devoted to promoting science and technology and providing responsible and interesting scientific knowledge. In 2013, “MOOC Academy” (mooc.guokr.com) was established by Guokr Company and became the biggest learning community of Chinese MOOC users. Up to now, MOOC academy has attract more than one million Chinese users.

MOOC Academy has established cooperation with many MOOC platforms, such as

Cousera, edX, Udacity, FutureLearn、iversity and several Chinese MOOC platforms such as Xuetangzaixian. In 2014, iversity introduced MOOC academy and Chinese online learners with the article “Meet Our Online Learning Friends from China: Guokr MOOC Academy”. MOOC academy helps publicize MOOCs and recommends valuable MOOCs to Chinese learners. In addition, it helps Chinese learners overcome difficulties and improve the quality of their learning. MOOC Academy provides several main services to Chinese learners.

First, MOOC Academy recommends courses to Chinese learners and Chinese learners can search for all kinds of MOOCs according to their need and interest. There is a block “MOOC” on the homepage of MOOC Academy. A number of popular courses that will be provided in the coming days are recommended in this block. When the learners are interested in the courses recommended, they can click the course link and obtain more detailed information. For example, in January 2016, the course “Principles of Economics with Calculus” was recommended. When the learners click the course link, they see that the course is from the California Institute of Technology on the platform edX and the teacher is Antonio Rangel. The course begins on the 5th of January 2016 and will last ten weeks. There is also a short description and comments about the course underneath. The description introduces the content of the course briefly and the comments are from the learners who have enrolled in the course. In the comments, the learners discuss their experience of the course. They usually discuss the quality and difficulty of the course and also the basic knowledge needed. Sometimes they also discuss details about the course such as the teaching style of the teacher, the quality of the video, the difficulty of the homework and so on. These comments provide valuable opinions and suggestions to learners who want to take the course. Some students also upload and share their notes for the course. If learners want to enroll in the course, they can click the link in the middle of the page “go to the course” and open the page of the course directly. With this service, it is very convenient for learners to enroll in a course they want.

In addition, Chinese learners can also search for the courses they want to take in this block. There are four categories, language, content, platforms and universities. That means learners can search courses according to the language the course uses, the area or content of the course, the platforms and the universities that provide the courses.

Secondly, MOOC Academy provides a community in which Chinese learners can

post and discuss questions about MOOCs with other learners. There are several main blocks in the community. In the block of “activity”, MOOC Academy often issues announcements and publicizes the activities they organize. Many of the activities provide scholarships to attract more students to attend and encourage them to finish more MOOCs. In the block of “ask questions”, the learners can post their questions about MOOCs and other learners will answer them. In the block of “experience”, the users introduce their feelings, experiences and what they obtained from MOOCs. There are also other blocks such as “MOOC” in which the users discuss questions about the courses, “speech” in which many famous speeches are recommended.

At last, MOOC Academy provides an App “MOOC Classmate”, in which the learners can establish or attend a “study room” and communicate with others, especially those learners who enroll in the same courses. In the study room, the learners can discuss the assignment with other students and share their notes and resource.

Through these several functions in MOOC Academy, Chinese learners can easily choose a course they need and find other classmates to study and communicate together.

EduInfinity Translation Group

EduInfinity Translation Group (EduInfinity) is an organization that provides translations of MOOCs without payment. Its website provides an introduction to the organization:

“EduInfinity Translation Group (EduInfinity), initially founded on Aug 2nd, 2013, is a non-profit volunteer organization that provides Chinese captions for MOOCs. Up to now, we are a big family with approximately 1000 members and contribute to translating more than 90 courses for Coursera, edX and other MOOC platforms; besides another dozens of courses' translations are in process. Furthermore, not only English-to-Chinese we are working on, but also traditional-to-simplified Chinese, French-to-Chinese, Russian-to-Chinese and Japanese-to-Chinese.” (http://www.edu-infinity.org/english-version.html)

In order to provide translation with high quality, EduInfinity Translation Group established a strict translation standard and procedure to control the translation quality. EduInfinity set up one translation group in order to translate one course, which is composed of one group leader and several members. The leader needs to be examined

by senior members of EduInfinity first. After he is appointed leader, he is responsible for the translation process. He needs to coordinate with individuals and distribute translated assignments. He needs to supervise translations and improve their quality. After the translation is finished, there is also procedure for checking and revising before it is issued.

Through these measure, EduInfinity is able to provide accurate translations for the course. With the help of translation and the subtitles on videos, Chinese learners can take MOOCs in other languages more conveniently and easily. The members of the organization are both MOOC learners and translation volunteers. Through the translation activities, they obtain more knowledge, improve language skills and have more chances to make friends in various fields.

MOOC Associations of Chinese Universities

Many MOOC associations were established in Chinese universities and have attracted many students who are interested in MOOCs. The members of the associations have regular meetings. They organize study groups for MOOCs; they discuss the content and assignments; they share their achievements and encourage each other. In addition, they publicize MOOCs in their universities and help beginners take course on MOOC platforms. Some influential associations also invite famous professors to interact with members and cooperate with institutes to organize events.

The MOOC Association of Zhejiang University of Technology, the first MOOC association in China, was founded in August 2013 and soon attracted about two hundred members. The members in the association also established their own translation group. Cooperating with EduInfinit, they have translated a famous course from Harvard University, “China”. They also invited a famous professor, Dansheng Zhu, the instructor of “History of Art” from Peking University to interact with about six hundred students from Zhejiang University of Technology. In March 2014, MOOC Association of Zhejiang University of Technology united with dozens of other MOOC associations and established a union named “Study Hard Union”. As more and more members put effort into the association, this MOOC association has become one of the most successful and influential MOOC associations in China.

There are also many other MOOC associations such as the MOOC association of Beijing Normal University (Zhuhai), MOOC association of Jiangxi University of

Finance and Economics and MOOC association of Tsinghua University and so on. These MOOC associations aim to promote the development and popularization of MOOCs and influence more students to engage in new online learning mode. With the spread of MOOCs, more and more MOOC associations will be established and they will have a much more positive effect on the students.

4.4.2. Learning Strategies of Individuals

Every interviewee is a part of the case, which is composed of all the Chinese learners who take MOOCs. However, as an individual who is interested in MOOCs, the interviewees have their own unique qualities and characters. In the process of learning online, they develop their own learning methods and strategies that make them well adapted to the online learning environment.

Online Learning Experience of Chinese Learners

All of the seven interviewees and more than 99% of the participants of the questionnaire have online learning experience before they took courses on MOOC platforms. Most of them take open online courses on the platform "Wangyi Open Courses". Compared to traditional classroom teaching, online learning has its own advantages. One interviewee thinks he can take online open courses any time he wants and without any pressure. One interviewee thinks that it is a good way to keep learning after leaving campus. One interviewee likes to listen and watch the videos used in online courses. Through attending these open courses, users obtain rich and good experience about online learning and promote themselves to experience a new model of online learning.

The following data describe the online learning experience of the interviewees:

"Before taking MOOCs, I have attended courses on the platform "Wangyi Open Courses", such as 'Listening to Music' by Yale University. This course is from an authoritative university and the content is rich and plentiful. It also has Chinese subtitles that help me understand the content well. I can watch the videos freely and without any pressure. It is really a good way for autonomic learning. This course

brought me a good experience of online learning. ” (Interviewee 1)

“After I graduated and left university, I wanted to keep learning. I attended ‘Wangyi Open Courses’. I choose the courses I like and watch the videos in my free time. This is a very good way for a staff that needs to work during office hours to keep learning. ”(Interviewee 2)

“In 2011, I started attended ‘Wangyi Open Courses’. Compared to traditional classes, online learning is more convenient for me. When I watch the videos of a course, I can stop, fast forward or fast reverse according to my understanding of the content. Compared to a book, videos have sound and image and attract me more. Online learning provides me a new learning method and has changed my learning habits. It is a good aid for my studies. ” (Interviewee 4)

With that experience of online learning they obtain before taking MOOCs, Chinese learners more readily accept MOOCs, the new form of online leaning. Compared to normal online open courses, MOOCs have particular advantages and promote learners’ persistence in learning and completing the courses. In the questionnaire, of all the 414 respondents, more than 60% chose MOOCs because the videos are made specially for online courses and are high quality. MOOC platforms have more rich and first-rate resources; more than 40% take MOOCs because MOOCs have evaluation systems which promote learning and MOOCs provide discussion forums through which learners can communicate with others. The evaluation systems and discussion forums are particular feature of MOOCs that make MOOCs separate from normal open online courses.

The following comments from the interviewees also illustrate the particular features that promote online learning through MOOCs:

“When I take MOOCs, I will first review the content and my notes, and then I will do the homework. I can also learn much from the feedback of the assignments. The process of completing homework, evaluating and obtaining feedback is also important to learning and will promote students to finish their courses. While normal open online courses have only videos and no assignments, evaluation or interaction, the

learning effect is not so good as MOOCs. ” (Interviewee 2)

“The MOOC videos are made specially for online courses and are high quality. Sometimes it is from a real class and has questions and answers, which is attractive. When I have questions, I can also communicate with others in the discussion forum, this kind of interaction is very helpful for me to finish the courses. In addition, the exam and certification also stimulate me to finish the courses. ” (Interviewee 3)

“MOOCs have rich learning resources from first-class universities through which I can easily find what I need. MOOCs have a complete teaching process that is similar to a traditional class. I need to finish assignments and take the exam, which make me feel the leaning process is more interesting. When I finish some programming assignment for Computer Science courses, it is really helpful for me to thoroughly know about the knowledge and skill of programming. In addition, we discuss much about the programming in discussion forums through which I can also make big progress. A normal open online course is only the part of video of a MOOC and when I take open courses I feel like I am watching a movie rather than I am learning.” (Interviewee 4)

English Learning Strategies

According to the questionnaire, more than 60% use foreign MOOC platforms such as Coursera, edX and future learn. The language used in most of the courses on these platforms is English, which means that Chinese learners must study in a second language. All of the seven interviewees use foreign language MOOC platforms such as Coursera and edX and they take many courses in English. All the interviewees take many measures to improve their language ability and adapt to the different learning context. They practice listening while watching the course videos; they take notes in English and study all the new words and translate them; they expand their cultural backgrounds through the courses. With these strategies, their English improves a lot when they take MOOCs.

The interview data describe the English learning strategies the interviewees use when they take the courses:

“I am weak in English especially listening. At first when I take a MOOC, I cannot

understand. But I do not give up. For example, when I took the course 'Introduction to Logic' provided by Stanford University, I did not know most of the specialized words used in the course and could not understand the content. Then I took notes or downloaded the English subtitles and choose the new words one by one and translated them. After that, I could understand the content. Then I listened to the course again to improve my listening ability. Because I know the words and the content now, it is a little easier to understand. When there are some sentences I cannot understand, I will keep listening to them several times. After this course, I will take several other courses in the same way. Then I believe my English ability will improve a lot." (Interviewee 3)

"I like music and most of the courses I take are about music. When I watch the videos, if I cannot understand the content by listening, I will stop and read the subtitle to help myself understand. There are some special words about music, for those I use a specialized dictionary. I sometimes feel it difficult because of my lack of background of music and culture, so I often listen English music and watch English films. In addition, I often read news of pop stars on some English websites. " (Interviewee 1)

"When I take science and engineering courses, most of the time, I can understand. But when I take humanities courses, sometimes I feel it is difficult to understand perhaps because of the big difference of Chinese and Western culture. In order to improve my English, I use apps such as 'Duolingo' and often listen to English broadcasts. In addition, I attend English study groups in which we study together. We often summarize what we have learned and supervise each other. This is an effective way for me." (Interviewee 2)

In order to improve English and help others to understand the content of the courses, several interviewees also attend "EduInfinity Translation Group" and translate the courses.

"I have attended the EduInfinity Translation Group and translated three courses: 'Jazz Improvisation' 'Developing Your Musicianship' 'Exploring Beethoven's Piano Sonatas'. After I translated them, there are two other students who are responsible for revision and checking. In the process, I need to discuss with them about the use of

special words and the structure of the sentences. In the process, my translation ability improved a lot. In addition, sometimes I need to know the background of the knowledge. After I translate, my knowledge related to the courses is broadened and I have deep understanding of the content. ” (Interviewee 7)

Time Management and Self Control Strategies

More than 20% of the respondents to the questionnaire are students and most of the other 80% are MOOC learners working in various trades. Five of the seven interviewees are students and one of the interviewees is a magazine editor. Only one of the interviewees is retired and has enough free time. Most of the learners take MOOCs in their limited spare time. Interview participants were asked how they arrange their time and finish MOOCs in limited spare time. Five of the seven interviewees make a detailed plan and budget their limited time in order to accomplish MOOCs, which represents their ability to apply time management strategies. Their strategies of budgeting time include making detailed and organized plans, using every spare minutes, scheduling time for both long-term and short-term goals and never procrastinating. In addition, they use different software or electronic tools to help them make an effective plan, such as “Timeful”, Excel, Notebook.

The following comments from the interviewees illustrate the time management strategies they use:

“I am a college student and usually I have stable spare time every semester. I will plan carefully before choose to start a MOOC. I have a general plan every month and have a very detailed plan for every week and every day.

Because every weekday I also have courses in college, I fragment my spare time and use it as effectively as possible. For example, I have a little time between lunch and the afternoon. I use this time to watch a video from a MOOC. When I have no course in college in the evening, I will finish an assignment for MOOC.

In order to use my time effectively and finish the assignments of a MOOC on time, I have a very detailed plan every day. I have specific tasks every fifteen minutes of my spare time.

I have software “Timeful” running on my mobile phone, which is recommended by Prof. Dan Ariely, the instructor of the course “A Beginner's Guide to Irrational

Behavior". With this software, it is very convenient to make a detailed plan every day." (Interviewee 1)

"I need to stay in the office on weekdays. According to my spare time, usually I enroll in three MOOCs at the same time. I will make an overall plan according to the length of MOOCs in which I enroll. Then I make a detailed plan every week. I have a calendar to write down what I should do to finish the courses in my spare time." (Interviewee 2)

"Usually I have classes during the day and have no classes in the evening. So I use my spare time in the evening to watch videos from MOOCs and I focus my attention on the assignments especially the difficult assignments on weekends. At the weekends I have enough time and I can concentrate on the assignments and finish them efficiently. In addition, whenever I get assignments, I tend to finish them on time and without delay". (Interviewee 6)

There are still two other interviewees who also make detailed plans. One uses the software "Notebook" on a mobile phone and the other writes down his detailed arrangement in Excel. Different interviewees use different plans and tools to arrange time in different ways, but all of them have the ability of self-analysis and make a personal plan. Through these time management skills, the interviewees are able to finish MOOCs and achieve the goals they set for themselves.

Online Learning Strategies

About 20% of the respondents to the questionnaire have finished five MOOCs or more and most of the interviewees have finished dozens of MOOCs. One of the interviewees even finished more than sixty MOOCs in about one year. Online learning is self-paced and MOOCs have special characteristics. When they engage in online learning, the interviewees explore their own learning methods and build their own learning concept. From the beginning, when they choose a MOOC and start, later watch videos and take notes, finish assignments and communicate with others in forums or groups, in every process they develop their own learning strategies which is very helpful for them to adapt to the online learning environment.

Choose a MOOC and Start

All of the interviewees have specific purposes before they enroll in MOOCs. According to their purposes, they have a comprehensive plan regarding the MOOCs they will take. There are many famous MOOC platforms from several countries and those platforms provide numerous and diverse courses which almost cover all fields of study. It is not easy to find a course they want because there are so many platform and fields. “MOOC Academy” and a website “Course Map”, summarize all the courses from famous and common platforms and provide comments from other students who have finished the courses. Six of the seven interviewees like to search courses first on these two summarized websites and get overall information about the courses they want to take. When they are interested in one course and want to enroll in it, they will develop a profound understanding of the course. They will read the course syllabus or outlines carefully, know when the course starts and finishes, identify the brief content of the course and evaluation system of the course. In addition, they will read the comments from other students and get more information. The comments describe the feeling and experiences of other students who have taken the course and they are very helpful for understanding the details of the course, such as the style of the teacher, the difficulty of the homework, the form and content of the examination and so on. After that, they will consider whether the course is suitable for them and meets their needs. One interviewee has her favorite teachers and courses from particular university. She often seeks courses provided by those teachers and universities periodically. In sum, they have a very serious attitude when choose a course and do a lot of preparations before they enroll and start the course.

The interview data show their preparation work when they want to enroll in a MOOC: “In order to choose a MOOC effectively from various types courses on all kinds of platforms, I usually do some research on MOOC Academy and read the comments from other students. Those comments are valuable information about the course for me. In addition, in order to provide other students with suggestions, every time I finish a course, I write my comments online.” (Interviewee 1)

“I want to expand my specialized knowledge and the MOOCs I enroll in are related to my major. I often read the course comments on “MOOC Academy” and “Course

Map". In addition, before I enroll in a MOOC, I try to know more about content of the course and judge whether the course meets my needs." (Interviewee 2)

"I often get recommendations for MOOCs in my email. Sometimes I search for interesting courses. I also track courses provided by my favorite teachers or universities. For example, the teaching style of Delft University of Technology is very attractive and I appreciate Prof. Jiang Bian from Peking University very much, so I often search for courses provided by this university and this teacher." (Interviewee 3)

"My major is Biology. My purpose in taking MOOCs is to obtain more knowledge about computer science and later apply it to Biology. In addition, I am interested in Psychology. So I enroll in MOOCs mainly in these two fields. After I get a general understanding of the course, I usually try to watch the video. If the course is not suitable for me, I will quit." (Interviewee 4)

Take Notes and Review

After the interviewees enroll in a MOOC, in order to acquire knowledge and finish the course successfully, they develop their own learning strategies when they watch the videos. Five of the seven interviewees take detailed note when they watch videos and the other interviewees write down some key points and difficult points of the content.

Because when are watching the videos, learners can stop and move backwards freely, it is easy to write down the content of the courses. Learners can make screenshots from videos and save the key points or summarizations from the teacher. Sometimes interviewees download the subtitles or the courses that are presented as a TXT file which have summarized the key and difficult points. Sometimes they download the PPT of the courses and in order to review a summarization.

At last they organize the material and have their own notes. Two of the interviewees even order and arrange their notes and upload them online. The process of making notes is helpful for the learners to acquire the knowledge and improve their study. Those notes online can also provide help and reference to other leaner.

The interview data show the experience of taking notes:

“One time, I uploaded the notes for the course ‘Marriage and the Movies: A History’. In order to provide others perfect notes, I must first translate my English notes to Chinese and then revise them several times to improve the quality of the notes. Through this process, I learn much more and improve a lot. ” (Interviewee 1)

“Usually when I watch the videos, I concentrate on listening and reading. After class when I review, I will download the subtitles or the course and organize the material. At last, when I finish and get my own notes, I feel I have acquired the knowledge and know more about the content.” (Interviewee 3)

The interviewees take notes in two forms, electronic notes and traditional notes. Every form of note taking has its advantages and disadvantages. When learners take electronic notes, they are able to use special software for taking notes, such as EverNote, OneNote and so on. Using the softwares’ functions, learners can take notes conveniently. However, taking traditional paper-pencil notes has its special advantages. For example, in some science courses, there are many complicated equations, which are not easily typed into a computer and it save much time to simply write it down. Sometimes interviewees combined these two ways of taking notes.

An interviewee provides his experience when taking notes:
“I use both electronic notes such as ‘EverNote’ and paper-pencil notes. I took a course, ‘The Red Chamber Dream’ from National Taiwan University that has no textbook. I took notes by typing. When I took the course, ‘Linear System Theory’, I took traditional notes because there were so many equations in varied forms and writing them down was convenient compared to typing. ” (Interviewee 2)

“I always take notes when I watch the videos. I use ‘Notpad’ to take notes sometimes. It is convenient. Sometimes I search for notes from others. Even if there is only an outline of the course summarized by other leaners, they are helpful.” (Interviewee 6)

Understanding Content and Finishing Assignments

In order to finish a MOOC successfully, learners must finish the assignments on time. According to the questionnaire, about 20% of Chinese learners have quit a MOOC

because they could not finish the assignment on time. Two interviewees also had the experience that the course they enrolled in was too difficult so they quit. After watching the videos and understanding the content, learners must put extra efforts into accomplishing the assignments. In this process, the interviewees develop their own strategies.

According to the interviewees, most of the assignments in MOOCs are closely related to the course content. They usually review the course content in time and when they get the assignments, they tend to prepare enough time for them before the deadline. They actively seek background knowledge and resources needed for understanding the content and completing assignments. When they have some difficulties with the assignment, they have the confidence to resolve them and sometimes seek help from others.

Most of the instructors of MOOCs provide resources for the course, such as electronic textbooks, papers and articles related to the content, websites and so on. Those materials are very helpful for understanding the content. In addition, the interviewees actively search resources by themselves. Some interviewees obtain background knowledge or specialized vocabulary from Google or Wikis. Some interviewees buy original English textbooks.

Before they try to finish assignments, the interviewees usually first review the course and read the notes. If there are some doubtful points or some points they cannot understand, they first try to make sure of the points and develop deep and full understanding. In this process, some search engines such as Google and Wikis and all kinds of materials help a lot. Also, they often communicate with others or seek help in the course discussion forums. The discussions there are organized around the course content and the assignments, which are very helpful for resolving problems.

The interview data show how the interviewees search resources and finish the assignments:

“My major is economics and I take many MOOCs about music. So I need to get much background information about music. I often search for some valuable material about music in Google or Wiki. One time Amazon introduced a book ‘all you need to know about the music business’ and I thought the book would be very helpful for my course so I bought it. In addition, I also bought some Chinese books that are helpful for

MOOCs. When I have much more background knowledge of the course, I feel it is easier to finish the assignments." (Interviewee 1)

"I often search the background knowledge from Wiki. Usually I look up a word I don't understand in an English-to English dictionary. I took a course, 'Introduction to Classical Music', from Yale University and the teacher introduced many old musical instruments. I knew nothing about them at first. I looked them up in dictionary and learned what they are. Then I searched for information in Wiki and learned more about them, such as what they look like and how people use them." (Interviewee 3)

"When I have difficulties when doing assignments, I like to go to the course's discussion forum and read the discussion there. In the discussion forum, many students are good at the course content and they like to help others. Usually I can be enlightened and get some good ideas to resolve my problem." (Interviewee 5)

There are still two interviewees who emphasized the importance of finishing assignments as early as possible and not starting to do them before deadline. For example, one interviewee said: "I try to finish assignments according to my schedule. I never postpone them, so I always have enough time for difficult assignments." (Interviewee 6)

Use of Discussion Forums

Almost every MOOC has its own discussion forum that distinguishes it from other online open courses. According to the questionnaire, about 40% of the respondents choose MOOCs rather than other open online courses because MOOCs has their own discussion forums. In the discussion forums, students who have enrolled in the course can discuss all of the questions about the course with others, such as understanding of the content, the ways to resolve a problem and how to finish the assignments.

According to the interview data, when interviewees have questions about the course, seeking help in the discussion forum is an effective way to find answers. The discussion forum is divided into several sections according to the different function of each section. For example, usually there is one section for learners to communicate problems about the content, one section for learners to discuss the assignments and so

on.

The questions posted in the discussion forum are sometimes answered by the instructor or assistant and are sometimes answered by active learners. Most of the time learners participate in the forum actively and provide heated discussion, especially when there is a difficult point in the content and many learners are attracted by the discussion. Some interviewees are able to learn a lot and obtain much help simply through reading the discussions. The learners come from many countries and have different educational backgrounds. Through exchanging thoughts and idea with them, interviewees have good opportunities to broaden their minds and widen their vision.

The interview data show the help that the interviewees obtain from discussion forums: "I often read the discussion in MOOC forums and the discussion is very helpful for studies. There are many very active students and whenever there is a question, they provide answers or discussion soon. I seldom ask a question in the forum, because difficult points are similar for other students and I can get what I want simply through reading the discussion." (Interviewee 1)

"Learners cannot tell others assignment answers directly in the discussion forums. They can only enlighten others. So reading discussions is very helpful. I must try to understand other learners' ideas and, at last, come to the answer by myself. This process is really helpful especially for problems in Science courses." (Interviewee 3)

"Every MOOC I have enrolled in has a discussion forum. Several courses, such as 'Introduction to Forensic science' from Coursera, 'An Introduction to Interactive Programming in Python' from Coursera, 'Nutrition Around You' from edX and so on, have especially heated discussion in their forum. Usually I read all the discussion in the forum, which is really helpful for me to develop a deep understanding of the content." (Interviewee 4)

Two interviewees also hold the view that perhaps because the learning culture of Chinese students is different from students from other countries. Some English MOOCs have attracted more discussion than Chinese MOOC forums. One

interviewee said:

“It is helpful to discuss in forums. Through communicating with learners with different backgrounds, I am inspired a lot. Some English MOOCs have more heated discussion in the forum, especially in some Science course. ” (Interviewee 5)

Communication and Cooperation

The interviewees not only contribute actively to discussions in MOOC forums, but also seek opportunities to communicate and cooperate with other MOOC learners through a MOOC learning community, social software and social networking sites.

The most common means the interviewees use to communicate with others is attending an established online study group. With the development of social software and instant message applications, such as Facebook, Tencent QQ and so on, it is easy and convenient to communicate with others through these interactive tools. MOOC learners easily establish an online study group using software services and attract others to participate. In study groups, learners share resources and electronic material; they study together and discuss difficult points; they supervise and encourage each other. One interviewee often makes summarizations of the course work and share it with others.

In addition, learners also communicate with others through online learning communities such as MOOC Academy, social networking sites such as Sina Weibo and online forums such as Baidu Paste Bar. In such communities, learners share information, resources and post MOOC comments.

These study groups and online learning communities often arrange offline meetings and organize offline activities. Through attending such activities, participants are able to share views and experiences, strengthen exchanges and cooperation and enhance the quality of online learning.

The interviewees also benefit a lot from study groups and online communities. One said:

“I am interested in music and I can make many friends through attending study groups. I attend discussion groups on Facebook; I also share music knowledge and music courses through social software, such as QQ. I also attend translation groups and help translate music courses. I learn a lot through communicating with others.”

(Interviewee 1)

“I think the discussion in study groups is really helpful for resolving difficult points. When I took the course, ‘History of Chinese Architecture’, I attended an online study group. There were several majors in Architecture in the study group and it was really helpful to discuss problems with them. Also, we exchanged pictures of old architecture and electronic resources.” (Interviewee 3)

“I often attend study groups online and communicate with others about the course in which I enrolled. Discussing with others helped me understand the content deeply and saved me much time. It is easy for me to find some study partners who have a common goal in the study group. In addition, I gain fresh and different learning experience, which is different from traditional classroom study.” (Interviewee 5)

Besides their communication with other learners, interviewees also try to interact with the MOOC instructors in discussion forums, through social platforms or email. Two of the interviewees talked about their experience of interacting with instructors online and they feel it is easier and more pleasant to contact an instructor online rather than interacting with an instructor face-to-face. They always feel pressure when discussing questions with teachers face-to-face. So to some Chinese learners, online social platforms promote interaction between instructors and learners and help them develop a new kind of relationship with instructors. One interviewee said:

“When I took the course exam for ‘Micro Chemistry’ provided by Dr. Dawei Li from National Chiao Tung University, I found some errors. Then I contacted Dr. Li on the social platform “Sina Weibo”. To my surprise, Dr. Li replies soon and we agreed that if later I can still find some errors, I could be the assistant for this course. Later I became the assistant. When I was a college student, I always feel pressure when contacting the teacher. I really had a pleasant experience this time when I interacted with instructors online.” (Interviewee 3)

Achievements of Chinese Learners

According to the questionnaire, about 20% of the respondents have finished five MOOCs or more. Six of the seven interviewees have finished dozens of MOOCs and

the other one has finished sixteen MOOCs. Through taking the courses, Chinese users obtain much knowledge and improve skills, develop their interests and hobbies and make many friends. Also, they improve English, promote communication and cooperation with others and develop online learning strategies.

More importantly, through taking these courses, the interviewees arrange time more efficiently and develop good time management strategies; they improve their learning ability and their self-management; they obtain great confidence and a sense of achievement.

Interview data present the achievement they obtain from MOOCs:

"Through MOOCs, I experienced the first-class instruction from famous universities. I am interested in Music and most of the courses I take are from ‘Berkleye College of Music’. The instructors are authoritative professors and the learning and teaching resources are valuable. I obtained a totally new and fantastic learning experience." (Interviewee 1)

"When I was a college students, I knew I should study hard to pass my exams, but I didn't really like learning. After I took courses on MOOC platforms, I feel no pressure at all and I learn actively. I obtain much knowledge and experience the pleasure of learning. I am good at managing my life and obtaining better sense of achievement. " (Interviewee 3)

"I obtain not only much knowledge from MOOCs. More importantly, I develop better study habits than before. Because learning online is self-paced and no one supervises me, I must coordinate online learning and my on-campus study. I improve my self-management abilities in the process. I learn actively and I manage myself better." (Interviewee 4)

"After I finished so many courses on MOOC platforms, I obtained greater confidence and I am able to learn better by myself. At the same time, I feel so interested in Western education. Later, I improved English and contacted universities in America and at last I transferred to a university in America successfully." (Interviewee 5)

4.4.3. Findings and Theory Generation

Through open coding process, six theoretical categories of have been developed which illustrates the way Chinese learners adapt to the online learning environment. The six theoretical categories are: establishing learning communities, online learning experience, English learning strategies, time management strategies, online learning strategies and cooperative strategies. Their properties and examples were summarized in Table 4.18.

In the axial coding process, a core category or phenomenon is selected and the relationships between the core category and other categories are identified. In this study, the purpose of the third questions is to investigate the process that Chinese learners adopt for the online learning environment and to complete MOOCs. According to Creswell (2012), the core category should be in the center and all other categories relate to it and the name used to describe it should be abstract. Based on the analysis in open coding process, all the categories are related to the learning strategies Chinese learners use to adapt to online learning. So the phenomenon selected is "Adapting to online learning environment". The actions Chinese learners take or strategies they use are all the learning strategies used which are classified into two categories. One is "independent strategies" such as time management strategies and the other is "cooperative strategies" such as participate in study groups or discussion forums. The factors influence the phenomenon or the causal condition is their "online learning experience". The general situational factors that influence the strategies or intervening conditions are the "external factors" such as the characteristics of MOOCs and the "internal factors" such as the motivation of Chinese learners. The specific factors that influence the strategies or the context are the "background of the learners" such as the educational background, their locations and so on.

The consequence of the phenomenon is that Chinese learners complete many MOOCs and adapt well to online learning. They finish many MOOCs and gain knowledge; they obtain a sense of achievement and experience the pleasure of learning.

Table 4.18 Open Coding Categories of Adaptation to Online Learning

Categories	Sub-Categories/Properties	Examples
Establish Learning Communities	Establish online learning community Establish translation group Establish MOOC Associations	• MOOC Acadamy • EduInfinity Translation Group
Online Learning Experience	Attending open online courses Participating online study group	• Use “Wangyi Open Courses”
English Learning Strategies	Practicing listening Taking note in English Expanding culture background Attending translation group Using electronic tools	• Listen English music • Use specialized dictionary • Attend “EduInfinity Translation Group”
Time Management Strategies	Making detailed plan Using every spare minutes Scheduling time for both long-term and short-term goals Never procrastinating Using electronic tools to make plans	• Watch video in evening • Finish assignment on weekend • Make a plan for the semester • Use software “Timeful” to make plan
Online Learning Strategies	Choosing a MOOC Taking note and review Finishing assignment Using discussion forum	• Obtain comments of the course online • Share note online • Post in discussion forum and seek help
Cooperative Strategies	Participating online learning group Applying social platforms Attending offline meetings or activities	• Participate “MOOC Academy” • Use social instrument such as “Facebook” and “QQ”

In the selected coding process, based on the analysis of the relationships between the categories, a theory to explain the relationship between the categories and to interpret the process, or the center phenomenon is generated. A theoretical model is created and expressed by a coding model (Figure 4.20) and several propositions are put forward.

External and Internal Motivation

External and strong internal motivation is preconditions for Chinese learners to finish MOOCs online successfully.

Internal motivations of Chinese learners are their desire to obtain more knowledge and develop their interests. External motivations include the development of online learning and the characteristics of MOOCs. MOOCs have their own advantages. They have evaluation systems that promote learning; they have discussion forums where learners can seek help; they have final evaluations and provide certificates that are a positive and strong encouragement for learners. Those characteristics of MOOCs are very helpful for learners completing MOOCs and adapting to online learning.

Online Learning Experience

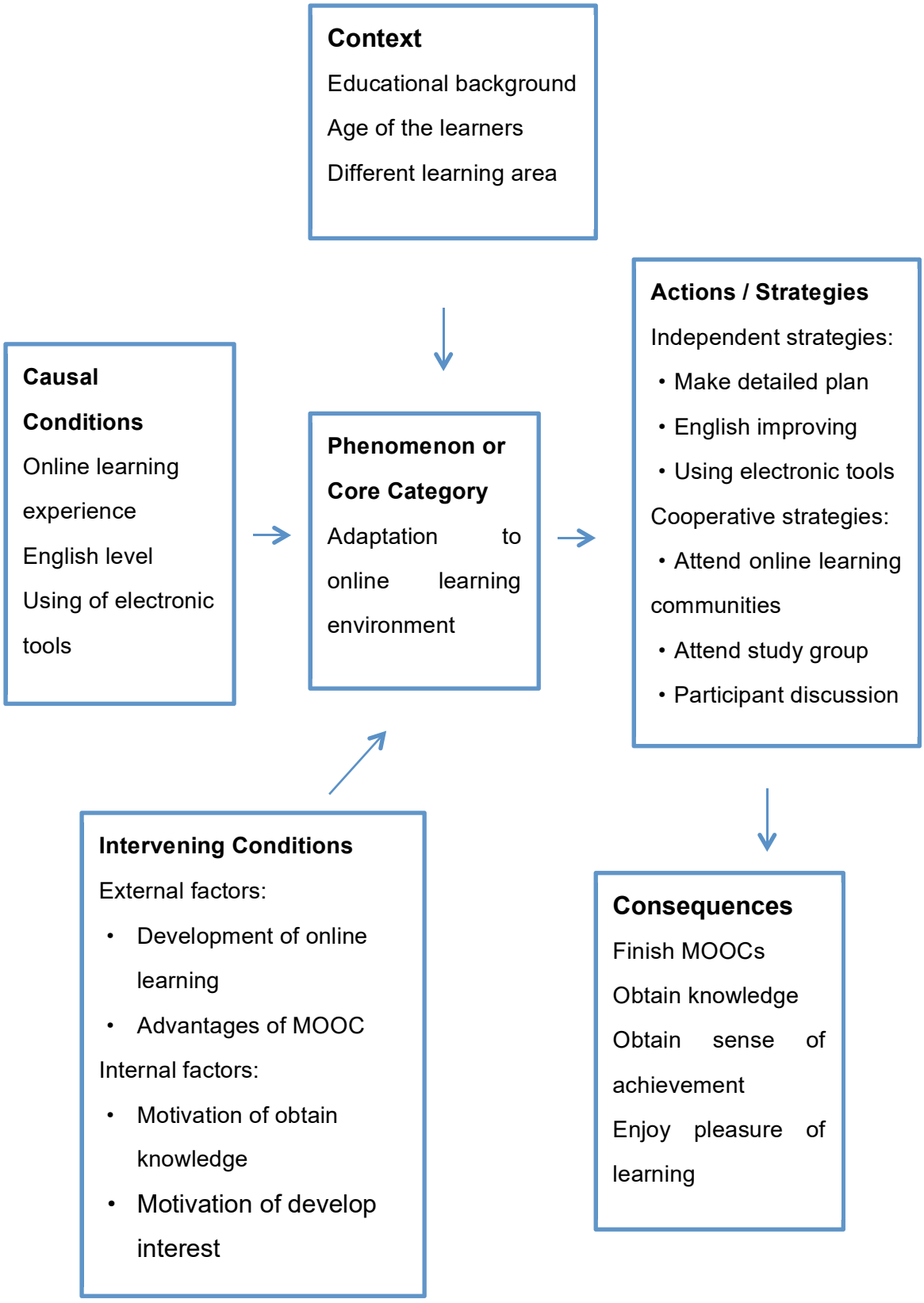
Previous online learning and E-learning experiences are beneficial and valuable for Chinese learners to complete MOOCs successfully. Before taking MOOCs, Chinese learners take other open online courses and experience the advantages of online learning and gain valuable experience. In addition, they skillfully use electronic tools that greatly facilitate learning. These experiences are very beneficial for Chinese learners to adapt to online learning.

Effective Use of Online Learning Strategies

Effective and active use of online learning strategies is a crucial point for adapting to the online learning and completing MOOCs.

Learning strategies Chinese users adopt can be classified into two categories: independent learning strategies and cooperative learning strategies. Independent learning strategies are those strategies that learners use independently.

Figure 4.20 Axial Coding of Process of Adapting to Online Learning



For example, they use time management strategies to make a detailed plan; they take notes when watch MOOC videos and review before doing assignments. Cooperative learning strategies are those strategies they adopt to establish cooperation and interaction with others, including joining learning communities and participating in discussions and so on. Using these strategies effectively and actively is beneficial for Chinese learners to adapt to online learning.

Active Participant in Discussion Forums or Study Groups

In order to adapt to the online learning environment, Chinese learners participate actively in discussion forums or all kinds of study groups. They interact and communicate with others in study groups, which is an effective way to resolve all kinds of problems in online learning.

Consequences of the Process

What Chinese learners obtain in the process of adapting to online learning and completing so many MOOCs is not only knowledge and skills. More importantly, they also experience the pleasure of learning and finding spiritual enjoyment.

5. Discussion

This chapter provides a discussion of the results. First, it discusses the background of Chinese learners who have enrolled in MOOCs and provides explanations. Secondly, it interprets the satisfaction of Chinese learners with the instructional design of MOOCs and points out whether the results are related with expectation. In addition, it states whether the results support the literature cited in the literature review and provides the reason. Thirdly, it discusses the process that Chinese learners finish MOOCs and adapt to the online learning environment. At last, it summarizes the limitation of this study and provides a recommendation for future study.

5.1. Background of Chinese MOOC Learners

5.1.1. Background of Chinese Learners

According to the study's questionnaire, about 70% of the respondents have a Bachelor degree or higher and about 20% of the respondents are college students. Christensen et al. (2013) conducted a survey and investigated the background of the students who enrolled in at least one MOOC provided by the University of Pennsylvania on the Coursera platform and received 34,779 responses. The data indicates that 79.4% of the students have a Bachelor's degree or higher and 83.0% of the students have a post-secondary degree (2 or 4 years).

In this study, more than 70% of the respondents are employed and about 20% are students. No more than 1% of the respondents are unemployed or retired. In the survey of Christensen et al. (2013), more than 60% are employed full-time or self-employed and 13.4% are unemployed or retired.

In this study, more than 70% of the respondents are under 30 years of age and no more than 3% are over 40 years old. In the survey of Christensen et al. (2013), more than 40% of MOOC students are under 30 years of age, and no more than 10% over 60. In five developing countries: Brazil, Russia, India, China, and South Africa (BRICS), learners are much younger. More than 60% of BRICS students are under

the age of 30.

In this study, the respondents are from almost the whole of China, but most of the respondents are grouped in several big cities and some in the southeast provinces of China, which are the economically developed areas of China. In the survey of Christensen et al. (2013), more than 60% of learners of MOOCs are from developed countries and about 30% of the leaners are from developing countries.

In this study, there are more female learners (57%) than male learners (43%). However, in the survey of Christensen et al. (2013), 56.9% of the learners are men, which is significantly higher than women. In developing countries, the proportion of male learners is much higher and accounts for more than 60% of all learners.

Compared to the background of the global learners of MOOCs, the backgrounds of Chinese learners are similar. They are from the economically developed areas of China. They are young, well educated and employed. MOOCs have been declared as "revolutionary" and will "democratize higher education and end the era of overpriced colleges" (Webley, 2012). The background of Chinese MOOC learners indicates that the "democratizing" of higher education that MOOCs provide is only a relative form of democracy. Chinese learners are able to experience first-class education through MOOCs because of their openness, but it seems that only when they have a Bachelor degree do they realistically have more opportunities to finish courses on MOOC platforms successfully. Also, in the west of China, where the economy is not so developed, it is not easy for learners to build awareness of MOOCs and finish courses on MOOC platforms.

5.1.2. Platforms Chinese Learners Use and the Competition between China and the United States

Most of the platforms Chinese learners usually use are Chinese MOOC platforms. About 60% of Chinese learners use the Chinese University MOOC and about 40% of the Chinese learners use Xuetang Zaixian. Compared to these Chinese platforms, not so many Chinese learners use foreign MOOC platforms from America such as Coursera or edX. About 36% of the respondents usually use Coursera and 22% of the respondents usually use edX. Only about 10% of the respondents usually use

platforms such as Udacity, Iversity and Open2study.

These facts show that Chinese learners have great difficulty when taking English courses. According to Kirby, Woodhouse and Ma (1996), when Asian students study in a second language, they must not only learn the knowledge first but also need to adapt to the different educational and cultural context. This is a "triple challenge": cognitive, linguistic and cultural. Although most Chinese learners have a post-secondary degree, only those with a good command of English can overcome these three challenges and take English courses. To most learners, the challenges of studying in a second language prevent them from studying on foreign platforms.

Although there is the triple challenge of studying in a second language for Chinese learners, they are still attracted to Americas MOOC platforms such as Coursera, edX and Udacity. Compared to Chinese MOOC platforms, MOOC platforms in American have their own particular advantages.

American MOOC platforms have valuable and rich resources. Famous universities all over the world cooperate with these platforms and most of the courses are provided by famous professors. Take Coursera for example, it has 140 partners that come from 28 countries, including dozens of famous universities from the United States. These institutes provide thousands of courses that cover various fields such as computer science, humanities, art and so on. Some courses are from very famous professors in first-rate universities and attract many students from all over the world.

"MOOC Academy", the biggest MOOC learning community in China, conducted a survey and investigated the 10 most popular MOOCs in 2015. Eight of the ten MOOCs are from foreign MOOC platforms and their language is English and six courses are from Coursera. Only two courses are from Chinese MOOC platforms and use Chinese. The results show that most of the favorite courses of Chinese students come from foreign platforms and the courses from Chinese platforms lag far behind.

In addition, courses on American MOOC platforms such as Coursera attract many more students than Chinese MOOCs. Those students have various educational backgrounds and learning styles and they behave more actively in discussion forums. Interview data also show that the discussion forums of courses on Coursera have more heated discussions than the Chinese MOOCs.

In sum, there is still a large gap between Chinese MOOCs and the MOOCs from

American platforms. Chinese MOOC platforms have only Chinese courses and most of their users are Chinese students. Many aspects of the courses, such as the production of the videos, the instructional design, and the popularity of the instructors, lag behind English courses. However, Chinese MOOC platforms have their own advantages and potential. There is huge demand in China since there are a large amount of learners so there are both challenges and opportunities ahead. As more and more institutes and instructors put effort into the construction of these platforms, Chinese MOOCs will develop step by step and meet the challenges.

5.1.3. Goals of Chinese Learners

The three main reasons that Chinese learners enroll in MOOCs are obtaining more knowledge (75%), improving skills (73%) and expanding specialized knowledge (71%). Scientific American and Nature conducted a survey (Bartholet, 2013) and investigated the motivation of 5,851 learners around the world who take MOOCs. The two main motivations are that MOOCs are free (75%) and to satisfy their personal curiosity (73%). Taking MOOCs to help with career development (45%) and studying something that is not offered by their university (45%) tied for third place. The results of the survey of Christensen et al. (2013) show that the two main reasons respondents are taking MOOCs are advancing in a current job and curiosity. Breslow et al. (2013) conducted research and investigated the background, achievement and persistence of the students in the first MOOC provided by edX. The results show that more than 50% of the survey respondents took the course because they wanted to gain knowledge and skill. About 25% of the students wanted to challenge themselves and 8.8% of the students took the course for "employment or job advancement opportunities."

Compared with the results of these studies, the goals of Chinese learners taking MOOCs are more clear and straightforward. More than 70% of Chinese learners are employed and about 20% of them are students. They want to gain more knowledge and acquire more skills to develop their careers. Their motivations are clear and positive.

5.1.4. High Drop Rate

According to the data of the questionnaire of this study, 152 respondents have enrolled in more than five MOOCs, but only 79 finished more than 5 MOOCs. 80% of the respondents finish only one to four MOOCs. In 2013, MOOC Academy conducted a survey and investigated the background of Chinese MOOC learners. The result showed that, of all the 6116 respondents, only 6% finished all the courses in which they enrolled. Only 12% finished most of the courses in which they enrolled. 16% of the respondents finished no more than half of the courses in which they enrolled and 67% of the respondents did not finish even one course. Completion rate is a hot topic regarding MOOC because quitting a course is always easier when there is no cost. Those facts indicate that the drop rate of Chinese learners is also high. Different learners have different purposes and not all Chinese learners enroll in a MOOC in order to finish it.

Hill (2013) summarizes five study patterns of the learners of Coursera-style MOOCs. The first study pattern is “No-shows”. Learners with this pattern register in MOOC platforms but never attend a course. The second study pattern is “Observers”. Learners with this pattern attend the courses but only do some reading about the content and discussion and never complete the assignments actively. The third study pattern is “Drop-Ins”. Learners with this study pattern may perform some of the activities such as watch videos, attend the discussion or complete some assignments, but they do not complete the whole course. The fourth study pattern is “Passive-Participant”. Learners with this pattern take the course passively. They may watch videos or read discussions but seldom perform assignments or participant in discussion actively. The fifth study pattern is “Active Participants”. Students with this study pattern attend the course actively. They watch videos, participate in the discussions, accomplish the assignments and, at last, take the final exam or final assessment.

Hill points out that some learners change their studying patterns during a course, but, usually, the majority of students (60 – 80%) enrolled in a course tend to leave the course completely by the second week. He provides a graph to illustrate the change in the shape of these five study patterns during the progress of a MOOC (Figure 5.1).

According to the result of this study, only about 20% of the respondents finish more

than five MOOCs and according to the survey of MOOC Academy, only 18% of learners finish most of the courses in which they enroll. Those learners can be seen as learners having the study pattern "Active Participants". Except for these learners, there are a lot of Chinese learners with the study pattern of "Observers", "Drop-Ins" or "Passive Participants". Also, there are more learners with the study pattern "No-shows". In order to increase the completion rate of MOOCs, MOOC providers must take more measures to stimulate the initiative of learners and attract more "Active Participants".

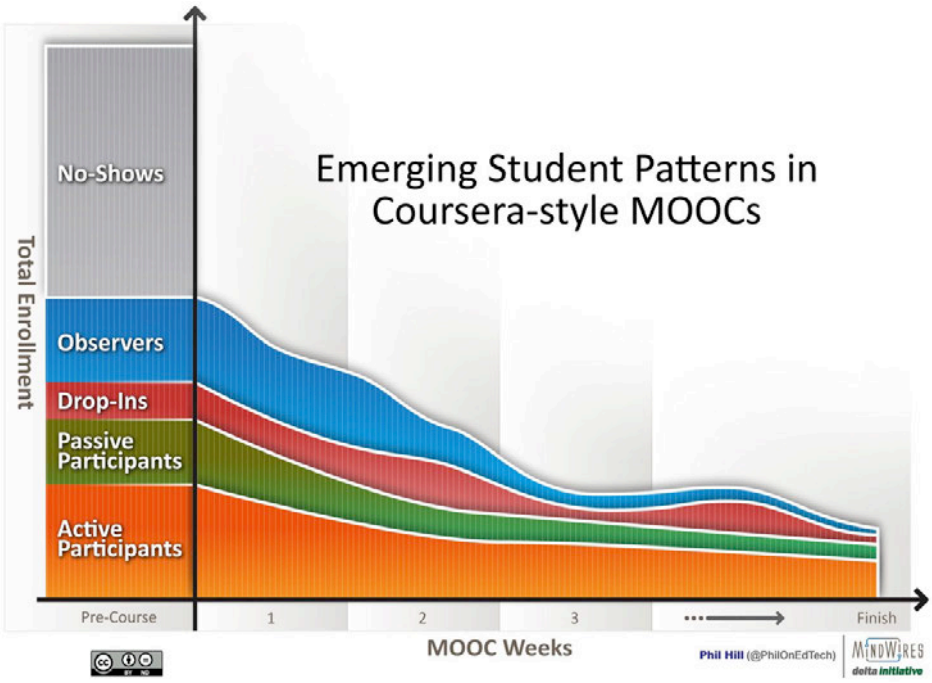


Figure 5.1 Emerging Student Patterns in Coursera-Style MOOCs (Hill, 2013)

5.2. Satisfaction with the Instructional Design of MOOCs

5.2.1. Satisfaction with the Course Content

According to the results of the study's questionnaire, Chinese learners have relatively high satisfaction with the content of MOOCs. They are satisfied especially with the

richness and plentiful nature of the course content. When respondents are asked why they choose MOOCs rather than other open online courses, more than 60% of the respondents think MOOC platforms have more rich and first-ranking resources.

With the development of MOOC platforms in American such as Coursera, edX and Udacity, many countries establish their own MOOC platforms such as FutureLearn in England, Open2Study in Australia and Xuetang Zaixian in China. There are so many famous professors from first-rate universities from all over the world who provide courses on those platforms and the courses are across all kinds of areas. Of the seven interviewees, only one interviewee who takes courses of Music on platforms thinks sometimes he cannot find courses he wants. The other six interviewees all hold the view that they can find almost all the courses they want to take on MOOC platforms. Although with the economic development occurring in China, many Chinese students study abroad. Most learners in China cannot afford the expense. So the outstanding educational resources on MOOC platforms are especially valuable for learners in China.

However, compared with the high satisfaction with the richness of the content of MOOCs, Chinese learners have no such a high level of satisfaction with the organization of the content. In addition, the organization of the course such as the clearness of the structure is the strongest predictor of learner satisfaction with the course content. The result suggests that only providing rich and plentiful content is not enough, MOOC providers should also put more effort into clearly and orderly structuring of the courses.

5.2.2. Satisfaction with the Teaching Methods

According to the literature review, many researchers (e.g. Daniel, 2012; Bates, 2012; Schulmeister, 2014) criticize the pedagogy of MOOCs and state that MOOCs are teacher centered and based on behaviorism. However, Chinese learners have a higher level of satisfaction with the variety of teaching methods used in MOOCs. Most courses on MOOC platforms are provided by famous professors of first-rate universities; many courses use various teaching methods and have special teaching styles; although MOOCs mainly focus on delivering knowledge through video, the

courses combine use of video with the pedagogy of learner-centered instruction. So Chinese learners show a high level of satisfaction with those aspects of MOOCs.

In addition, Chinese students experience different teaching and learning environment when compare to western students in face-to-face instruction. Biggs (1996, p. 63) describes the special teaching environment that Chinese students experience: the classes are large, classroom climate is cold, the teaching method is expository, and the purpose of study is to prepare for external examination. Although China always advocated education reforms for dozens of years, this kind of teacher-centered instruction has never been changed.

Because of this single instruction model Chinese learners experience in traditional education, they are attracted to MOOCs, especially English courses provided by famous professors for their variety of teaching methods and fascinating teaching styles. For example, the course “A Beginner's Guide to Irrational Behavior” provided by Prof. Dan Ariely from Duke University attracted many Chinese learners for its special teaching methods and style. The learners provided high evaluation marks and thought the course had a creative design, original perspectives and visualizable examples.

On the other hand, Chinese learners have a lower level of satisfaction with the cooperative methods of MOOCs than the variety of methods MOOCs use. In fact, in order to promote students to cooperate and communicate with other students, in some MOOCs, the performance of learners in the discussion forums will also be evaluated. This is a good measure to encourage cooperation and communication; however, it is still not enough. Just as Schulmeister (2014) states, the online-mode of a MOOC limits its pedagogical potential and makes it similar to classical distance learning. Whether the courses encourage cooperation is a predictor of learner satisfaction with the teaching methods. How to promote learners to participate in more team activities and cooperate with each other is still a huge challenge facing MOOCs. MOOCs providers should take much more measure to stimulate the learners’ cooperation.

5.2.3. Satisfaction with Evaluation Systems

Compared to other open online courses, a main characteristic of MOOCs is that they

have evaluation systems and provide feedback to learners. About 50% of the respondents of the questionnaire take MOOCs because MOOCs have evaluation system and they think it promotes learning. About 60% of respondents think that the feedback is helpful for learning. MOOCs have a variety of forms of assignments such as quizzes, essays, presentations, design work, writing a program and so on. That is the reason why Chinese learners have high overall satisfaction with the evaluation systems.

Compared to the satisfaction with the variety of evaluation methods and the effectiveness of evaluation, Chinese learners have significantly lower satisfaction with peer assessment. According to the literature review, many researchers express their worries about the quality of peer assessment. The low satisfaction of Chinese learners with peer assessment also shows a correspondence with the literature review. Kulkarni et al. (2013) conducted research and investigated the quality of peer assessment in MOOCs. The results show that the peer assessment scores provided by the learners is 7% higher than the scores by staff. Students also give scores to the work from their own country 3.6% higher than those from elsewhere.

Although the quality of peer assessment is still a controversial topic for MOOCs, peer assessment is a main scalable and effective way to provide assessment for massive groups of students. Since the backgrounds of MOOC users are different and most of them have not been trained to provide evaluation, MOOC providers should take more measures in order to improve the quality of peer assessment. Luo, Robinson and Park (2014) conducted research and investigated the reliability, validity and effects of the peer assessment of a Coursera MOOC. The results show that although the reliability of peer grading scores provided by one individual learner was found to be rather low, the reliability of peer assessment can be largely improved when five learners provide grading scores and make an average to create a composite score. Based on this result, MOOC providers can ask more learners to grade an assignment and average the score to improve the quality of peer assessment. In addition, the course instructors and assistants should try to assess some of the assignments and provide a reference for learners.

5.2.4. Satisfaction with the Discussion Forums

Chinese learners have lower satisfaction with the discussion forums of MOOCs than the satisfaction with content or learning environment of MOOCs. The results indicate that Chinese learners are more satisfied with the organization of the discussion forums and have low satisfaction of the active participation of learners.

Collison et al. (2000, p. 7) state three principles for moderating effective online learning. The second principle is "The style of 'guide on the side' is most appropriate for learning in a virtual learning community". The model based on this principle is like a seminar and the moderator organizes the discussion among the participants (Figure 5.2). Compared many other online courses where the instructor is at the central point (Figure 5.3) and perhaps is overwhelmed with the email discussion with all participants, this model has a very important advantage which is that the participants take charge of the discussion and the instructor promotes discussions by encouraging conversations or organizing the forum.

The discussion forums in MOOCs adopt this effective interaction model of "guide on the side". In the forums, the instructors or assistants mainly organize and learners mainly participate in the discussion. This is an effective way to foster the online learning interaction among massive groups of students.

Figure 5.2 Guide on the Side
(Collison et al., 2000, p. 34)

Figure 5.3 Instructor in Center
(Collison et al., 2000, p. 34)

Collison et al. (2000, p. 77) state that a healthy, web-based, collaborative learning community has the following characteristics:

"Participants post regularly; the online community meets its member's needs, and participants express honest opinions; participant-to-participant collaboration and teaching are evident, and spontaneous moderating occurs among the participants; reasonable venting about technology, content, and even the facilitator is acceptable and evident; participants show concern and support for the community."

The results of this study show that Chinese learners have comparatively low satisfaction with the active participation of learners in discussion forums. In order to build a healthy and effective learning community, MOOC providers should take more measures to encourage the participants to post more and attend the discussion more actively.

5.2.5. Satisfaction with Online Learning Environments

According to the instructional design model of Beetham (2007), learning activities occur in a specific online learning environment through interaction between learners and other people. A supportive, interactive and cooperative learning environment is beneficial to learners for obtaining a positive online learning experience. In this study, Chinese learners have high satisfaction with the online learning environments provided by MOOC platforms. They are satisfied with the easy operation of the platforms and the way to submit assignments or post in the discussion forums.

Hirium (2013) classified Elearning interaction into three levels (Figure 5.4). The first level is internal learner-self interactions. This interaction means the mental and metacognitive processes of learners that control their learning. The second level of interaction is learner-human and learner-nonhuman interactions, which includes learner-interface interactions, learner-instructor interactions, learner-learner interactions, learner-other human interactions, learner-tool interactions, and learner-environment interactions. The third level of interaction is learner-instructional interactions. This interaction means that the instructional strategies used should be based on the purpose of the learners (the first level of interaction) and promotes the second level of interactions. The instructional design of a MOOC facilitates these

three levels of interaction and constructs an interactive learning environment for learners.

A healthy and effective online learning environment should promote these three levels of interaction. The MOOC platforms are easily operated; the way to submit assignments and post in the discussion forum are convenient and the courses encourage cooperation and communication. Those characteristics show that the learning environments MOOC providers build is effective with regard to promoting all levels of interaction.

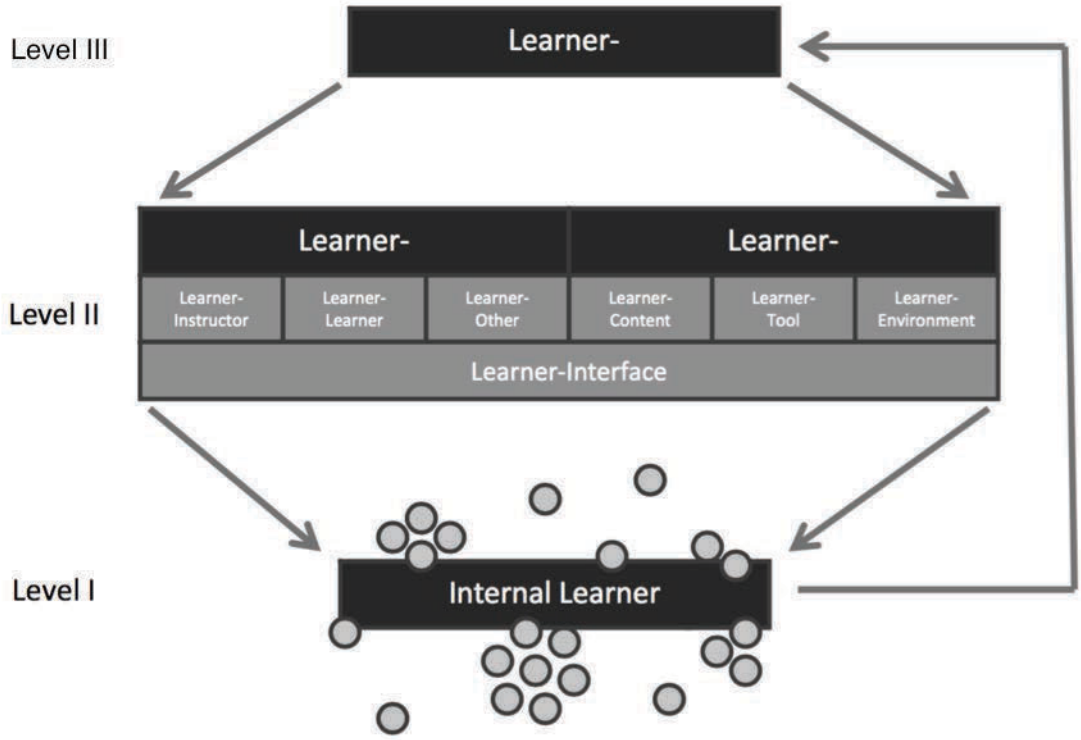


Figure 5.4 Three Levels of Planning E-learning Interactions (Hirium, 2013)

In sum, Chinese learners have high satisfaction with the instructional design of MOOCs and MOOCs have now become a new learning style for them in the digital age. MOOCs are free open online courses. They are open educational resources. Open Educational Resources (OER) are defined as “digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning

and research" (OECD, 2007, p. 10). According to OECD (2007), OER include learning content such as free courses or content modules, tools or software that can deliver resources and implementation resources such as intellectual property licenses. The development of OER enhances the accessibility of knowledge and encourages learners to conduct informal learning. MOOCs, as a special kind of open educational resource, not only possess all the advantages that OER have but also have their own characteristics. The courses on MOOC platforms have complete teaching processes and evaluation systems that promote learning effectively. These characteristics make MOOCs separate from normal OER. With much more effort invested by MOOC providers, MOOCs will be a more perfect and desirable open educational resource for learners.

5.3. Adaptation to Online Learning Environment

5.3.1. Connectivism

Siemens (2005) advances a new learning theory "connectivism" which focuses on "connected learning". He points to the limitation of the learning theories of behaviorism, cognitivism, and constructivism and stated that those theories cannot explain learning through communication and cooperation between people and that learning happens within organizations. According to the theory of connectivism, learning occurs through interaction and dialogue and connections aid learners acquiring new knowledge through all kinds of resources.

In order to enhance cooperation and promote communication with others, Chinese learners have built many online learning communities such as MOOC Academy and EduInfinity Translation Group. "A learning community is a group of people who share common academic goals and attitudes, who meet semi-regularly to collaborate on classwork." (Wikipedia, 2016b). In these learning communities, Chinese learners acquire information, express opinions and share experience. The communication and cooperation in these communities help Chinese learners adapt to the online learning environment effectively. Learning in such a community is exactly a reflection of "connectivism" and "connected learning".

Downes (2012, p. 9) identifies four key design principles for Connectivism in MOOCs. The first is “autonomy” of the learner, which is how learners determine what to learn. The second is “diversity”, which means the participants vary in their educational background and characteristics. The third is “openness”, which refers to the easy of accessing content and participating in the activities. The fourth is “connectivity” or “interactivity”, which means the learners are interactive and cooperative which results in more opportunities and knowledge to learn. Thus in “connected learning”, learning not only occurs in the process of delivering of knowledge by an expert, but occurs when the learner shares knowledge and interacts with others.

The online learning communities Chinese learners establish also have these four characteristics. The learners are diversified; they are active and interactive; they are open and willing to cooperative with others. Every individual of the community obtain much information from it and is willing to help others and contributes to the community. Thus these online communities are supportive, cooperative and interactive and help build a friendly online learning environment for Chinese learners. With the help of such online communities, it is easy for Chinese learners to adapt to online learning.

5.3.2. Increasing Use of Blended Learning

Blended learning is the combination of traditional face-to-face instruction and online learning, or learning facilitated by technology. The integration of various electronic tools and online service in instruction provide instructors much convenience, flexibility and efficiency. At the same time, learners experience an innovation in education and a new style of instruction. With the development of technology, one key trend in higher education is the increasing use of blended learning designs (Johnson, et al., 2016).

In this study, four of the seven interviewees combine MOOCs with their traditional classroom learning. They take courses on MOOC platforms related their academic study, which are beneficial for them to improve their academic performance. In addition, all of the seven interviewees combine various electronic tools with their

study. They use software to make detailed plans; they use electronic dictionaries; they use mobile phone applications that facilitate their study; they use online social networks to promote communication. The combined use of these tools enhances convenience for learners and greatly facilitates their study.

5.3.3. Adaptation of Chinese Learners

Learning style is an individual's preferred way of learning. Dunn et al. (1995) define it as "a way in which individuals begin to concentrate on, process, internalize, and retain new and difficult academic information". Different research into learning style theories categorizes learning style differently.

Kolb and Kolb (2005) classify learners into four categories: Diverger, Assimilator, Converger and Accomodator. The VARK model separated learning style into four categories: visual, aural, read/write, and kinesthetic (Fleming & Baume, 2006). Felder and Silverman (1988) categorized learning style into sensing and intuitive, visual and auditory, inductive and deductive, active and reflective, and sequential and global. Dunn and Dunn's learning style model is based on five learning style stimuli that include environmental, emotional, sociological, physiological, and psychological processing (Dunn et al., 1995). Grasha (2002) separated learning style into six categories: competitive, collaborative, avoidant, participant, dependent and independent.

Much research has been conducted to investigate whether learners with different learning styles perform differently in online learning environments. Some research found that learners with particular learning styles are more likely to succeed in an online learning environment (e.g. Manochehr, 2006; Terrell, 2002; Shaw, 2012; Huang, Lin & Huang, 2012). Other studies show that learning style has no significant impact on students' online learning performance (e.g. Zacharis, 2011; Lu, Yu & Liu, 2003; Sun, Lin & Yu, 2007).

In this study, the main action Chinese learners take to adapt to online learning is the effective use of online learning strategies. Although the strategies they adopt are various, they can be classified into two main groups, independent learning strategies

and cooperative learning strategies. According to the learning style classified by Grasha (2002), learners who have an independent learning style are self-initiated and self-directed learners. They are confident in their learning abilities. Learners who have a collaborative learning style learn by sharing ideas and have skills working in groups. In this study, Chinese learners who have finished many MOOCs show strong independent and collaborative tendencies in learning style.

Although the online environment is suitably applied to students with different learning styles (Sun, Lin & Yu, 2007) and most students "are able to adapt their personal learning styles in order to succeed in a Web-based learning environment" (Terrell, 2002), the results of this study show that the learners who have independent and collaborative learning styles are more likely to adapt to the online learning environment well. For the Chinese learners who want to start to learn online, it is better to establish their own learning strategies and seek for cooperation to achieve success.

5.4. Limitations of the Study

This study adopts the case study method to investigate the satisfaction of Chinese learners who have enrolled in MOOCs and examines how they adapt to the online learning environment and finish the courses. The limitations include the following:

The first limitation is the limitation of the method. In a case study, the researcher conducts the interviews and collects data. The researcher is involved in the whole study and their world view and values will influence how they select samples, collect data and express their opinion. "The subjectivity of the researcher is an inevitable part of case study research" (Simons, 2009, p. 24) and "qualitative case studies are limited by the sensitivity and integrity of the investigator" (Merriam, 2009, p. 52).

The second limitation is the limitation of sampling. This study focused on the learning experience of Chinese users who enrolled in MOOCs. There are a large number of users and the number is increasing. The limited sample size of the questionnaire and participants for interviews prevent the result being applied to a larger group. Also, participation for the questionnaire is voluntary and random, so the sample might not be a representation of all Chinese students. In addition, although much can be learned

from a particular case, the limited sample size prevents the generalizability of the data and results.

The third limitation is about the scope of the research. The scope of the study only included satisfaction and learning experience of Chinese learners and did not include the experience of learners from other countries.

5.5. Recommendations for Future Research

This study investigates the satisfaction of Chinese learners with the instructional design of MOOCs and their adaptation to online learning environments. To continue expanding the research of online learning, the researcher provides the following recommendations for future research.

First, this study focuses on the satisfaction of Chinese learners with the instructional design of MOOCs. The instructional design of different MOOCs has different advantages and disadvantages. In the future, more studies should be conducted to investigate the satisfaction of the learners with MOOCs on one platform. As a result, more detailed suggestions about the instructional design can be provided.

Secondly, sampling in this study is limited. Compared to the number of learners who take MOOCs in China, the number of participants in this study is small. In the future, studies with larger sampling can be conducted and the result will be more representative.

Thirdly, this study focuses on the feelings and experiences of Chinese online learners. In the future, studies on the feelings and experiences of learners from other countries should be conducted.

6. Summary

Massive Open Online Course (MOOC) has become a new and revolutionary learning approach since its first launch in America in 2012. MOOC has a complete teaching process, particular evaluation system and discussion forum, which promote learning effectively. With these advantages, MOOCs have attracted large numbers of students all over the world. Although MOOC developed quickly, challenges still exit and there are many controversial topics regarding such as its pedagogy, its evaluation system and its way to promote interaction. In order to create better online learning instructional design of MOOCs, more research is required to investigate the perceptions of MOOC learners and explore the user experience.

In China, there are more than one million MOOC learners and many Chinese MOOC platforms were established. Many studies have been conducted to investigate the background of the massive participants, low completion rate or peer assessment. However, research has not adequately interpreted the Chinese learners' perceptions of MOOCs and investigated their satisfaction and experience.

Based on the background, this study investigates the perceptions of Chinese learners who have enrolled in MOOCs. It interprets the reason why Chinese learners enroll in and quit MOOCs. It explores in detail Chinese learners' satisfaction with five aspects of the instructional design of MOOCs: course content, teaching method, evaluation system, discussion forum and learning environment. It also investigates the process that Chinese learners finish MOOCs and adapt themselves to the online learning environment.

This study is framed by three groups of research questions:

1. What are the goals and expectations of Chinese learners when they enroll in MOOCs? What are the reasons for Chinese learners to quit MOOCs? Compared to other open online courses, why do Chinese learners choose MOOCs?
2. How satisfied are Chinese learners with the instructional design of MOOCs? Which aspects of the instructional design of MOOCs contribute most to learners' satisfaction? Which aspects contribute least?
3. How do Chinese learners finish MOOCs and adapt themselves to the online learning environment?

A case study research is conducted and a mixed data collection method is adopted in this study. Quantitative data, which is used to answer the first and second group of questions, is collected through an online questionnaire. Qualitative data, which is used to answer the third question, is collected from interviews and online documents.

The questionnaire consists of three sections and twenty-one questions. The first part is about the demographic details and the background of the participants. The second part is intended to collect data about Chinese MOOC learners' satisfaction with MOOCs. The questions in this part were designed based on the guidelines and principles of online learning instructional design summarized in literature review. Opinions are collected through five aspects of MOOCs: course content, teaching method, evaluation systems, discussion forums and learning environment. In this part, a 7-point Likert scale ranging from 1 as strongly disagree to 7 as strongly agree is used for the measurement. The third part of the questionnaire is an open-ended question and a question to collect contact information of participants.
The questionnaire is edited on a Chinese online survey platform "Wenjuanxing" and the language of the questionnaire is Chinese. It is distributed online and the data collected is analyzed by the software EXCEL and SPSS.

Online interviews are conducted to collect qualitative data. An interview guide is designed to guide the interview. The first part of the interview guide is about the background of the participants and basic information about MOOCs. The second part is about how the participants finish MOOCs and adapt themselves to online learning environments. The third part is about the achievement of Chinese learners after they finish MOOCs and their suggestions to other learners. Data collected from interview is transcribed into Microsoft Word and is analyzed based on the grounded theory.

In order to examine the validity of the data collection methods, a pilot research, including a pilot test of the questionnaire and a pilot interview, was conducted.
In the pilot test of the questionnaire, 20 participants were invited to finish the questionnaire. After that, the reliability and validity of the content of the questionnaire were examined. Through the program SPSS, Cronbach's alpha of the second part of the questionnaire is calculated (Cronbach's alpha = 0.903), which showed that the

questionnaire has high internally consistent reliability. Experts were invited to evaluate the questionnaire to see whether the questions and items were valid and represent what they were intend to measure. Also, the researcher talked with the participants and asked them to provide suggestions about the questionnaire. In the end, the content of the questionnaire was optimized.

A pilot interview was conducted after the pilot test of the questionnaire. The result was transcribed into Microsoft Word and analyzed to identify the validity of the questions in interview guide.

The sampling strategy adopted in this study for the questionnaire is simple random sampling. The questionnaire was distributed online and every Chinese MOOC learners has equal chance to finish it. When selecting the participants for interview, purposive sampling is adopted and the selection criteria are: rich online learning experience on MOOC platforms; finish at least 10 MOOCs and get course certificates; willing to participate in an online interview.

A total of 414 effective questionnaires are received. More than 90% of the respondents are between 19 and 40 years old and most of the respondents come from the economically developed areas of China. About 50% of the respondents have a Bachelor degree and the MOOC platforms they usually use are Chinese University MOOC, Xuetang Zaixian and Coursera. About 80% of the respondents finish at least one MOOC and about 20% of the respondents finish more than five MOOCs.

The results show that the first three goals when Chinese learners take MOOCs are obtaining more knowledge, improving skills and expanding specialized knowledge. The main reasons they quit a MOOC are that they have no much time, the course content is too difficult and the course do not meet their needs. The respondents choose to attend MOOCs rather than other online open courses because that the videos of MOOCs are high quality, MOOC platforms have more rich resources and MOOC platforms are easy and convenient to manage.

The results show that Chinese learners have high satisfaction level with the rich content and the high quality video of MOOCs and the convenient learning environment MOOC platforms provided. They have low satisfaction level with peer

assessment and the learners' participation in discussion forum. The results also revealed that course structure, diversity of teaching methods, evaluation effectiveness, good organization of forums, helpful discussion and easily operated forum are critical predictors in explaining leaners' satisfaction.

Seven interviews are conducted to collect qualitative data and answer the third question of this study. Four of the interviewees are college students and the other three have Bachelor or Master degrees. All of them have rich learning experience on MOOC platforms.

The results show that, in the process of accomplishing MOOCs, Chinese learners' strong motivation is precondition and their valuable previous online learning experience are very helpful. Their active use of online learning strategies and active participant in discussion forums and study groups are crucial points for adapting to the online learning environment. In addition, the establishment of MOOC communities and associations is also a beneficial factor for Chinese learners to adapt the online learning environment.

From the results, it is known that Chinese learners have high satisfaction level with the instructional design of MOOCs. However, Chinese learners have comparatively low satisfaction with the quality of peer assessment and learners' inactive participation in discussion forum. MOOCs providers should take more effective measures to improve the quality of peer assessment. At the same time, they should take measures to encourage the learners to participate in the discussion forum more actively and promote social interaction and communication.

In the process of adapting online learning environment, Chinese learners participate in learning communities and study groups and interact actively with other learners, which reflects the idea of "connected learning" or "connectivism" (Siemens, 2012). Also, they are good at using various online learning strategies independently, which represents an effective combination of cooperative and independent learning style.

In this study, the limited sample size of the questionnaire and the limited participants of interviews prevent the result being applied to a larger group. In the future, studies with larger sampling should be conducted and the result will be more representative.

7. Literature

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8. Appendix

8.1. Appendix A. Questionnaire

8.1.1 English Version of Questionnaire

Chinese Learners' Satisfaction with MOOCs

I. Introduction

Dear Students,

Good day! I am a Ph.D. student of Education in Germany. I am doing research on MOOCs. This questionnaire is to investigate the satisfaction of Chinese students regarding MOOCs. Your answers will be helpful for my study and other students who want to enroll in MOOCs. Your response will only be used for the purposes of research. In case you have any questions regarding the survey, please feel free to contact me. Thank you very much for your time and suggestions.

Researcher: Yuqin Yin
Department of Educational Research and Educational Management
Heinrich Heine Universitaet Duesseldorf
E-mail: yuqin78516@gmail.com
Telephone number: 49+15755932787
Address: Nosthoffenstr. 21, 40589 Duesseldorf

II. Questions

Directions: There are two parts to this questionnaire. The first part is basic information. The second part is about the satisfaction with the design of MOOCs.

Part 1. Basic Information

1. My age

0-18 □ 18-22 □ 23-26 □

27-30 □ 31-40 □ 41—□

2. My gender

Male □ Female □

3. I live at

Beijing □ Tianjin □ Shanghai □ Chongqing □

Hebei □ Shandong □ Jiangsu □ Zhejiang □

Fujian □ Guangdong □ Hainan □ Shanxi □

Henan □ Anhui □ Hubei □ Hunan □

Jiangxi □ Shanxi □ Sichuan □ Liaoning □

Jilin □ Heilongjiang □ Neimeng □ Guizhou □

Nixiahuizu □ Gansu □ Qinghai □ Guangxizhuangzu □

Yunnan □ Xizang □ Xinjiang □ Taiwang□

Hongkong □ Macao □ Other countries □

4. My career

Student □ Scientific research and education □

IT industry □ Business □

Medicine industry □ Public employees □

Service industry □ Others_____

5. My education background

High school student □ High school graduate □

Two-year college student □ Two- year college graduate □

Undergraduate (College student) □ College graduate (Bachelor degree) □

Master degree □ Doctor degree □

Others_____

6. My major

Philosophy □ Economics □ Law □

Education □ Literature □ History □

Science □ Engineering □ Agriculture □

Medicine □ Management □ Military Science □

Art □ Others_____

7. MOOC's platform I usually use

Cursera □ Edx □ Udacity □

Iversity □ Future Learn □ Open2Study □

Xuetang Zaixian □ Chinese University MOOC □ Haodaxue Zaixian □

Qinghuamokeshi □ Others_____

8. Area of courses I enroll

Computer science □ Economics □ Business Administration □

Humanities □ Social science □ Art □

Life science □ Engineering □ Science □

Energy □ Statistics □ Medical science □

Education □ Law □ Health and nutrition □

Others_____

9. The number of MOOCs I have enrolled

1 □ 2-4 □ 5-10 □

11-20 □ 21-- □

10. The number of MOOCs I have finished

0 □ 1-4 □ 5-10 □

11-20 □ 21-- □

11. The reasons and goals when attending courses MOOCs

Obtain more knowledge □

Improve skills □

Like learning and obtain sense of achievement □

Experience first-class education □

Expand specialized knowledge □

Improve English □

For challenging yourself □

For expanding your interests □

Make more friends □

For killing time □

Others_____

12. The reasons for quitting courses

The course does not meet my needs □

Have not so much time □

The content of the course is too difficult □

Cannot finish the course assignments □

Cannot understand because of poor English □

Cannot find classmates to communicate with □

Do not like online learning □

Others_____

13. Compared with other online open courses, the reasons for enrolling in MOOCs are:

The MOOC videos are made specially for online courses and are high quality□

There are questions embedded in the videos which help students concentrating □

The MOOC platforms are easy and convenient to use □

MOOC platforms have more rich and first-rate resources □

MOOCs have evaluation systems, such as assignments and exams, which promote learning □

MOOCs provide discussion forums through which users can communicate with others □

MOOCs have a complete teaching process and stages □

MOOCs have exact a time to start and end, which promotes learning □

MOOCs are similar with other online open courses □

Did not try other online open courses □

Other reasons_____

Part 2. Satisfaction of MOOCs

Please indicate your level of agreement or disagreement with each of the instructional design aspects of MOOCs.

14. Satisfaction with Course Content

14.1. The course content is clear in its organization and structure.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

14.2. The course content is rich and plentiful.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

14.3. The course content is up-to-date.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

14.4. The course resources of the are easy to obtain.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

14.5. The course content exactly fits your needs.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

14.6. Overall, I am satisfied with the quality of the content of MOOCs.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

15. Satisfaction with Teaching Methods

15.1. The courses use different teaching approaches to promote learning.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

15.2. The courses are learner-centered.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

15.3. The courses improve learners' problem-solving ability.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

15.4. The courses encourage the communication and cooperation of learners.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

15.5. Overall, I am satisfied with the teaching methods of MOOCs.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

16. Satisfaction with Evaluation Systems

16.1. The courses use multiple methods to assess student performance.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

16.2. Assessment and evaluation tools are effective for measuring outcomes.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

16.3. The quality of machine-graded assessment system is high.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

16.4. The quality of peer assessment is high.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

16.5. The feedback is helpful for learning.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

16.6. The quality of final exams or final evaluations is high.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

16.7. Overall, I am satisfied with the assessment of MOOCs.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

17. Satisfaction with Discussion Forums

17.1. Discussion forums are well organized by the instructors or assistants.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

17.2. Teachers or teaching assistants always provide timely answers to questions.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

17.3. Instructors' or assistants' answers are helpful.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

17.4. Students participate actively and provide heated discussion in forums.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

17.5. The discussion among students is helpful.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

17.6. Overall, I am satisfied with the discussion forums of MOOCs.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

18. Satisfaction with Online Learning Environments

18.1. The interface of MOOC platforms is simple and it is easily operated.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

18.2. The MOOC platforms provide technical support that provides help to learners.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

18.3. The MOOC videos are made specially for online courses and are high quality

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

18.4. The way of submitting or uploading assignments is convenient and is appropriate for online courses.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

18.5. Posing or replying to questions in discussion forums is easy.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

18.6. Overall, I am satisfied with the online learning environments of MOOC platforms.

Strongly agree □ Agree □ Somewhat agree □
Neutral □ Somewhat disagree □ Disagree □
Strongly disagree □

19. Overall Satisfaction With MOOCs

Overall, I am satisfied with the quality of the MOOCs.

Strongly agree □ Agree □ Somewhat agree □

Neutral □ Somewhat disagree □ Disagree □

Strongly disagree □

Part 3. Open Ended Question

20. Looking back on the experience, are there any particularly positive or negative aspects of MOOCs you would like to highlight? (Please use the boxes below.)

21. Would you like to write down your contact information?

E-mail:_____

QQ number:_____

8.1.2. Chinese Version of Questionnaire

中国用户对 MOOC 教学设计满意度的调查

I. 介绍

大家好！我是德国杜塞尔多夫大学教育学院的博士生，我研究的课题是关于中国学习者对 MOOC 教学设计的满意度调查。这份问卷目的是调查中国用户对 MOOC 教学设计的满意程度。您的回答会对我的研究非常有帮助，调查结果会对其他想上 MOOC 的中国用户产生积极影响。您的回答将仅被应用于我的研究。如果您对问卷有疑问或者建议，请随时联系我。非常感谢您付出的宝贵时间。

调查者：殷玉琴
教育研究与管理学院
杜塞尔多夫大学
E-mail：yuqin78516@gmail.com
Tel: (49)+15755932787

II. 问题

本问卷分为两大部分。第一部分是基本信息调查。第二部分是关于 MOOC 教学设计的满意度调查。

第一部分： 基本信息

1. 您的年龄

0-18 □　　18-22□　　23-26 □

27-30 □　　31-40 □　　41—□

2. 您的性别

男 □　　女 □

3. 您生活或学习工作的地理位置

北京市□	天津市□	上海市□	重庆市□
河北省□	山东省□	江苏省□	浙江省□
福建省□	广东省□	海南省□	山西省□
河南省□	安徽省□	湖北省□	湖南省□
江西省□	陕西省□	四川省□	辽宁省□
吉林省□	黑龙江省□	内蒙古□	贵州省□
宁夏回族□	甘肃省□	青海省□	广西壮族□
云南省□	西藏□	新疆□	台湾□
香港□	澳门□	海外□	

4. 您的职业

学生 □　　IT 行业及相关 □

商业 □　　科研教育行业 □

医药行业 □　　公共事务行业 □

服务行业□　　其它_____

5. 您的教育背景（获得的最高学位）

高中在读□　　高中毕业 □

学士学位 □　　硕士学位 □

博士学位 □　　其它_____

6. 您的专业

哲学 □　　经济学 □　　法学 □

教育学 □　　文学 □　　历史学□

理学 □　　工程学 □　　农学 □

医学 □　　管理学 □　　军事学 □

艺术学 □　　其它_____

7. 您常用的 MOOC 平台

Cursera □　　Edx □　　Udacity □

Iversity □　　Future learn □　　Open2study □

学堂在线 □　　中国大学 MOOC □　　清华磨课师 □

好大学在线 □

其它_____

8. 您常参与的课程

计算机科学　　经济金融　　商业管理

人文学科　　社会科学　　艺术学

生物和生命科学　　工程学　　理学（物理，化学，数学等）

能源和地球科学　　统计学和数据分析　　医学

教育学　　法学　　健康食品类

其它_____

9. 您参加过几门课程

1 □　　2-4 □

5-10 □　　11-- □

10. 您完成过几门课程

0 □　　1-4 □

5-10 □　　11-- □

11. 您参加课程的原因是（可多选）

获得更多的知识□

提升技能□

体验一流的教育□

扩充专业知识□

提高英语水平□

挑战自己□

有兴趣□

认识更多的朋友□

打发时间□

其它_____

12. 您未完成课程或者退出课程的原因是 （可多选）

课程不符合我的需要☐

时间有限☐

课程内容太难☐

无法完成作业☐

英语太差无法听懂课程☐

无法找到同学交流☐

不喜欢网络学习☐

其它_____

13. 与其它网络公开课相比，您选择 MOOC 的原因是（可多选）

课程视频专为网络学习制作，质量上乘☐

课程嵌入问题使学生更为专心☐

课程平台易于操作使用☐

MOOC平台有更多一流教育资源☐

MOOCs有评价系统可以更好的促进学习☐

MOOCs 有讨论论坛可以和同学交流讨论☐

MOOCs 有完备的教学过程☐

MOOCs 有确定起始和终止时间，可以很好的促进学习☐

MOOCs 和其它网络公开课相似☐

没有上过其它网络公开课☐

其它 _____

第二部分： MOOC 教学设计满意度

第二部分从六个方面调查对 MOOC 的教学设计的满意度。

14. 教学内容满意度

14.1 教学内容组织合理，结构清晰。

强烈同意 ☐	同意 ☐	部分同意 ☐	中立 ☐
部分不同意 ☐	不同意 ☐	非常不同意 ☐	

14.2 教学内容丰富充实。

强烈同意 ☐	同意 ☐	部分同意 ☐	中立 ☐
部分不同意 ☐	不同意 ☐	非常不同意 ☐	

14.3 教学内容有时代前沿性。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

14.4 与课程有关的学习材料获取便捷。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

14.5 教学内容符合我的需要。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

14.6 整体上看来，我对 MOOCs 教学内容感到满意。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

15. 教学方法满意度

15.1 课程运用多种教学方法促进学习者的学习。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

15.2 课程体现了学习者为中心的教学设计理念。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

15.3 课程设计促进了学习者问题解决能力。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

15.4 课程设计促进鼓励学习者之间的交流合作。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

15.5 整体看来，我对 MOOC 的教学方法感到满意。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

16. 教学评价系统满意度

16.1 课程运用多种方法评价学生的成绩。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.2 课程运用的评价方法能有效评价学生学习成果。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.3 机器评分系统质量良好有效。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.4 同伴评分质量良好。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.5 评价反馈能有效帮助学习者的学习。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.7 课程结束时的期末评价与教学目标相符，全面考察所学知识。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.8 期末考试安排及打分公平合理。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

16.9 整体上看，我对 MOOC 的评价方式感到满意。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

17. 讨论论坛满意度

17.1 论坛的讨论有教师或者助教组织。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

17.2 教师或助教对论坛的问题回答及时。

强烈同意 ☐　同意 ☐　部分同意 ☐　中立 ☐

部分不同意 ☐　不同意 ☐　非常不同意 ☐

17.3 教师或助教的回答对我的学习非常有帮助。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

17.4 开课期间课程论坛中同学讨论热烈，参与度高。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

17.5 同学之间的讨论对我的学习非常有帮助。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

17.6 整体上看，我对 MOOC 的讨论论坛感到满意。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

18. 教学环境

18.1 课程平台界面简洁，操作流畅。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

18.2 课程平台有技术支持服务链接，可为学习者提供帮助。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

18.3 课程视频专为网络课程制作，质量上乘。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

18.4 作业上传方式简洁方便，适合网络教学。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

18.5 讨论论坛发表观点回复观点，操作简洁方便。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

18.6 整体上看，我对 MOOC 平台的网络教学环境感到满意。

强烈同意 ☐ 同意 ☐ 部分同意 ☐ 中立 ☐

部分不同意 ☐ 不同意 ☐ 非常不同意 ☐

19. 整体满意度

整体上看，我对 MOOC 的教学设计感到满意。

强烈同意 ☐　　同意 ☐　　部分同意 ☐　　中立 ☐

部分不同意 ☐　　不同意 ☐　　非常不同意 ☐

第三部分： 开放式问题

20. 结合您的经验，您还有关于 MOOC 想要强调的正面的或负面的观点么？

21. 您是否愿意留下您的联系方式，便于我们联系进一步开展关于 MOOC 的深度访谈？

E-mail:_____

Telephone number:_____

QQ number:_____

8.2. Appendix B. Interview Guide and Example Transcript

8.2.1. Interview Guide

Adaptation of Chinese Learners to Online Learning Environment and Achievements on MOOC
(Duration: about 1.5 hours)

Part 1 Basic information (about 20 minutes)

1.1. Background of the interviewee (about 5 minutes)

Would you like to introduce yourself?

· Please introduce your name, city, university or job, major, and education background.

1.2. Information of MOOCs (about 15 minutes)

1.2.1. Basic information of MOOC (about 5 minutes)

Would you like to introduce what you know of MOOCs?

· When did you learn of MOOCs?
· How did you learn about MOOCs? (From friends, classmates or Internet?)
· When did you first enroll in a MOOC? What is the first course you enrolled in?
· Which MOOC platforms do you usually use?
· How many courses have you already enrolled in?
· What kind of courses did you enroll in? (The area, the subject)
· How many courses did you finish?
· Have you got a certificate?
· Have you paid for the courses? How much?
· Can you always find a course you want to attend on the platform?

1.2.2. Opinions and experience of MOOC (about 10 minutes)

Would you like to explain why you enrolled in MOOCs?

· Why did you take the courses?
· Have you ever quit a course? Why?
· Have you taken other online open courses before a MOOC?

· Compared with the courses you have taken in your university, what are the advantages or disadvantages of MOOCs?

· Compared with other online courses, what are the advantages or disadvantages of MOOCs?

Part 2 Adaptation to online learning environment (about 60 minutes)

2.1. How to finish a course (about 15 minutes)

How can you finish a MOOC successfully?

· How do you choose a course?

· How do you make a plan for the course and homework?

· Where have you got the resources needed for the courses?

· Do you take notes when listening to the course? How do you write notes for the courses?

· How do you finish the homework on time?

· Is it easy to finish the homework before the deadline?

· Do you often communicate with other students in discussion forums?

· When you have questions, how do you deal with them?

2.2. Difficulties faced when accomplishing the course (about 15 minutes)

What kind of difficulties did you come across when you attended a MOOC?

· What is your English level? Do you have language problems?

· Do you have enough time for your MOOCs?

· Do you have basic knowledge or background for a MOOC before you attend?

· Is the content of the course difficult for you to understand?

· Are the assignments difficult to accomplish?

· Are the quizzes or tests difficult to pass?

· Is it difficult to find someone else with whom to discuss and communicate?

2.3. Measures taken to overcome difficulties (about 15 minutes)

What kind of measures or strategies did you take to overcome those difficulties?

· How do you improve your English?
· How do you arrange your spare time and prepare enough time for a MOOC?
· What kind of discussion forums do you often use?
· What kind of online or offline study groups do you attend?
· What kind of help can you get from study groups?
· How do you communicate and cooperate with peers?
· Do you search answers or data online?
· What kind of software or new technology do you use?

2.4. Measures taken to adapt to online learning environments (about 15 minutes)

How do you adapt to an online learning environment?

· How do you make exercise more self-control?
· How do you resist distraction?
· How do you use new technology or tools to help your study?
· How do you participate and act in a study group?
· How do you get help when studying online?
· How do you interact or communicate with peers?

Part 3 Conclusions (about 10 minutes)

3.1. Achievements from MOOCs

What did you obtain from MOOCs?

· What kind of impact or influence have MOOCs had on you?
· Have MOOCs changed your life or study?
· Have MOOCs changed your ideas about online learning?

· What have you obtained from MOOCs?

3.2. Opinions or suggestions to other students

What are your opinions or suggestions for other students who want to enroll in MOOCs?

3.3. Conclusion

Are there still any particularly positive or negative aspects of MOOCs you would like to highlight?

8.2.2. Example Interview Transcript

Interview Transcript of Interviewee 1

A –Author (interviewer), I1 – Interviewee 1

Part 1 Basic Information

A: I have introduced my study and the purpose of the interview when we contact. Now, let's go ahead and start. First, would you like to introduce yourself?

I1: I am a college student in Zhejing Province and I major in Economics.

A: Would you like to introduce how you know MOOCs?

I1: I knew MOOC from Internet and the first MOOC I enrolled in is "Songwriting" in 2013.

A: Which MOOC platforms do you usually use?

I1: Coursera and Edx.

A: How many courses have you already enrolled in?

I1: I have finished 28 courses and got the certificates, but I have enrolled more because I quit some.

A: Why did you quit a course?

I1: I don't have so much time. Some courses are also difficult for me, for example one course named "Jazz Improvisation" is very difficult for me.

A: What kind of courses did you enroll in?

I1: Humanities and Art

A: Have you paid for the courses? How much?

I1: Yes. But I have paid not so much. Some courses have no certificate if you don't pay for it. So in order to encourage myself and get certificate, sometimes I pay for the certificate. Until now, I have paid about two hundreds Dollars.

A: Can you always find a course you want to attend on the platform?

I1: Yes, I think there are very rich resources on MOOC platforms and until now I can almost find all the courses I want to take.

A: Would you like to explain why you enrolled in MOOCs?

I1: I am interested in Music. There are many courses related this area.

A: Have you taken other online open courses before a MOOC?

I1: Before taking MOOCs, I have attended courses on the platform "Wangyi Open

Courses", such as 'Listening to Music' by Yale University. This course is from an authoritative university and the content is rich and plentiful.

A: Do you like that online courses?

I1: Yes. It also has Chinese subtitles that help me understand the content well. I can watch the videos freely and without any pressure. It is really a good way for autonomic learning. This course brought me a good experience of online learning.

A: Compared with the courses you have taken in your university, what are the advantages or disadvantages of MOOCs?

I1: When I take MOOCs, I can decide when and where as long as there is Internet. When I watch the video of the courses, I can stop and watch again if I didn't understand. But some MOOCs are like traditional classroom teaching and I feel boring.

A: Compared with other online courses, what are the advantages or disadvantages of MOOCs?

I1: MOOCs have assignments that I must finish and then submit. Also, I will get feedback and at last I get certificates, which promote learning effectively.

Part 2 Adaptation to Online Learning Environment

A: Would you like to talk about how could you finish a MOOC successfully? First, how do you choose a course?

I1: In order to choose a MOOC effectively from various types courses on all kinds of platforms, I usually do some research on MOOC Academy and read the comments from other students. Those comments are valuable information about the course for me. In addition, in order to provide other students with suggestions, every time I finish a course, I write my comments online.

A: How do you make a plan for the course and homework?

I1: I am a college student and usually I have stable spare time every semester. I will plan carefully before choose to start a MOOC. I have a general plan every month and have a very detailed plan for every week and every day. In order to use my time effectively and finish the assignments of a MOOC on time, I have a very detailed plan every day. I have specific tasks every fifteen minutes of my spare time.

A: Where have you got the resources needed for the courses?

I1: I often search for some valuable material about music in Google or Wiki. One time Amazon introduced a book 'all you need to know about the music business' and

I thought the book would be very helpful for my course so I bought it. In addition, I also bought some Chinese books that are helpful for MOOCs.

A: Do you take notes when listening to the course? How do you write notes for the courses?

I1: Yes, if there are important points, I will write down. In addition, sometimes I download the "PPT" of the courses. Sometimes I share my notes with others. One time, I uploaded the notes for the course 'Marriage and the Movies: A History'. In order to provide others perfect notes, I must first translate my English notes to Chinese and then revise them several times to improve the quality of the notes. Through this process, I learn much more and improve a lot.

A: How do you finish the homework on time?

I1: Most of the time, the homework is not difficult. I do some review and summarize some important points, which are helpful for doing homework. My major is economics and I take many MOOCs about music. So I need to get much background information about music. I often search for some music knowledge online. When I have much more background knowledge of the course, I feel it is easier to finish the assignments.

A: Do you often communicate with other students in discussion forums?

I1: I often read the discussion in MOOC forums and the discussion is very helpful for studies. There are many very active students and whenever there is a question, they provide answers or discussion soon. I seldom ask a question in the forum, because difficult points are similar for other students and I can get what I want simply through reading the discussion.

A: When you have questions, how do you deal with them?

I1: Usually I do some review and have a look at my notes first. If I cannot resolve it by myself, I will look for answers in the discussion forums.

A: Would you like to talk about the difficulties you come across when you attended a MOOC? First, do you have language problems?

I1: When I was a high school student, I like to study English and I often listen to English music. Now when I take MOOCs, there are many new words. But I can look for them in the dictionary.

A: Do you have enough time for your MOOCs?

I1: Because every weekday I also have courses in college, I fragment my spare time

and use it as effectively as possible. For example, I have a little time between lunch and the afternoon. I use this time to watch a video from a MOOC. When I have no course in college in the evening, I will finish an assignment for MOOC.

A: Do you have basic knowledge or background for a MOOC before you attend?

I1: Sometimes I have some problems. But usually I do some preparation and collect some knowledge related to the courses first.

A: Is the content of the course difficult for you to understand?

I1: I choose a course carefully and most of the courses are not so difficult. I am able to finish them. Also, they are not so easy.

A: Are the assignments difficult to accomplish?

I1: Most of the assignments are not difficult and I can finish them by myself. Sometime I seek help in discussion forums or study groups.

A: Are the quizzes or tests difficult to pass?

I1: No. I think if I watch the video carefully and understand the course content, it is not difficult to pass the exams.

A: Is it difficult to find someone else with whom to discuss and communicate?

I1: Many young people like music and I can find many in online study groups.

A: What kind of measures or strategies did you take to overcome those difficulties? First, how do you improve your English?

I1: I like music and most of the courses I take are about music. When I watch the videos, if I cannot understand the content by listening, I will stop and read the subtitle to help myself understand. There are some special words about music, for those I use a specialized dictionary. I sometimes feel it difficult because of my lack of background of music and culture, so I often listen English music and watch English films. In addition, I often read news of pop stars on some English websites.

A: How do you arrange your spare time and prepare enough time for a MOOC?

I1: I make detailed plan. I have software “Timeful” running on my mobile phone, which is recommended by Prof. Dan Ariely, the instructor of the course “A Beginner's Guide to Irrational Behavior”. With this software, it is very convenient to make a detailed plan every day and use time efficiently.

A: What kind of discussion forums do you often use?

I1: I often participate the discussion forums of MOOCs. Also, I attend some online study groups and MOOC community. I also use twitter and Billboard to read the news

of popular music stars.

A: What kind of online or offline study groups do you attend?

I1: I attend discussion groups on Facebook; I also share music knowledge and music courses through social software, such as QQ. I also attend translation groups and help translate music courses.

A: What kind of help can you get from study groups?

I1: I am interested in music and I can make many friends through attending study groups. I learn a lot through communicating with others.

A: How do you communicate and cooperate with peers?

I1: I participate the study groups actively. In addition, I would like to help others, such as share with others my notes. I am a member of translation group and we often translate courses for others.

A: What kind of software or new technology do you use?

I1: Yes, I think the electronic software is very helpful. I use electronic dictionary, Google, Wiki, and software for make plan, such as “Timeful” and take notes. Those electronic tools make me learn efficiently.

A: How do you adapt to an online learning environment? First, How do you make exercise more self-control?

I1: I am an independent person and good at making plan. When I have a plan, I always finish the assignment on time. I am good at controlling myself.

A: How do you use new technology or tools to help your study?

I1: I try actively some new software to see whether they are helpful. When others introduce some good software, I would like to try. I am interested in the new technology, which can make learning more efficient and interesting.

A: How do you participate and act in a study group?

I1: Every MOOC has its own discussion forum, in which we can communicate with others. Sometime, learners introduce other study group in the discussion forum and I will attend some if I think it is helpful. In addition, translation group are very helpful for me to improve English.

Part 3 Conclusions

A: What did you obtain from MOOCs?

I1: Through taking MOOCs, I experienced the first-class instruction from famous universities. I am interested in Music and most of the courses I take are from “Berklee

College of Music". The instructors are authoritative professors and the learning and teaching resources are valuable. I obtained a totally new and fantastic learning experience.

A: What kind of impact or influence have MOOCs had on you? Have MOOCs changed your life or study?

I1: Since I am interested in music, I take a series of MOOCs about music. However, my major is economic. Later I want to be engaged in music industry.

A: Have MOOCs changed your ideas about online learning?

I1: Yes, its scale, its evaluation system and many other aspects provide me a new field of vision of online learning.

A: What are your opinions or suggestions for other students who want to enroll in MOOCs?

I1: When the learners start to take MOOCs, they should choose some courses that they are really interested in. Otherwise, it is difficult to keep on the courses.

A: Are there still any particularly positive or negative aspects of MOOCs you would like to highlight?

I1: With the rapid development of technology, there are various online learning methods and we can use various electronic tools. MOOC is one of them. Perhaps MOOC is not suitable for everyone, but we should try to experience other ways of online learning and get benefit from them.

8.3. Appendix C. Backgrounds of Interviewees

Table 8.1 Backgrounds of Interviewees

	Interviewee1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6	Interviewee 7
Gender	Male	Male	Female	Male	Male	Male	Male
Career	Student	Editor	Retired	Student	Student	Student	Student
Educational Background	College student	Master	Bachelor	College student	College student	Master student	College student
Major	Economics	Science	Economics	Biology	Mathematics	Computer Science	Chemistry
MOOC platforms used	Coursera, edX	Coursera, edX, Xuetang zaixian	Coursera,edX Future learn Xuetang zaixian	Coursera, edX Open2study Xuetang zaixian	Coursera edX Xuetang zaixian	Coursera, edX Xuetangzaixian Standford Online	Coursera, edX Open2study
Coursed enrolled	Humanities Art	Computer Science Engineering Statistics	Economics Humanities Social Science Natural Science Art	Computer Science Social Science Life Science Biology	Natural Science Social Science Humanities	Computer Science Economics Humanities Statistics	Humanities Music Chemistry
Number of courses finished	28	16	67	41	27	37	40

8.4. Appendix D. Original Data From Questionnaire

Table 8.2 Satisfaction with Course Content

Items	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	Mean
The course content is clear in its organization and structure	67 (16.18%)	177 (42.75%)	130 (31.4%)	21 (5.07%)	17(4.11%)	1(0.24%)	1(0.24%)	5.60
The course content is rich and plentiful	112 (27.05%)	172 (41.55%)	99 (23.91%)	17 (4.11%)	8(1.93%)	5(1.21%)	1(0.24%)	5.83
The course content is up-to-date	121 (29.23%)	154 (37.2%)	92 (22.22%)	32 (7.73%)	9(2.17%)	5(1.21%)	1(0.24%)	5.79
The course resources are easy to obtain	91 (21.98%)	155 (37.44%)	113 (27.29%)	42 (10.14%)	8(1.93%)	4(0.97%)	1(0.24%)	5.64
The course content exactly fits your needs	88 (21.26%)	169 (40.82%)	113 (27.29%)	30 (7.25%)	11(2.66%)	3(0.72%)	0(0%)	5.69
Overall, I am satisfied with the quality of the content of MOOCs	95 (22.95%)	193 (46.62%)	90 (21.74%)	20 (4.83%)	8(1.93%)	7(1.69%)	1(0.24%)	5.78

Table 8.3 Satisfaction with Teaching Methods

Items	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	Mean
The courses use different teaching approaches to promote learning	87 (21.01%)	172 (41.55%)	115 (27.78%)	25 (6.04%)	6 (1.45%)	8 (1.93%)	1 (0.24%)	5.68
The courses are learner-centered	85 (20.53%)	168 (40.58%)	115 (27.78%)	35 (8.45%)	9 (2.17%)	2 (0.48%)	0 (0%)	5.67
The courses improve learners' problem-solving ability	76 (18.36%)	161 (38.89%)	122 (29.47%)	37 (8.94%)	14 (3.38%)	3 (0.72%)	1 (0.24%)	5.57
The courses encourage the communication and cooperation of learners	76 (18.36%)	149 (35.99%)	130 (31.4%)	36 (8.7%)	18 (4.35%)	4 (0.97%)	1 (0.24%)	5.51
Overall, I am satisfied with the teaching method of MOOCs	84 (20.29%)	189 (45.65%)	103 (24.88%)	24 (5.8%)	6 (1.45%)	7 (1.69%)	1 (0.24%)	5.72

Table 8.4 Satisfaction with Evaluation Systems

Items	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	Mean
The courses use multiple methods to assess student performance	60 (14.49%)	171 (41.3%)	139 (33.57%)	27 (6.52%)	15 (3.62%)	1 (0.24%)	1 (0.24%)	5.55
Assessment and evaluation tools are effective for measuring outcomes	63 (15.22%)	179 (43.24%)	121 (29.23%)	36 (8.7%)	6 (1.45%)	8 (1.93%)	1 (0.24%)	5.55
The quality of machine-graded assessment system is high	82 (19.81%)	153 (36.96%)	111 (26.81%)	52 (12.56%)	12 (2.9%)	3 (0.72%)	1 (0.24%)	5.55
The quality of peer assessment is high	66 (15.94%)	138 (33.33%)	133 (32.13%)	54 (13.04%)	17 (4.11%)	4 (0.97%)	2 (0.48%)	5.39
The feedback is helpful for learning	83 (20.05%)	160 (38.65%)	129 (31.16%)	28 (6.76%)	8 (1.93%)	6 (1.45%)	0 (0%)	5.64
The quality of the final exams or final evaluations is high	65 (15.7%)	156 (37.68%)	132 (31.88%)	45 (10.87%)	11 (2.66%)	5 (1.21%)	0 (0%)	5.49
Overall, I am satisfied with the assessment of MOOCs	75 (18.12%)	204 (49.28%)	95 (22.95%)	26 (6.28%)	8 (1.93%)	6 (1.45%)	0 (0%)	5.71

Table 8.5 Satisfaction with Discussion Forums

Items	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	Mean
Discussion forums are well-organized by the instructors or assistants	80 (19.32%)	179 (43.24%)	110 (26.57%)	34 (8.21%)	9(2.17%)	1(0.24%)	1(0.24%)	5.68
Teachers or teaching assistants always provide timely answers to questions	62 (14.98%)	155 (37.44%)	140 (33.82%)	43 (10.39%)	10(2.42%)	3(0.72%)	1(0.24%)	5.49
Instructors' or assistants' answers are helpful	82 (19.81%)	165 (39.86%)	121 (29.23%)	30 (7.25%)	7(1.69%)	7(1.69%)	2(0.48%)	5.62
Students participate actively and provide heated discussion in forums	62 (14.98%)	146 (35.27%)	133 (32.13%)	52 (12.56%)	15(3.62%)	4(0.97%)	2(0.48%)	5.41
The discussion among students is helpful	78 (18.84%)	162 (39.13%)	123 (29.71%)	34 (8.21%)	13(3.14%)	4(0.97%)	0(0%)	5.59
Overall, I am satisfied with the discussion forums of MOOCs	72 (17.39%)	195 (47.1%)	102 (24.64%)	33 (7.97%)	7(1.69%)	4(0.97%)	1(0.24%)	5.67

Table 8.6 Satisfaction with Online Learning Environments

Items	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	Mean
The interface of MOOC platforms is simple and it is easily operated	87 (21.01%)	176 (42.51%)	111 (26.81%)	25 (6.04%)	12(2.9%)	1(0.24%)	2(0.48%)	5.70
The MOOC platforms provide technical support that provides help to learners	85 (20.53%)	163 (39.37%)	127 (30.68%)	30 (7.25%)	7(1.69%)	1(0.24%)	1(0.24%)	5.68
The MOOC videos are made specially for online courses and are high quality	90 (21.74%)	178 (43%)	108 (26.09%)	28 (6.76%)	9(2.17%)	1(0.24%)	0(0%)	5.75
The way of submitting or uploading assignments is convenient and is appropriate for online courses	91 (21.98%)	171 (41.3%)	106 (25.6%)	30 (7.25%)	11(2.66%)	5(1.21%)	0(0%)	5.69
Posing or replying to questions in discussion forums is easy	87 (21.01%)	195 (47.1%)	95 (22.95%)	18 (4.35%)	12(2.9%)	6(1.45%)	1(0.24%)	5.74
Overall, I am satisfied with the online learning environment of MOOC platforms.	82 (19.81%)	205 (49.52%)	96 (23.19%)	18 (4.35%)	7(1.69%)	6(1.45%)	0(0%)	5.77

Table 8.7 Overall Satisfaction With MOOCs

Items	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	Mean
Overall, I am satisfied with the quality of the MOOCs	77 (18.6%)	220 (53.14%)	96 (23.19%)	14 (3.38%)	4(0.97%)	3(0.72%)	0(0%)	5.83

“I herewith declare that I have composed the manuscript submitted here by myself and without using any means other than those stated and that I have clearly indicated as such all ideas from third-party sources adopted either directly or indirectly and that the manuscript has not previously been presented in the same or a similar form to any examining authority nor has it yet been published. Previously published parts are marked as such in the manuscript.”

Yuqin Yin

Düsseldorf, 08.2016

Curriculum Vitae

Yuqin Yin
Date of birth: 16.05.1978
Birthplace: Shandong, China
Nationality: Chinese
Family status: Married

Nosthoffenstr. 21
40589 Düsseldorf
Phone number: +4915755932787
Email: yinyuqin218@gmail.com

Academic Background

09.2012 — 09.2016	Heinrich Heine University (Düsseldorf, Germany)
	Doctor Degree on Education
09.2003 — 07.2006	Shandong Normal University (Jinan, China)
	Master Degree on Education
	Curriculum and Instruction
09.1996 — 07.2000	Shandong Normal University (Jinan, China)
	Bachelor Degree on Science

Teaching Experience

09.2007 — 09.2012	Introductory Physics Teacher
	Shandong University of Science and Technology
	Taian Campus (Taian China)
09.2000 — 07.2003	Physics Teacher and Class Tutor
	Shandong Taishan High School (Taian China)