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# A Mixed-Method Investigation of the Best Practices of Online Education in Southwestern China at Four Public Universities by Yu Hao

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A Mixed-Method Investigation of the Best Practices of Online Education

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in partial fulfillment of the requirements for the degree of
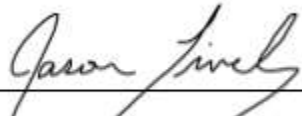
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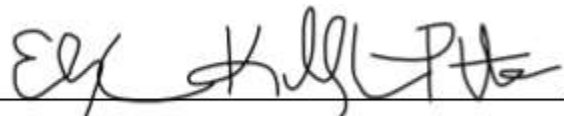

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This dissertation has been approved in partial fulfillment of the requirements for the

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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extend my deepest appreciation and love towards ever-supportive wife Yawen Hsiao, my

children Noah, Hannah, and Jeremy.  All the success and joy in my life is because of you.

**Abstract**

The purpose of this mixed-method study was to discover the best practices of online education in Southwestern China in order to improve the quality of online education in the region. The Chinese overall higher education online courses and programs are continuously expanding (Chou & Lu, 2013). However, the Chinese southwest region's online education was still in its initial stages, which lacks research and reports regarding regional online education development. This study is innovative research essential to assist in online education development in Southwestern China. The researcher conducted this study at four universities that reflected the local culture. According to Baghdad (2011), Jackson and Helms (2008), and Merrill (2003), online education needs the involvement of stakeholders, including faculty, staff members, administrators, and students. The researcher used quantitative and qualitative methods to evaluate the perceptions of existing online education from faculty, staff members, school administrators, and students, due to a lack of related research existing in the region. This mixed-method investigation of online education investigated online education stakeholders' perceptions to determine the level of development of online education in the region. The researcher also referred to the existing literature and combined practices with online learning experiences in the United States to make best practice recommendations for online education in Southwestern China. The researcher collected a significant amount of online survey data and interview responses, and the research results were valid and reliable. The results from the four universities were reliable, and the suggestions for online education in this research are generalizable in Southwestern China

and other frontier areas worldwide that have minorities, lower-income, and insufficient

online resources.

*Keywords*: Online education, Southwestern China, Higher Education, Initial Stage,

Online Resource Insufficient

## Abbreviations

EM          Ethnic Minority

HE          Higher Education

HEI         Higher Education Institution

IT           Information Technology

LMS        Learning Management System

MOE        Chinese Ministry of Education

MOOC      Massive Open Online Course

PI           Primary Investigator

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**Chapter One: Introduction to the Study**

**Introduction**

China has the second-highest amount of higher education institutions (HEIs) with 2,529 universities and colleges, as well as the most college students with 25.5 million in the world in 2014; this significant higher education enrollment made China one of the most extensive higher education systems in the world (Liu S., 2016). Online learning plays a crucial role in students acquiring knowledge in the 21st century, particularly in the field of higher education (Zhang, 2004). However, Chinese online education in HEIs is in its beginning stages (Shi & Yu, 2016; Zhang, Kang, & Li, 2013; Zhang, 2004). Especially in southwestern China, like the Yunnan province, most of the HEIs only offer a few online courses or have not started among the 31 regular four-year universities and 30 short-cycle institutions (Number of Higher Education Institutions, 2016). Although online education development is essential, it remains inadequate in Southwestern China.

In contrast, the United States has the most significant number of HEIs and the most top universities in the world (Vioreanu, 2017; Best Universities in the World 2020, 2019). Due to the long history of higher education development, higher education in the United States became the most mature education industry worldwide (Thelin, Edwards, & Moyen, 2019). The HEIs in the United States included high-quality, diverse, and groundbreaking research, various higher education study subjects, multi-cultural campuses, and the most advanced technology involved in students' learning (Vioreanu, 2017; Why Did You Choose to Study in the United States?, 2013). U.S. college students have access to their study courses and materials online at any time and from anywhere. According to the survey regarding online education conducted in December 2015 by the

U.S. Department of Education, 20.2 million college students across the United States attended higher education.  Among the large college student population, 14% of the students took online courses to receive all of their education, and an additional 28.5% of students took at least one online course (Education, 2015).  Various software and techniques assisted online classes, such as Learning Management Systems (LMS) and Massive Open Online Courses (MOOCs).  In addition to the online learning formats, the hybrid (or blended) courses method combined traditional in-class education with online education, which enhanced students' learning to be more effective (McPherson & Bacow, 2015).  Online courses allow students to learn asynchronously, and students independently determine when to access the learning materials anytime and anywhere (McPherson & Bacow, 2015).  China has the most college students and the second-most HEIs, but many aspects still lack development, showing that China needs to learn from the successful higher education model in the United States, especially regarding their online education.  The regional HEIs' online education requires practical investigation and references to practices from existing online learning to better understand the proper practices that should be applied in online education development.

The goal of this mixed-method study (2019) was to discover the best practices of online education in Southwestern China in order to improve online education quality. The Chinese overall higher education online courses and programs were continuously expanding (Chou & Lu, 2013).  However, the Chinese southwest region's online education was still in its initial stages, which lacks research and reports regarding regional online education development.  This study (2019) is innovative research that is essential to assist online education development in Southwestern China.  The researcher

used quantitative and qualitative methods to evaluate the perceptions of existing online education from faculty, staff members, school administrators, and students, due to no related research existing in the region. Through analyzing the availability of the online resources, online education stakeholders' perceptions, and the needs for development in the southwest region, the researcher referred to the existing literature and combined practices with online learning experiences in the United States to make recommendations for the best practices in Southwestern China.

**Background of the Study**

The primary investigator (PI) grew up in the southwestern region of China in a town known as Yunnan. As a result, the PI was able to experience the local economy and education offered in Southwestern China. Also, the PI has worked in the visual design field and has had several years of website design and information illustration experience. Furthermore, the PI has a particularly deep understanding regarding the development of the local higher education, due to the PI's father, who is a higher education administrator in this region. The PI's father has continually shared his experiences with his administrative responsibilities, as well as the changes needed in the education system. The PI wanted to conduct this research to discover the best practices to assist institutional leaders in the implementation of online education offerings in the region.

Yunnan is one of the most significant ethnic minority (EM) provinces nationwide. A total of 25 types of EMs live in this region, which makes up one-third of the total population in Yunnan. Further, most of the EM groups have their own distinct languages and cultures (55 Ethnic Minorities in China, 2016; Zhang & Verhoeven, 2010). Yunnan province's primary economic income relies on the region's industries of tobacco,

tourism, biologically related investment, power, and mining (Gan & Xu, n.d.).  Due to the

remote geographical location, Yunnan province's 2016 gross regional income was

$2,110,073 (14.788 billion yuan), which was below the average of the national gross

income of $3,590,453 (25.163 billion yuan) (Annual by Province, 2019).  Additionally,

the majority of the EM population lives in rural areas, with most of the rural residents

being low-income householders that need the government to support; however, most of

the Han population lives in the urban area that has more economic resources (Hong,

2010; Zhang & Verhoeven, 2010).  Zhang and Verhoeven (2010) and Hong (2010) stated

that, due to low-income financial backgrounds, the EM students have lower access to

secondary and post-secondary education, especially higher education opportunities.

EM's higher education enrollment rates are lower than the Han ethnic students.  Hong

(2010) claimed that frontier geographic locations and low economic income backgrounds

lead to the lack of economic resources and uneven higher education access opportunities

between EM and Han students in the west and southwest regions.  However, "equal

access to education is an important part of education . . . the importance of this principle

for the Chinese government is shown in the Constitution of the Chinese People's republic

of China" (Zhang & Verhoeven, 2010, p.291).  The Chinese government is willing to

establish policies to assist Yunnan universities, as well as other universities, with the

development of online education programs that help every citizen.

Because of the new technology changes, extensive involvement in the Chinese

higher education system, and potentially assisting equal learning opportunities to all

students, the Chinese government is establishing policies to assist Yunnan and other

provinces' universities in online education development.  According to the Education

Information Technology Development Ten-Year Plan 2010-2020, a computer software, Internet platforms, and other IT (hardware) facilities could support a student's daily learning, as long as the MOE can continuously upgrade and maintain the system and make policies to support the universities' education development (as cited in Chou & Lu, 2013).  The goal of improvement is that the MOE specifies that every student could study in the IT environment, which more computer facility support and broadband coverage could achieve for all districts and school campuses (Chou & Lu, 2013).  The MOE determined that a developed IT environment can effectively assist students' learning, which assures the principal goals of higher education development, especially in assisting the development of online education in Southwestern China.  As the government established the goal of improving education technology, this study's (2019) outcomes would provide the suggestions of practices to improve online education to all students.

The researcher conducted this mixed-method investigation of online education (2019) at four of the 31 universities in the area, and the researcher included 4,448 students' replies from the online survey and 40 university employee interviewees' responses.  The researcher used quantitative and qualitative methods to conduct the study (2019) at four universities.  The data drew from a large student population, and the research questionnaire asked a broad set of 47 online survey questions for the quantitative study to test the hypotheses.  In addition to analyzing the quantitative data to test the three hypotheses, the researcher also used that data to further answer three research questions in the qualitative study in order to address the research subjects from both university employees' and students' perspectives.  The researcher designed the nine interview questions to ask the opinions of university educators and personnel regarding

online education development. The four universities involved in the study were Dali University, Honghe University, Wenshan University, and Yunnan Minzu University. The first three universities - Dali, Honghe, and Wenshan, located in EM's autonomous prefectures, offered a few online programs or classes. The fourth university, Yunnan Minzu University, was one of the well-known HEIs in the southwestern region that recruited minority students, as well as one of few institutions continually providing online learning. The unique study sites used to conduct this study (2019) and a significant amount of responses from the mixed-method study make the outcomes capable of representing the 31 universities in the region.

The researcher chose the mixed-method approach (quantitative and qualitative) in the study because the mixed-method research can assist in clarifying and explaining the outcomes between variables, as well as exploring and defining the results in depth (Fraenkel et al., 2015). Online surveys (quantitative) and face-to-face interviews (qualitative) were the primary methods that the researcher used to conduct this study (2019). Since online education in Yunnan had just begun, the secondary data of the students' online education in Southwestern China did not exist. Due to a lack of regional research in online education, previous data were not available for use in testing the defined hypothesis. Fang and Chen (2015) designed online questionnaires in online education and hybrid courses in other regions of China. The researcher referred to Fang and Chen's (2015) methodology to create online surveys to collect students' relevant online education research. Fraenkel et al. (2015) indicated that online surveys have greater access to distant and hard-to-reach participants and conveniently allow survey access from portable devices.

Additionally, the researcher used more information to support this online education investigation study (2019). While analyzing the literature, the researcher compared the development of online education in different regions of China to the United States. The researcher studied available Chinese higher education and online education formats in the present, examined higher education environments and existing online education resources in Southwestern China, and applied several components of best practices to developing online education. The researcher focused on the following literature categories to design the questions: the status of online education resources at a local university, students' online learning behaviors, ethnic minority students' IT resources, online teaching, and online resource management. The researcher listed a full version of the survey and interview instruments in Appendices B and C.

**Rationale (Importance of the Study)**

Due to the inconsistent availability of online courses and programs across all universities in Southwestern China, the research regarding best practices of online education in the region remains lacking. However, the researcher of this study (2019) referred to existing literature regarding the best practices of online education to discover functional applications in Southwestern China's HEIs. According to Baghdadi (2011), online education needs the collaboration of administrators, instructors, professionals, and technical specialists. In addition to online education stakeholders, students are required to have several abilities for effective online education, such as proper time management, self-regulation, and independent learning abilities (Baghdadi, 2011). In order to conduct a high quality of online education, it is the responsibility of the learners, educators, and administration (Jackson & Helms, 2008). Jackson and Helms (2008) considered that the

learner's responsibility was to acquire learning information, the educator's responsibility

was to design and deliver the education material, and the administration's responsibility

was the technical management of the course.  Moreover, Merrill (2003) also confirmed

that online education needed to consider factors such as instructors, students,

administrators, course design, the understanding of technologies, and online interaction

of teaching and learning.  Due to the isolated nature of online students' studying

environments, which lacked connections with instructors, active communication was the

practice in online education that engaged students in active learning (Baghdadi, 2011).

Based on online education stakeholders' roles, program operation elements, and a lack of

support from regional research, the researcher determined that it was essential to

investigate online education stakeholders' perceptions at Yunnan's universities.  The

feedback from faculty, staff members, administrators, and students would assist in

identifying the status of online education in the region.  The researcher then compared the

data to existing successful models of online education in other regions.  Based on the

insights of the stakeholders involved and review of the literature, the goal of this study

(2019) was to identify the best practices in online education to be implemented across

these four institutions of higher education and others in Southwestern China.

The researcher designed three primary research questions in the qualitative study

to investigate the feedback from university educators and staff members.  According to

Baghdadi (2011), each online course should be well-designed to meet the curriculum

goals of its on-ground counterpart, and the curriculum should reflect the educational

material requirements and guide the students to master their chosen major's skills.

Regarding the online instructor, due to the mobility of online learning and its lack of

face-to-face interaction, the instructor of the online course must serve as a guide to facilitate learning, so that students receive appropriate feedback and maintain time management skills (Baghdadi, 2011).  Due to the under-researched status of online higher education in Yunnan, the researcher adopted Baghdadi's best practice suggestions to assess the feasibility of online course design, teaching and learning styles, and administrations' online resource management to discover the best practices for online education in Southwestern China.

       The researcher collected the students' understandings of online education in the southwest region by using the quantitative study to examine three hypotheses.  Since Yunnan's online education is in its initial stages, most of the HEIs in the region have not regularly offered online education to all college students.  The researcher used this study (2019) of students' existing online learning experiences to examine the hypotheses.  The researcher also considered EMs' higher education access, due to Yunnan's high percentage of EM populations.  The previous study in Yunnan indicated that Han ethnicity students achieved significantly more extensive higher education than ethnic minority students (Zhang & Verhoeven, 2010).  More specifically, Zhang and Verhoeven (2010) investigated whether inequality between Han and ethnic minorities existed due to low economic conditions and less developed higher education systems in southwestern China.  Zhang and Verhoeven (2010) used quantitative methods to examine a total of 2,315 students of 25 ethnic minorities at 10 universities in Yunnan.  A small percentage of EM students attended an HEI; whereas, the majority of Han ethnic students did attend; most of the EM students' attendance was lower than Han students (Zhang & Verhoeven, 2010).  Their study discussed the discrepancy existing in higher education access

between Han and EM students.  However, the researchers did not address equal access to

school IT resources for academic pursuits and higher education satisfaction levels in

different grades among all students.  Also, Zhang and Verhoeven conducted their

research in 2010, in which online learning in Chinese higher education was not very

common.  The popular MOOC platform began its implementation in Chinese higher

education in 2012 (Shi & Yu, 2016).  Zhang and Verhoeven (2010) did not examine the

status of online learning in Yunnan's universities or any improvement of higher

education quality with the implementation of online education in the southwest region.

Therefore, the researcher decided to investigate students' online learning satisfaction at

different school levels and the equality of opportunities for online education resource

access between EMs and Han ethnic students.  The researcher also chose to examine the

correlation between students' Internet usage and using the Internet to study, because of

online learning in higher education was no longer just a trend and had become the

majority (Kentnor, 2015).  Online and traditional in-class education coexisted in HEIs'

educational models.

**Research Questions**

*Research Question 1*: What are the college student's needs and limitations when

faced with online learning in Yunnan?

*Research Question 2*: What differences exist in online education between

Southwestern and other regions of China?

*Research Question 3*: How do universities manage online learning resources in

ethnic minority areas?

**Hypotheses**

*Hypothesis 1*: There will be a significant difference in student satisfaction as it pertains to a student's academic year of study.

*Hypothesis 2*: There will be a correlation between the frequency of a student's daily Internet usage and the time spent on the Internet study.

*Hypothesis 3*: The university's ethnic minorities and Han ethnic students have unequal access to technological resources.

**Limitations**

This study of the mixed-method investigation of online education (2019) surveys and interviews conducted in other languages, specifically an online survey translated from Chinese to English (see Appendix B-2) and interview questions, also translated from Chinese to English (see Appendix C-2). As the researcher conducted this study in China, all the participants' responses were in Chinese. Even though the researcher made great efforts to ensure the interpretation of the interview responses were clear and accurate, misunderstandings could also occur when the PI translated from Chinese to English in chapter four.

The study conducted from July to September 2017 took place close to the end of Chinese higher education institutions' spring semester. Four universities senior students were busy preparing for their graduation examinations and job hunting. Among all of the 4,448 replies, 1,782 were freshmen, 1,276 were sophomores, 1,305 were juniors, and 85 were seniors. The percentage of senior students involved was 1.91%. Online survey replies of seniors were lower than the other three school-level students, which might affect the accuracy of the hypotheses' examination of the different school-level students' online education satisfaction. In addition to the discrepancy of replies, Dali University

had a different school calendar than the other three universities.  They supplied fewer

online survey replies than the other three study sites.  For instance, while 1,486 students

replied from Honghe University, 1,646 replied from Wenshan University, and 976 replied

from Yunnan Minzu University, only 337 students replied at Dali University.  Dali

University's reply rate is 7.58% of the total replies.  The lower reply rate might also

misrepresent the students' perceptions of Dali University.

**Definition of Terms**

*Autonomous Prefecture:* The prefectural level is the head of minority autonomous

leadership in China, in which the ethnic minority (EM) group of a region has a relatively

higher population when compared to the majority population in other regions.  However,

the population of Han Chinese (ethnicity) is the largest of the total population of China.

Thus, Han ethnicity does not count as an EM group.  The autonomous prefecture name

includes the most dominant minority group in that region, sometimes two, but rarely with

three (Regional Autonomy for Ethnic Minorities, 2016).

*Distance education:* Distance education is usually defined as a teaching method

where teachers and students are physically separated or not in the same space.  Education

utilizes a combination of technologies instead of only the traditional face-to-face method.

Distance education includes written correspondence, audio, video, computers, and the

Internet (Roffe, 2004).

*Electronic Learning Resource*: Electronic learning resources allow students to

have access to multiple sources of information presented in diverse formats that include

portable document files (PDF), web pages, electronic books, digital photographs,

animated video demonstrations, and course lectures.  Costs for electronic learning

resources range from open resources that are offered at no charge to subscription-based

materials that require payment to access (Phelan, 2016).

*Ethnic Minority:* Ethnic minorities (EMs) are the non-Han ethnic Chinese,

because EMs' total population is much less than the Han ethnic group.  A total of 55

kinds of EM groups in China are officially recognized other than the Han ethnic majority.

The entire population of all 55 EM groups generally comprised 8.49% of the population

in mainland China in 2010.  Most of the EM groups have their own distinctive language

and cultures (55 Ethnic Minorities in China, 2016).

*Han Ethnicity:* The Han ethnicity is the largest ethnic group both in China and

even in the worldwide.  Their population reached 1.16 billion in 2015, approximately

19% of the world's total population (Han Ethnicity, 2016).

*Hybrid Courses*: Hybrid courses are also called blended courses, which combine

traditional face-to-face classroom instruction with online learning.  The purpose of this

type of educational method was to adopt the advantageous features from both online

learning and the face-to-face format, providing students and teachers much more

flexibility in creating a class meeting schedule, while students maintain face-to-face

contact with the instructor and classmates (Hybrid Courses, 2016).

*Information Technology (IT):* IT is the term for using computers, Internet

networks, and other computer or Internet-related electronic devices.  IT includes

infrastructures to establish, store, secure, exchange, and process all types of electronic

data (Rouse, 2015).

*Learning Management System (LMS):* An LMS is a network software application

that is built for the documentation, administration, reporting, tracking, and delivery of

electronic educational resources.  LMS is one of the primary platforms that offer online

courses/programs (Fenton, 2016).

*Massive Open Online Course (MOOC)*: MOOC is one of the types of online

course technology that is open source and allows unlimited users to participate via the

Internet.  Most MOOC courses are free.  The form of the MOOC lectures is different

from the traditional online course materials, as they contain pre-recorded lectures, text

readings, and question sets.  Most MOOCs have functions that allow users to interact

with the supporting community among students, professors, and academic staff members.

MOOCs originated in Canada, where the software was developed, and users expanded to

the United States in 2012.  MOOCs started to become widespread in China in 2013

(Situation Analysis: Massive Open Online Courses (MOOCs) in China, 2014).

*Online Course:* Online courses are the classes/programs conducted on the Internet

or through social media networks, which is a revolutionary form of education that allows

users to take online courses at anytime, anywhere, not limited by a physical classroom

(What is an online course?, 2012).

*Online Learning*: Online learning or online education is also known as e-learning.

Online learning is the primary method of distance learning/education, as it increases

access to educational opportunities for remote and non-traditional learners.  The

fundamental method to unite distance learning instructors with distance learners is the

Internet.  The Internet is suitable more for distance learning than past implementations

like satellite, cable modem, digital subscriber lines (DSL), and wireless network.

(Kentnor, 2015).

*Yunnan*: Yunnan is one of the provinces in China, located in the far southwest region of the nation, where bordered by Laos, Burma, and Vietnam.  Yunnan spans approximately 152,000 square miles (394,000 sq. km) and has an approximate population of 45.7 million (2009).  The capital city is Kunming.  Yunnan contains eight autonomous prefectures, 16 prefecture-level divisions, and eight prefecture-level cities.  Ethnic minorities in Yunnan compose approximately 34% of the total population.  Major ethnic groups include Bai, Dai, Hani, Miao Yi, and Zhuang.  Due to most of the ethnic minorities' populations existing in distinctive settlements, each large ethnic minority has its own autonomous prefecture; for instance, the Honghe Hani Autonomous Prefecture, the Dali Bai Autonomous Prefecture, and the Wenshan Miao and Zhuang Autonomous Prefecture (China's Cities and Provinces Yunnan Province, 2016).

**Summary**

This study (2019) attempted to discover the best practices in online education implementation based on the feedback of the stakeholders involved and review of the literature.  The researcher conducted this study (2019) at four universities that reflected the local culture.  The researcher expected that the study outcomes could be applied across other institutions of higher education in Southwestern China.  According to Baghdad (2011), Jackson and Helms (2008), and Merrill (2003), online education needs the involvement of stakeholders, including faculty, staff members, administrators, and students.  The goal of online education is to provide the same, high-quality education equal to traditional in-class education.  The researcher believed that online education in this region was worthy of study, due to the Chinese government mandates to integrate online education at all universities in China (Chou & Lu, 2013), but the status of online

higher education in Yunnan remained unexplored.  This mixed-method investigation of

online education (2019) investigated online education stakeholders' perceptions to

determine the status of online education in the region.  The researcher also referred to the

existing literature and combined practices with online learning experiences in the United

States to make best practice recommendations for online education in Southwestern

China.  The researcher reviewed the literature to address information regarding the status

of online higher education worldwide, best practice recommendations for online

education, and background information for the Yunnan province in Chapter Two.

## Chapter Two: Literature Review

**Overview**

The purpose of this mixed-method study (2019) was to discover the best practices of online higher education development in Southwestern China. In order to improve online education to be effective in teaching and learning, the researcher examined best practices standards, examples of online education models in the United States, Chinese online education status, and Yunnan's local higher education status studies. This chapter begins with briefly presenting the principals of best practices for online education from existing studies, which link to the goals of this study (2019): developing online education to be effective in assisting students in their online higher education. Then, the researcher introduced online education development in the United States as one of the successful models of some of the best online education in the world. The researcher continued to describe the current status of Chinese higher education in policy and reform, which influenced online education in the Chinese higher education system. In this chapter, the researcher also included the Southwestern higher education environment. Although Chinese higher education institutions (HEIs) have developed online education for a decade, insufficient research exists regarding the best practices of online education in China, especially in the southwestern region. By analyzing previous studies of online education, the researcher had an understanding of the existing online education development. Then, based on the outcome of this mixed-method study (2019), the researcher determined the best practices of online education in the southwestern region. The literature review in this chapter sets the groundwork for the mix-method research in the next three chapters.

**Online Education Development**

Online studying and adopting the Internet to study is the most used form of distance education. Distance education has a long history of development. This type of education represents that education conducted between teachers and students that are physically separated (Jackson & Helms, 2008; Kentnor, 2015). Kentnor (2015) stated that the United States' distance education started as early as in the 1700s and has lasted through the whole 20th-century technology revolution. Over time, the distance education methods involved included written correspondence, audio, video, computer, and Internet bases (Kentnor, 2015). Distance learning rapidly expanded in the late 1900s due to widespread online education. Online education represents distance education in general as a wide-use learning approach besides the traditional in-class education method.

Online education is the teaching method that requires the use of computers and the Internet. People receive educational information by using computers to access the Internet. The University of Phoenix established the first online education program in 1989 (Kentnor, 2015). Two years later, the public World Wide Web (WWW) network, created by Tim Berners-Lee, started to allow people broad Internet access to all the interlinked (HTML) pages. United States' universities and colleges began to experiment with online education in the early 1990s, and the traditional non-profit universities started to adapt to Internet distance education in 1998 (Kentnor, 2015). Online courses and programs were quickly expanding along with Internet technology evolution in the 21st century. According to Allen and Seaman's survey data, more than 6.1 million students had at least one online class during the fall semester of 2010, and 31% of all university and college students took one or more online courses (2011). The data also reported that

Universities delivered 80% of the content of classes online in general (Allen & Seaman, 2011).

Online education has multiple advantages, such as the lower cost, quick access, and diversity of online learning options. According to Bose (2014), the cost of online education in the United States is relatively lower than traditional classroom education. Bose (2014) addressed that online education can hold as many students as possible without classroom space limitations. In addition, online learning holds a lower cost in the information system and building maintenance, and schools do not need to build a residence hall for resident students. Online education also can save money for hiring additional faculty, staff members, and administrators to teach and manage the online resources (Bose, 2014). Additionally, students can immediately access online learning from anywhere in the world once they have an available device to connect to the Internet. Many U.S. college students are more frequently accessing email, the Internet, and social media platforms due to the popularization of personal electronic devices, including the smartphone, tablet, and personal computer (Kentnor, 2015; Jackson & Helms, 2008). The extensive available personal electronic devices allow students to conduct their studies without restrictions. The students in the United States have almost moved all their studies onto the Internet network (Kentnor, 2015). Students have many options while taking classes online, including access to Massively Open Online Courses (MOOC), LMS online learning, or use the Internet to access the general educational material from Youtube, Facebook, and other social media platforms. Online learning in higher education is no longer just a trend and has become the majority (Kentnor, 2015).

Online and traditional in-class education coexist in HEIs' educational models to serve college students in learning.

**Status of Online Education in the United States**

Online education is as essential as traditional in-class education.  Online education, traditional in-class education, and hybrid courses are the majority of education methods in higher education in the 21st century (Allen & Seaman, 2011; Brunner, 2006; Jackson & Helms, 2008;).  Allen and Seaman (2011) stated that online education would continuously expand in the future of U.S. higher education; online education is becoming as important as the traditional face-to-face educational method.  According to an online education survey conducted in December 2015 by the U.S. Department of Education, a total of 20.2 million college students across the U.S. experienced online learning in the fall of 2014.  The student population was from private and public, nonprofit and for-profit, and 4-year-program and 2-year-program HEIs.  Based on the measured data, 14% of students took online courses to receive all their education, and an additional 28.5% of students have taken at least one online course (U.S. Department of Education Survey, 2015).  Additionally, by rough calculation, one-third of all college students in the U.S. took at least one class online, and the online courses provided 80% or more of their materials through the Internet network (Allen & Seaman, 2015).  Students might not formally enroll in the online courses, but the use of digital content in self-learning is popular.

The online courses utilize a variety of platforms and applications to deliver education materials.  Multiple online platforms include MOOC, LMS, and hybrid courses (Amirault, 2012).  Most online courses provide for learners by using an asynchronous

mode, which allows students to study individually, based on their study status.  Most of

the course lectures were in pre-recorded videos, and the online instructor cut the length of

lecturing videos into several short clips.  Students could watch in their free time.  In

addition to watching the lecture videos online, students also could participate in

answering the interactive course questions to test their knowledge learning level.

Furthermore, hybrid or blended courses involve online education and use the flipped

classroom theory.  Liu Y. (2014) expressed that the idea of flipping the classroom

redefined the mode of studying to explore adopting digital learning.  The hybrid course

adopts this concept to apply the traditional classroom meeting time for instructors to

answer questions, contribute to discussions, and participate in interactive learning

activities.  The course lectures are pre-recorded videos that students watch before the

class begins.  Almost all the courses taught in U.S. higher education classrooms today use

a hybrid approach and incorporate an online component such as hybrid courses.

### MOOC (Massively Open Online Courses)

MOOC platforms are one method of online education.  Skiba (2012) stated that

MOOC platforms depend on new information communication technology (ICT).  The

users could easily participate via the Internet for an open course.  A MOOC is free, and

typically involves thousands of views from learners.  The MOOC structure provided

flexible and asynchronous features to hold different levels of participants.  Anyone could

join the courses and access the course learning content tools, such as video lectures and

discussions.  The users of the MOOCs, through a large number of discussions and a

variety of online participants, could read each other's replies and discover the solutions to

the questions (Skiba, 2012).  Although the instructor might not provide the feedback,

MOOC users could still find the answers from many open participants' discussion.

MOOC platforms and courseware continuously develop.  Stephen Downe created

and launched two different types of MOOC programs that appeared at the beginning,

which are xMOOC and cMOOC (Marques, 2013).  The structures and qualities of

xMOOC and cMOOC are different.  The xMOOC is more based on the traditional

education structure that centers around the instructors' information rather than the

students.  The majority of MOOCs are this type and continuously expand the instruction-

centered courses through the Internet all over the world (Marques, 2013; Shi &Yu, 2016).

In contrast, the cMOOC is more student-centered and emphasizes individual learners

(Marques, 2013).  By using social network sites, such as wikis, blogs, and social media

platforms, the learners ultimately gain knowledge and find the answer from diverse

opinions (Marques, 2013).  The lecture content is the pre-recorded videos combined with

quizzes and/or other assessments.

Three major MOOC providers existed when the MOOC started to provide online

classes. *The New York Times* stated that 2012 is the year of MOOC due to three primary

MOOC providers: EdX, Coursera, and Udacity, which appeared as the favored modes of

learning in the United States (Pappano, 2012).  EdX was founded in May 2012 at

Harvard and MIT, collaborating with some famous universities worldwide, including UC

Berkeley, University of Toronto, Georgetown University, and Australian National

University (EdX, 2016).  EdX offered around 650 courses in the subjects of the

humanities, math, and computer science by the end of 2015 (Shi & Yu, 2016).

Coursera was established at Stanford in April 2012 by two computer professors, Andrew Ng, and Daphne Koller.  Until the end of 2017, Professor Ng and Koller collaborated with some experts at 149 well-known universities from 28 countries.  They developed more than 2,000 courses on Coursera.  The courses primarily cover the fields of art, biology, computer science, economics, humanity, law, medical science, physics, and more.  Approximately 25 million learners registered for online courses through Coursera.  Coursera courses included more than 10 languages, including English, Spanish, German, and Chinese (Coursera Courses, 2017).  Lastly, three Stanford University professors—Sebastian Thrun, David Stavens, and Mike Sokolsky—developed Udacity in January 2012.  Most of the courses on Udacity are computer and technology relevant courses.  By the end of 2014, the Udacity platform had already reached up to one million users (Shi & Yu, 2016).  The global MOOC market should grow to $8.5 billion by 2022.  The majority of the top three online vendors will likely still be EdX, Coursera, and Udacity worldwide (MOOC Revolutionise the Education Industry, 2017).  The primary MOOC platforms courseware continuously expands to meet the needs of online learners.

MOOC supports most of the different devices' displays and is free to use.  MOOC developers created electronic distance learning technologies on different electronic devices/platforms, like Internet browsers, computer software, tablets, smartphones, and other portable devices.  The installation of the courses on MOOC is typically free but may require the user to pay a small fee.  HEIs created coursewares and utilized those three provided (EdX, Coursera, and Udacity) to share with others.  Coursera and Udacity have supported college-level courses on the Internet since 2012; all learners from

colleges and universities can take the classes online for free worldwide (McPherson &

Bacow, 2015). Most of the courses through MOOCs are open and free to all learners,

though charges that might apply to the students who were seeking a course completion

certificate (Bonvillian & Singer, 2013). The information presented is open to anyone

wishing to join the course sessions without any formal admittance required by a

traditional institution or program (Amirault, 2012). Students who take the classes on

MOOCs might not earn the traditional formal credit. However, due to its open-source

nature and the number of classes offered, MOOCs could be viewed as a lifelong learning

concept in the cross-culture and career fields.

**LMS (Learning Management Systems)**

Learning Management Systems (LMSs) are another technique to provide students

online learning opportunities. An LMS is a powerful integrated system that supports the

students' e-learning process through many activities between the teachers and students

(Despotovic-Zrakic, Markovic, Bogdanovic, Barac, & Krco, 2012). Unlike most of

MOOC resources open to all the learners in society, institutions adopted the LMS

platforms for the delivery of online courses and learning materials for internal school

education. The system platform creates the shell or storage online to let the teacher

establish the web-based course content, including text, graphics, videos, audio, class

notes, and quizzes. Students can use similar functions in LMSs as in MOOCs for

learning, collaborating, communicating, and discussing with the instructor and other

classmates (Despotovic-Zrakic al et., 2012). LMSs assist educators and students in

accessing and completing the learning activities at the HEIs.

As online education continually grows in HEIs, more functionalities are required by institutions to deploy school-based online courses and programs. The online learning software industry has rapidly grown, along with the schools' needs. Licensed and free are the two types of online learning software. Many licensed LMS products have developed, such as Blackboard Learning System, eCollege, Desire2Learn, etc. (Jackson & Helms, 2008). Licensed LMS products are highly expensive to purchase, and divers' licenses have different costs. Regularly relicensed LMSs may cost more depending on the number of enrolled students. Some of the open-source LMSs offer small start-up costs, and the system is highly stable and reliable (Amirault, 2012).

LMSs also have open-source platforms available just as the MOOCs. LMS free software licensed products include Moodle, Claroline, and OLAT (Jackson & Helms, 2008). The existing open-source LMS platforms work appropriately to deploy institutional online learning materials, courses, and programs (Amirault, 2012). "Open Class" LMS has been created by the partners of Google and Pearson. This system provides basic LMS functionality and combines with Google Suite tools, mobile functionality, and social networking (Amirault, 2012). Those developments in the LMS market may influence the boundary of free and licensed systems, which may change and create another option for lower-cost systems. The free LMS may also significantly enhance the entire LMS functionality and the LMS market competition. A Variety of LMS platforms allow universities to conduct online education with their students. However, choosing an appropriate LMS platform for HEIs is not a simple decision. Universities' personnel have to know the features of the various platforms. Selecting a

free or licensed LMS would be a much more common challenge because each platform has specific strengths and weaknesses within its features, usability, and functionality.

**Hybrid Courses**

Hybrid courses blend traditional face-to-face instruction with online teaching. Students can quickly access class materials through electronic devices without the restrictions of time and location, regardless of whether they are physically inside or outside of the classroom. Besides adopting the traditional educational curriculum standard and ICTs to teach, hybrid courses also use social media platforms to enable interactions between students and teachers, which engage students in diverse ways to pursue learning (Ferrera, Ostrander, & Crabtree-Nelson, 2013). During the hybrid course learning process, Potter et al. (2016) suggested that students should study the class material outside of class and participate in hands-on activities during class time. The hybrid approach allows for reaching and engaging students in diverse ways, often through students' already accustomed mediums and integrating online learning.

Higher education institutions use hybrid teaching methods to increase the accessibility of online environments in student learning. According to the findings of the U.S. Department of Education, the use of the blended approach for traditional and online courses was more effective than solely in-class teaching or online teaching (2015). Brunner (2006) stated that hybrid courses use the flipping classroom theory of having students learn the material on their own prior to discussing it in class, which changes the traditional way of lecturing and combines the advantages of online and traditional in-classroom teaching methods. The hybrid method leads the students to better engagements and learning outcomes than the traditional teaching method (Bishop &

Verleger, 2013).  The hybrid course takes advantage of the most useful features of both online and in-class learning, which integrate the two learning formats' activities so that the aspects of the hybrid course complements, strengthens, and elaborates on one another (Brunner, 2006; Jackson & Helms, 2008; Chingos, Griffiths, Mulhern, & Spies, 2017; McPherson & Bacow, 2015).  Additionally, HEIs commonly used LMSs as online learning tools for hosting as online classes and hybrid course learning materials.  LMS platforms support users to electronically communicate with each other for assignments, grades, notifications, and discussions (Despotovic-Zrakic et al., 2012).  More than two-thirds of American academic leaders recognized the positive outcomes of hybrid courses (Allen & Seaman, 2011).  Many higher education institutions in the United States utilize the hybrid course teaching approach, which blends online and in-class education.

The hybrid course method ensures that the quality of learning outcomes aligns with traditional in-class education.  Chingos, Griffiths, Mulhern, and Spies (2017) conducted a study in comparing the students' outcomes in a hybrid approach to traditional in-class instruction at the University of Maryland.  Chingos al et.  (2017) found that students through the hybrid course approach and from traditional in-class learning had the same high-quality learning outcomes in class-passing rates and learning evaluations.  Insufficient evidence concluded that hybrid courses are disadvantaged or academically inferior (Chingos al et., 2017).  Allen and Seaman (2011) addressed that, since the hybrid course includes online delivery for study materials and in-class communication, hybrid method adoption is as excellent as traditional face-to-face education or even better.  The hybrid courses teaching method at HEIs of the U.S. has

become the most common method of online education methods due to the high

percentage of the use in HEIs and its outstanding students' learning outcomes.

**Online Education Best Practices**

Best practices are efficient ways to accomplish tasks, but their ability to be

effective is contingent upon the surroundings. The United Nations Educational,

Scientific, and Cultural Organization (UNESCO) determined best practices as "the most

efficient (least amount of effort) and effective (best results) way of accomplishing a task"

(TVET Best Practice Clearinghouse, 2010). UNESCO (2010) also stated that the best

practice in one place might not be the best application in another area. However, people

can learn from previous experiences to determine better practices. Baghdadi (2011)

addressed that no standard best practice for all people in different circumstances, but the

best practice needs to ensure the most effective outcome for most people. In order to

design a useful online education course, the process of creating an online course requires

the collaboration of administrators, instructors, and staff members (Baghdadi, 2011).

Yang and Cornelius (2004) conducted a qualitative study, researching three students'

perceptions of the quality of online education at three different universities. As a result,

the study (2004) showed that students' perceptions of positive online learning

experiences included cost-effectiveness, flexibility, convenience, self-learning, ease of

connection, and availability of technical support. The researcher of this study (2019),

analyzed the best practices based on the literature surrounding online education and the

most effective components in the following sections.

**Online Instructor**

The role of online instructors and their teaching methods should differ from traditional teaching methods in order to guide students in learning effectively. The online instructor needs to serve as a facilitator to lead the students' online learning rather than maintaining a lecture substantial traditional teaching (Baghdadi, 2011; Silva, Lourtie, and Aires 2014; Crawford-Ferre & Wiest, 2012). Implementing instruction with an interactive approach guide students' learning, which helps them develop learner-centered strategies that students need to be active in their education (Merrill, 2003; Silva, Lourtie, and Aires 2014). Baghdadi (2011) and Merrill (2003) also addressed the need for online instructors to serve as content consultants who pose relevant guiding questions, maintains a learner-centered focus, provide clear and useful feedback, and arranges the learning activities to engage students with their peers. According to Baghdadi (2011), due to the lack of face-to-face communications online, the instructor needs to guide students by facilitating discussion. These online discussions allow the online instructors to interact with students, such as replying to students' inquiries, addressing difficult topics, and engaging students in idea exchange (Baghdadi, 2011; Silva al et., 2014; Crawford-Ferre & Wiest, 2012). Crawford-Ferre and Wiest (2012) also added that training online instructors would help to prepare them to assist students effectively. Online instructors need to adopt online platform functions to create learning activities other than text-readings, such as discussions, videos of hands-on activities, peer evaluation, writing blogs, and online chats (Merrill, 2003). In order to develop students' active learning abilities, online instructors need to change their traditional classroom teaching role to be student-centered and facilitate them in learning.

Online teaching schedules need to be fixed, but the instructor also needs to reserve some flexible time to cover class unexpected circumstances throughout the semester.  Yang and Cornelius (2004) addressed the isolating nature of online learning that are perpetuated through the lack of interaction or interpersonal communication between instructors and students.  Crawford-Ferre and Wiest (2012) suggested that instructors need to manage students' involvement in online courses and build connections with students in remote environments through the online teaching plan.  According to Baghdadi (2011), online courses require planning in advance because students and instructors are physically separated, and students feel comfortable participating in the class activities online if they see an outline for the entire course rather than a short period (2011).  Instructors also need to consider the flexibility of the course plan, which should develop assignment timeframes to prevent getting in the way of students' responsibilities and activities outside of school (Baghdadi, 2011).  Baghdadi (2011) and Crawford-Ferre and Wiest (2012) stated that online instructors are responsible for managing the teaching structure and process.  Online instructors need to provide direct access to learning resources, present the required format/template for assignments, prepare appropriate tasks within the course schedule to avoid overload, and be flexible with the syllabus and make changes when needed (Baghdadi, 2011; Crawford-Ferre & Wiest, 2012).  The flexibility of the course plan can provide students with the opportunity to fix the problem without falling behind.  For instance, they would be able to resolve unexpected technical issues, respond to students' feedback, adjust the learning style to match instructor's online teaching, and arrange for emergency circumstances (Baghdadi, 2011).  Although instructors did not meet students in the online environment, through the established

syllabus with a fixed course learning calendar and flexible feature, instructors could

support students' learning in online courses.

Online instructors need to familiarize themselves with online education platforms.

According to Yang and Cornelius (2004), online instructors who were unfamiliar with the

online learning platform are unhelpful because they could not answer students' technical

problems. Baghdadi (2011) and Crawford-Ferre and Wiest (2012) explained that

although online instructors are not a professional in online learning development, online

instructors still need to understand the online learning platform adequately, in order to

assist online students. Due to the many functions in online platforms, the online

instructor must experience each feature of the online program in order to assist students

with the online software's functionality and performance (Baghdadi, 2011; Merrill,

2003). Additionally, Fayne (2009) stated that online learners would repeatedly ask about

the location of learning materials during the semester, including lesson plans, articles,

and other course materials. Online instructors who could efficiently assist students locate

the learning materials benefit students' learning online. Online instructors need to study

the online teaching platform in order to become familiar with the online platform and

effectively support students in learning.

### Course Design and Support

Merrill (2003) stated that designing a new course is the beginning of an effective

online learning process. Online course development requires the collaboration of several

people's involvement. According to Baghdadi (2011), creating and developing an online

course needs the cooperation of a variety of expertise from different professions, such as

administrators, educators, and technical experts. Different professionals assure different

responsibilities in the design process of online courses.  Fayne (2009) explained that the

development team is to assign different roles to individuals, such as supervisor, materials

manager, instructor, recorder, timekeeper, editor, or computer programmer.  According to

Merrill (2003), online courses first need to develop the learning objectives that are

valuable, achievable, and assessable; then, create actual learning tasks for engaging

learners.  In order to develop and transform the course subjects into valuable learning

content, instructional planners should be part of the course development team (Baghdadi,

2011).  Merrill (2003) also recommended, "effective online course design and facilitation

uses a learner-centered model, a familiar model for most adult educators" (p.15).  In

addition to developing new online courses, using or modifying existing online resources

is another way to develop online learning content.  Because many factors that contribute

to online learning, modification of an existing course could also be beneficial in

facilitating students in online learning (Despotovic-Zrakic, et al., 2012; Merrill, 2003).

Additionally, Despotovic-Zrakic, et al. (2012) explained that effective online learning

involves course content, online learning activities, students' learning styles, and

communication methods.  Baghdadi (2011) addressed that in order to prevent violating

copyright guidelines, faculty and staff members should develop courses around available

materials because they could have more time to prepare for instruction.  Therefore,

instructors or content specialists should always involve course development (Baghdadi,

2011).  In order to have a valuable online course that facilitates students in online

learning, regardless of utilizing existing course content or create new ones, administrators

are essential to collaborating in online course development.

Online course delivery methods and content need to be diverse and interesting. Monotonous online instructional methods and poorly designed online courses would make students lose interest in seeking information, and experience increased isolation from online learning (Yang & Cornelius, 2004).  Multiple methods of content learning and delivery method should include synchronous and asynchronous learning activities (Crawford-Ferre & Wiest, 2012).  Synchronous activities primarily involve communication methods, including chat rooms, discussion forums, and webcam conversations (Merrill, 2003; Crawford-Ferre & Wiest, 2012).  Asynchronous activities refer to individual learning, such as video lectures, presentation slides, viewing learning material, and communication through e-mail (Merrill, 2003; Crawford-Ferre & Wiest, 2012).  In addition to using diverse methods to communicate and deliver learning information, various types of learning materials would assist students' online learning.

According to Merrill (2003), online courses usually incorporate text-intensive assignments, which could easily cause the students to lose their interests in online learning.  Instructors and designers should consider adding visual elements within texts or external links to other resources (Baghdadi, 2011; Merrill, 2003).  Instructors should use tables, charts, graphs, and pictures in their online lectures to enrich the learning content (Baghdadi, 2011).  Merrill also addressed that it is essential to be sure to receive permission to use visual elements (2003).  During the online education process, technical support needs to be available to both instructors and students (Crawford-Ferre & Wiest, 2012).  In order to effectively facilitate students in online learning, synchronous and asynchronous online course delivery methods need to use, and include visual elements in learning materials, to enhance students' attention in reading learning material online.

**Supervision**

As the leaders of the school, administrators need to adapt to the changes in education and be cognizant of the need for online and hybrid educational offerings. According to Baghdadi (2011), although online and traditional in-class instruction possesses differences in course delivery processes, the learning outcomes should be the same quality. Administrators need to evaluate online and in-class faculty equally to avoid taking sides about which educational method is better as well as to recognize and establish equally credible systems for online and in-class courses and degree programs. If online and traditional in-class faculty members are in different groups, administrators should serve as a communication channel to facilitate conversation between those two groups in exchanging teaching experiences. The recognition of online education from administrators is the foundation of online education development because they equally manage educational methods that are able to assist students' diverse learning needs.

In addition to participating in online course development, administrators have responsibilities in choosing compatible online learning platforms. According to Crawford-Ferre and Wiest (2012), diverse students' demands determine the selected suitable technology. Academic leaders need to consider the type of platforms, enrollment of online courses, achievement, and based on different demographic groups (Glass, Shiokawa-Baklan, & Saltarelli, 2016). Glass et al. (2016) stated that, for higher education institutions that have already implemented online education, institutional administrators could examine the enrollment and access data related to those courses to determine the effectiveness of online learning as well as the platform. The online education is different from traditional in-class education because there is more data to

observe.  Online platform servers stored students' online learning activities, including

login, material engagement, posts, and responses (He, Xu, & Kruck, 2014).  Those data

allow administrations to conduct assessments and course evaluations.  Also, by providing

evaluation opportunities to students who take online courses, the administration would

receive valuable feedback (Fayne, 2009).  Therefore, online instructors and staff

members could benefit from this insight and revise the online course as needed based on

their feedback (Fayne, 2009).  The data would help school administrators align with more

comprehensive institutional strategies to demonstrate how online platforms are essential

to developing access, ensuring learning quality, and reducing cost (Glass, et al., 2016).

For universities that do not offer online learning, the administrators could study students'

needs within their school, such as providing diverse subjects, and serving broader

different student populations to determine how online platforms would work in their

respective school settings (Glass, et al., 2016).  Glass, et al. (2016) also stated,

"Institutional researchers must prioritize data collection and analysis that will be of most

interest to state legislators and policymakers" (p.51).  Every higher education institution

has a different mission; however, online education could assist college students in

learning effectively if school administrations could appropriately evaluate the needs of

students and choose the compatible platform for their school.

### Learner Characteristics

Students in online learning need to have self-regulation, time management skills,

and active learning abilities.  According to a study conducted by Yang and Cornelius

(2004), a variety of benefits that online education brings, specifically including

flexibility, convenience, and self-learning (Yang & Cornelius, 2004).  Yang and

Cornelius (2004) addressed that due to the convenience and freedom present in online courses, successful online learning highly required students to have self-motivation and self-regulation. However, the advantages of online education could negatively affect students' learning if not correctly used. Students who do not possess self-management skills might miss the due date for assignments or tests (Yang & Cornelius, 2004). Therefore, in order to be successful in online education, students must be organized, self-directed, and maintain an active learning attitude in the learning process (Veletsianos, Collier, & Schneider, 2015). Students with self-regulation abilities are able to understand, prepare, and navigate their learning environment; through setting short- and long-term goals. Those goals allow them to manage their learning behavior to accomplish the goals they set (Kizilcec et al., 2013). Additionally, active learners usually take notes during lecture videos, rather than doing nothing and passively viewing the content (Veletsianos et al., 2015). Although students may encounter difficulty due to a lack of immediate and frequent support from their instructors, they need to persist in seeking assistance and resolutions (Glass et al., 2016; Veletsianos et al., 2015). Overall, in order to master course information, students who take online education need to have self-regulation skills to guide their online learning process, abilities to manage time to accomplish online assignments, and possess an attitude that supports active learning.

Students need to have necessary knowledge in computers and online platforms in order to succeed in online education. According to Yang and Cornelius (2004), online learning technical problems could affect students' online learning experience if they are unfamiliar with the online platform and if their instructor could not provide them assistance. Since many U.S. college students widely use smartphones, tablets, and

personal computers, they have increased their use of email, Internet, and social media in

their daily lives (Jackson & Helms, 2008).  Most of the students in the United States have

moved all their studies into the Internet network (Kentnor, 2015).  Although students

have many opportunities to operate new technologies, universities may still need to

provide training programs in order to serve students in online learning.  Crawford-Ferre

and Wiest (2012) recommended that universities must train students in necessary

technologies before taking online courses.  Additionally, students in the online learning

environment need to collaborate with their classmates, and instructors need to facilitate

learning (Merrill, 2003; Crawford-Ferre & Wiest, 2012).  More specifically, students

would benefit from exchanging ideas, engaging in discussion, and hearing opposing

perspectives (Ferrera et al., 2013).  Therefore, students need to access an online

orientation to familiarize them with the features of online platforms and courses,

including discussion forums, a module that holds the class materials, and functions of

PDFs and other document files (Crawford-Ferre & Wiest, 2012).  Students must have the

necessary computer and online platform accessing abilities in order to complete online

courses.

### Hybrid Courses Format

Hybrid courses or the blended learning approach is a combination of online and

traditional in-class instructional practice, which delivers a new way of classroom

teaching.  This type of educational method utilizes the idea of "flipping the classroom"

(Brunner, 2006; McPherson & Bacow, 2015).  A flipped classroom changes the

traditional way of the instructor-centered lecturing method allowing students to

asynchronously study outside the classroom because course content can be accessed

online (Brunner, 2006).  Furthermore, in hybrid courses, instructors use traditional class

time for discussion and interactive exercises (McPherson & Bacow, 2015).  Flipped

classrooms require students to study course content outside of class, then participate in

hands-on activities in-class meetings, which could effectively increase students'

interaction and active learning more than in traditional courses (Chingos, Griffiths,

Mulhern, & Spies, 2017).  McPherson and Bacow (2015) also stated that the flipped

classroom teaching provides more class time to devote students to be more active in

learning.  Additionally, hybrid courses integrate online learning and face-to-face

classroom teaching, which reduces the amount of time students are seated in classrooms

(Brunner, 2006; Chingos, et al., 2017).  The blended teaching method combines

technology-driven instructors with traditional classroom teaching, which is the new style

of teaching in the 21st century.

The hybrid approach can efficiently assist teaching and learning.  According to

Brunner (2006), the blended teaching method enhances teaching, communication, and

learning within the actual classroom.  Many educational tools serve either online teaching

methods or traditional classroom environment but assist them in both (Brunner, 2006).

The weakness of online education programs is hard to engage students in collaboration

and discussion.  Also, the traditional in-class method causes students to rely on their

instructors to learn (Brunner, 2006).  The hybrid model gives instructors and students

more flexibility with their learning methods and class schedules (Ferrera, Ostrander, &

Crabtree-Nelson, 2013).  Hybrid learning allows the instructor to support students in

learning using the strengths of both methods; instructors can include different teaching

methods in their face-to-face class-time and respond to discussions in online learning

platforms to assist students in learning (Ferrera et al., 2013). Brunner (2006) also addressed that if instructors utilize both online and in-class time well, online learning can develop students' written communication skills, whereas the face-to-face learning experience can provide students more training in listening and oral communication skills. Hybrid courses utilize advantages of traditional in-class instruction methods combine with online platforms, which effectively assist students in learning.

The hybrid courses and traditional in-class teaching provide the same quality of education. College students enrolled in hybrid courses and traditional in-class courses demonstrated similar learning outcomes (Ferrera et al., 2013). According to Chingos et al. (2017), their study found the same high-quality learning outcomes from the hybrid course approach and from traditional in-class teaching. One of the conclusions from the study stated that insufficient evidence to conclude that hybrid courses did not prepare students as well (Chingos et al., 2017). Hybrid courses commonly used the LMS as the online learning tool for hosting online teaching and hybrid course learning materials (Despotovic-Zrakic et al., 2012). All the functions of LMS platforms support the users to electronically communicate with their instructor and classmates (Despotovic-Zrakic et al., 2012). Those functions efficiently assist students in learning. The online platforms feature supplemental learning activities, including group work, quizzes, and online discussions (Ferrera et al., 2013). Hybrid courses provide quality learning outcomes by utilizing the traditional in-class instruction methods along with online platform functions, which explains why many academic leaders from the U.S. recommend this approach. More than two-thirds of the American academic leaders recognized the outcome of the hybrid course (Allen & Seaman, 2011).

Hybrid courses can make the implementation of the education process more manageable. Chingos et al. (2017) stated that due to the flexible schedules, hybrid courses have the potential to increase access to higher education and decrease costs. Hybrid courses combine online learning and face-to-face classroom teaching, which maintain learning outcomes in leading better results than either only one method. In addition, hybrid courses reduce seat time in the traditional classroom (Brunner, 2006). Because hybrid courses do not meet regularly, it cuts down on the cost of commuting to the university. Hybrid classes incorporate flexible meeting schedules, which allow students to take more courses to earn a degree quickly (Chingos et al., 2017). In addition to producing the same high-quality education as traditional in-class teaching, implementing hybrid courses may potentially reduce the costs to students because flexible class schedules allow students to take many classes and quickly earn a degree.

**Chinese Higher Education Overview**

The two types of higher education institutions (HEIs) that exist in the Chinese higher education system include public and private higher education. All public higher education institutions are under the administration of the Ministry of Education (MOE), in which schools receive funding from the government. All the HEIs' development plans, policymaking, funding, and evaluation must involve the MOE (China, 2009; Li F., 2016). Private HEIs have more autonomy in policymaking, facility development, and self-funding. However, private schools need recognition from the MOE, as the graduates need to take the higher education certificate tests provided by the MOE in order to receive the diploma. Additionally, Chinese high school graduates have to take higher education entry examinations, and the scores determine which HEI they can choose to

attend.  Higher education entrance exams are a highly intense competition, due to the

limited student enrollment in schools.  Students with higher scores have more choices to

enroll in well-known universities, regular 4-year universities, and 3-year colleges.  The

students with lower scores students are limited in the choice of their university.  Entering

the private institutions do not require a high score, but the tuitions are much higher than

the public institutions.  Regardless public or provide universities, the MOE leads all

Chinese higher education institutions in development.

Current Chinese HEIs have more freedom and autonomy in school development

and self-funding.  The MOE released some of the rights to the local government, also

reformed some of their policies to assist universities and colleges in policymaking and

funding.  In order to save government funding and improve HEIs' quality in the society,

the MOE combined many HEIs in the same city or province in the 1990s.  Thus, the

MOE and school administrations used funding more efficiently in a particular facility

improvement and/or school projects (China, 2009).  Furthermore, Chinese higher

education enrollment expansion started in the late 1990s (Liu, S., 2016).  After several

decades of higher education developments and reform, China had 37 million college

students enrolled by the end of 2015 (Zhao, X., 2016).  Additionally, China has the

second-most HEIs in the world with 2,900 accredited universities and colleges (Zhao, X.,

2016).  The significant amount of college students and HEIs makes Chinese higher

education to become one of the most extensive higher education systems in the world

(Choudaha, 2012; Zhao, X., 2016).  As the report of MOE in July 2014, China had 2,542

public universities and colleges, including 2,246 universities and 296 colleges (MOE

report, 2014).  In order to more efficiently assist the development of Chinese HEIs, the

MOE determining their needs and started to reform policies.

Chinese higher education has faced many challenges after achieving or coming

close to the goal of mass enrollment in higher education.  Shifting the higher education

quantity to quality is the most significant challenge in Chinese higher education (Li,

Whalley, Zhang, & Zhao, 2008).  Additionally, although Chinese higher education as one

of the most prominent higher education systems in the world, only two of the HEIs

ranked in the top 25 universities for world reputation.  The best-ranked Chinese

universities are Tsinghua University (THU), ranked at the 14th, and Peking University

(PKU), ranked at 17th (World Reputation Rankings 2018, 2018).  China was still young

in modern higher education advancements.  Modern Chinese higher education

development has existed for less than 50 years, and the education system faced many

challenges.  For instance, HEIs need to have more freedom and autonomy in school

policymaking and planning, HEIs should be able to better-manipulating school resources,

the quality of higher education in colleges and universities needs to increase, and the

facilities and resources require improvement.

**Funding**

Chinese government funding supports the development of Chinese higher

education.  The Ministry of Education (MOE) developed the Communist Party of China

(CPC) Central Committee on Education Reform in 1985, which was the first funding

regulation to refer aid Chinese modern higher education reform (Li F., 2016).  The MOE

has shown strong supporting in four main aspects, "national strategy designer and

program planner, major funding provider, executive director, and regulator and

supervisor" (Li F., 2016, p.47).  The funding from national and local governments

support the development of higher education institutions, which continuously increasing

every year.  According to *China's Education Statistics Yearbook*, the government

funding for higher education was at the scale of 164.8 billion Yuan (2007), 206.2 billion

Yuan (2008), 232.7 billion Yuan (2009), 296.5 billion Yuan (2010), and 409.6 billion

Yuan (2011) (Xie, Han, Mou, & Ji, 2012).  The annual growth rates of HEIs' fiscal

funding were 25.1% (2007-2008), 12.9% (2008-2009), 27.4% (2009-2010), and 38.1%

(2010-2011).  The results indicated that the growth rate of funds used for higher

education increased in recent years.  The ratios of government appropriation of funding

for HEIs were higher than the of general education funding ratios of 20.0% (2007),

19.7% (2008), 19.0% (2009), 20.2% (2010), and 22% (2011); higher education funds

were taking approximately 19 - 22% of the total education funds (Xie et al., 2012).

Chinese government funding, in supporting the expansion of Chinese higher education

increased in recent years, which demonstrated that the Chinese government is

continuously leading the development of higher education.  Fundings are the fundamental

factor in operating a school.  Besides the national and local government appropriation,

other funds of Chinese HEIs are donations from community groups, personal donations,

and institutional business income (including tuition and fees).

Student tuition has been increasing every year.  The higher education institutional

tuition and fee charge system began in 1986.  HEIs implemented the unified charge

policy of tuition and fees since 1997.  From 2007 to 2011, HEIs total tuition reached

127.7 billion Yuan (2007), 147.4 billion Yuan (2008), 159.4 billion Yuan (2009), 172.5

billion Yuan (2010), and 186.2 billion Yuan (2011), the growth rate of the tuition were

15.4% (2007-2008), 8% (2008-2009), 8% (2009-2010), and 8%(2010-2011) (Xie et al.,

2012).  Overall, the total higher education funds were 376.2 billion Yuan (2007), 434.7

billion Yuan (2008), 478.2 billion Yuan (2009), 562.9 billion Yuan (2010), and 702.1

billion Yuan (2011) (Xie et al., 2012).  The annual growth rates for the total higher

education funds were 15.6% (2007-2008), 10.0% (2008-2009), 17.7% (2009-2010), and

24.7% (2010-2011) (Xie et al., 2012).  Li F.  (2016) also stated that tuition fees are a

significant part of HEIs' income.  The percentage of tuition and fees charged in the total

funds for the higher education were 33.9% (2007), 33.9% (2008), 33.3% (2009), 30.6%

(2010), and 26.5% (2011); the percentages of government budget in the total funds for

the higher education were 43.8% (2007), 47.4% (2008), 48.7% (2009), 52.7% (2010) and

58.3% (2011) (Xie et al., 2012).  Thus, the average of one-third of the total universities

and colleges' funds represents that HEIs' tuitions are other main resources in higher

education institution funds.  However, "major funding providers of Chinese public higher

education institutions are still the government" (Li, F., 2016, p.50).  The government

funds provide approximately half of the total funding, which indicates that government

funds are the primary resource that supports HEIs so that HEIs strongly rely upon and

follow government regulations.

**Education Policy**

The MOE assists needy students in paying their tuition.  As Chinese HEIs'

tuitions and fees increase annually, universities and colleges created several financial aid

options to support needy students and families to pay for their school expenses.  HEIs

have offered three student loan programs nationwide: The General Commercial Student

Loans Scheme (GCSL), The Government Subsidized Student Loan (GSSL), and The

Student Resident Loan (SRL) (China, 2009).  The GCSL started in spring of 2000.  The

annual amount of loan is from 2,000 to 20,000 Yuan.  The GSSL began in August of

2000, and the annual amount of a loan is 6,000 Yuan.  The SRL started in 2009, and the

annual amount of borrowing is 6,000 Yuan (China, 2009).  In recent years, the MOE

established other national scholarships, grants, student loans, and programs to assist those

needy students.  The MOE conducted financial aid policies in order to help the needy

students have opportunities to receive their higher education.

Chinese higher education started to expand its influence globally.  The MOE

began to make policies of globalization to increase the international competitiveness of

Chinese higher education outcomes in 1995 (Bailey, 2013).  Two critical policies'

implementation influences Chinese higher education development.  The MOE started

Project 985 as the first policy in 1998 to help in the school facility development process;

this project focused on assisting a total of 39 universities in developing into world-class

universities (Gong & Li, 2010).  The 39 universities include most of the well-known

universities and some regular universities.  The Chinese central and local government

directly provided the funding.  After most of the funding investment, 9 of the total 39

universities considered been reached the goal of the world top-ranked "Chinese Ivy

League" (International Briefs for Higher Education Leaders, 2012).

The other Chinese globalization policy was Project 211, which the MOE focused

on equipping in a certain small number of universities in China to become world-class

universities (Yan, 2010).  This project started in 1995. The Chinese government

provided funding in succession to help 100 top-ranked, domestic Chinese public

universities through various projects to develop school facilities and enhance university

instructors and staff members' skills in teaching, managing, and using technology (Li F., 2016).  Project 211 funding assists the relevant universities' administrators and personnel to visit universities in Western countries to learn from their successful school management experiences (Hammond, 2016).

The 211 project is also a rewarding program provided by the MOE and Chinese Ministry of Finance.  The purpose of this project is to help to encourage high-quality performance and innovation in higher education (Yan, 2010).  The MOE primarily implements the project funding in four categories of development, including disciplinary and interdisciplinary programs, digital campuses, faculty development, and university infrastructure (International Briefs for Higher Education Leaders, 2012).  The policy initially funded 100 universities for developing purposes.  However, funding narrowed down to only the universities with excellent reputations later on.  Due to the increase in qualified universities, investment funds became limited (International Briefs for Higher Education Leaders, 2012).  The MOE adopted both Project 985 and 211 to develop the quality of the universities; both plans assist several Chinese HEIs to improve the school facilities and encourage academic achievement.  Meanwhile, many other projects at the local level to assist universities' development, such as classroom and residential building establishment, laboratory, library, and other school facilities development (Li F., 2016).

Furthermore, China's higher education global strategy is to expand Chinese culture to the world.  Along with the influence of the Chinese global economy, the MOE built Chinese language schools, school departments, and programs at many universities in Western countries.  Confucius Institutes is one of the examples where students can learn the Chinese language and culture.  "Chinese universities are enthusiastic about having

exchange programs, admitting foreign students, offering courses taught in English and

developing joint research programs" (Li F., 2016, p.50).  Many Chinese HEIs began

partner institutions with HEIs in Western countries, which send the instructors to teach

the Chinese language or culture classes as the creditable college course.  Moreover, MOE

and/or Chinese HEIs provided a scholarship in assisting student exchange programs with

the sister school to attract students to study abroad in China.  In 2015, 214,345

international students were studying abroad in Chinese domestic HEIs (Number of

Students in Higher Education Institutions, 2016).  According to UNESCO (The United

Nations Educational, Scientific and Cultural Organization) data, China has the most

students study-aboard with a total of 801,187; the top three countries are the United

States (291,063), Australia (97,387), and the United Kingdom (86,204) (Global Flow of

Tertiary-Level Students, 2017).  Many researchers recognized China as a global higher

education importer and exporter (Hammond, 2016).  The MOE also encourages Chinese

HEIs to establish their own strategies and development for internationalization, including

long- and short-term work plans; all policies need to follow the MOE's framework in

terms of objectives, operations, and supervisions (Li F., 2016).  With the influence of the

globalization of education, the MOE increases the effectiveness of Chinese culture

worldwide, as well as with many students studying abroad, and the graduates could

implement the knowledge and international perspective in their careers.

     Chinese higher education faces challenges in uneven educational resources due to

the economy and the differences in HEIs development across geographical regions.  Most

of the well-known and regular universities are located in Eastern and East Coast China;

thus, students in the eastern regions have more educational resources than the other parts

of China (Carr-Chellman & Zhang, 2000).  Carr-Chellman and Zhang (2000) addressed

that education varies significantly between the urban and rural areas, Han and ethnic

minorities, ordinary and disabled students, and male and female students.  While the

enrollment of higher education and vocational education is expanding, different social

statuses cause college graduates to have different access educational resources, which

mismatches students' skills/degrees with jobs because of the differing qualities of

education (Carr-Chellman & Zhang, 2000).  The MOE aims to ensure equitable

educational resource access and balance the development of educational opportunities.

*National Medium and Long-Term Education Reform and Development Plan Outline*

(2010-2020) announced in July 2010 that the MOE is transforming Chinese higher

education from the expansive education of the past to one of the highest quality

educations in the world.  Chinese higher education system needs to balance the

development in other regions, along with Eastern China (UNESCO, 2013).  The MOE

seeks to resolve the issues of equity in educational resources, funding, and education

quality.

One way the Chinese Ministry of Education (MOE) tries to increase the equity

and quality of education by applying digital learning.  The MOE announced the *Ten-year*

*Plan for Educational Informationization Development* (2011-2020) in order to balance

the development of digital learning in China (2012).  The policy encouraged HEIs to use

networks and information technologies to integrate resources to build an advanced,

efficient, and practical higher education information infrastructure.  The policy also

recommended that developing and integrating various types of high-quality educational

resources, establishing a combination of traditional and digital higher education

resources, and creating a sharing mechanism.  The HEIs were then tasked with promoting

the information technology to reach high-quality course resource formats, such as sharing

and teaching with digital books and literature.  These formats can be used in experiments

to improve the quality of the online learning platform (Ten-year Plan, 2012).  The Ten-

year Plan (2012) declared that HEIs need to enhance the abilities of tertiary education

educators in educational technology applications and increase the common utilization of

information technology in teaching.  Also, the regulation of online education will

continue to decrease the scarcity of high-quality education resources in underdeveloped

regions and continuously improve the quality of graduates to promote the economic

development in the area (Ten-year Plan, 2010).  The MOE announced the *Ten-year Plan*

*for Educational Informationization Development*, which continues to improve the quality

of Chinese higher education, as well as assure equality of higher education access to a

diverse population by using digital learning.

**Online Education Development in China**

Chinese higher education institutions primarily use the traditional in-class

education method.  The traditional teaching method is defined as students depending on

the instructor's teaching, and students are required to attend the classroom and to learn

from classroom instruction (Zhang, Kang, & Li, 2013).  Zhang al et. (2013) stated that

the outcome of the traditional education model has consequences that affect people

globally.  One example is employers reporting that college graduates lack creativity and

professional skills due to the fact that their knowledge is only from one resource—their

instructor.  The MOE combined the features of massive enrollment, diversified

information, internationalized perspectives, and individualized development of higher

education together as aspects that are significant for HEIs to focus on while developing

online education systems (Zhou, G., 2016).  Although traditional in-class teaching is the

primary method used in higher education to educate students, online education assists in

improving students' higher educations.

Chinese higher education adopted MOOCs for online education implementation.

Since the three major MOOC platforms—EdX, Coursera, and Udacity—were created in

2012, most of the courses through MOOCs open and free to all learners, though charges

may apply to the students who seek a course completion certificate (Bonvillian & Singer,

2013; McPherson & Bacow, 2015).  Several well-known Chinese universities became

partners of the MOOC platforms in 2013; thus, most people recognized 2013 as the year

of the Chinese MOOC (Shi & Yu, 2016).  Chinese MOOC developers designed and

published diverse courseware online, which allowed students to learn through online

courses and the new technology of the MOOCs (Shi & Yu, 2016).  China's MOOCs

development involved multiple well-known Chinese universities, including the Hong

Kong University of Science and Technology (HKUST), and the Chinese University of

Hong Kong (CUHK), which joined Coursera in April of 2013.  Tsinghua University

(THU), Peking University (PKU), the University of Hong Kong (HKU), and HKUST

became partners of EdX in May 2013; Shanghai Jiaotong University (SHJU) and Fudan

University (Fudan-U) joined Coursera in July of the same year (Shi & Yu, 2016).

Furthermore, as two of the top Chinese universities, THU and PKU are pioneers

in Chinese MOOCs that are highly and actively engaged in the global MOOC platforms.

THU became the first Chinese university to collaborate with EdX to open several online

courses.  These courses quickly became highly popular and had thousands of students

register within two weeks.  Even though the five courses' languages were labeled as

Chinese, more than 90% of registered users did not primarily speak Chinese (Shi & Yu,

2016).  PKU is also actively creating open online courses for MOOC users to take.

Similarly, PKU released numerous Chinese online courses, one after another, on EdX.

PKU opened 26 courses on EdX by the end of 2015.  PKU and THU also signed the

agreements to assure their courses are also available on Coursera, as one of the three

majority MOOC platforms in the world.  Two other well-known universities, Fudan-U

and SJTU, signed the agreement and began to collaborate with Coursera in 2013 (Shi &

Yu, 2016).  Along with MOOC development worldwide, well-known Chinese

universities also collaborated to create online courses and offer in various MOOC

platforms in order to provide the Chinese college students online learning opportunities.

In addition to majorly developing MOOCs in Chinese HEIs, many Chinese HEIs

also adopted domestic learning management systems (LMSs) to host school online

teaching materials.  Chinese universities utilized LMSs that support the instructors in

creating, managing, and delivering the e-learning courses to students (What's an LMS?,

n.d.).  The xuetangX is one of the Chinese MOOC platforms that created by THU in

2014.  THU also launched "xuetangX Cloud", which is an LMS that hosts teaching

materials that combine traditional classroom teaching methods with online digital media.

This platform was well-received and is in use of more than 200 Chinese universities

(xuetangX, 2017).  The platform is allowing instructors to upload courses within the

MOOC format that includes lecture videos, reading materials, and quizzes.  Students can

access the platform from any place and at any time.  Additionally, university instructors

typically use the platform in hybrid course teaching.  This LMS platform reached 1.5

million users (xuetangX, 2017). Similar to the xuetangX, many other MOOC platforms create online storage and serve as LMSs, which allows the university instructors to upload their learning materials to their server for students to seek out.

**Creating Chinese MOOC Platforms**

Another means of Chinese higher education development is creating new MOOC platforms. Many Chinese well-known universities have been approached to develop their own MOOC platforms. Developers created more than 10 Chinese MOOC platforms by late 2015 (Shi & Yu, 2016). Developers divide MOOC platforms into several categories based on the usage of the platforms, such as institutional-based platforms, online courses that would be open to all universities of China (OUC), university and enterprise joint platforms, and independent enterprise platforms (Shi & Yu, 2016). Although the attributes of the platform categories are different, the functions are similar. MOOC developers collect the lecture contents from Chinese well-known universities and other countries' world-class universities. The following section lists some domestic Chinese MOOC platforms.

Yun-Ketang, which means the "cloud classroom" in Chinese pinyin, is one of the enterprise platforms. NetEase is one of the largest network companies in China and developed the Yun-Ketang in December 2012. Besides collecting outstanding online course resources worldwide, the platform's learning management tools are remarkable, and it provides users with the ability to freely manage their learning progress, sent out lecture content update notifications, and spread information. According to user comments on their website, the functions "learning plan" and "question bank" are the two best features (Yun-Ketang, 2019). Previous users can recommend proper learning

materials and paths for new users, which allows users to create learning content and

programs that fit their needs.  The platform's users intend to take the examinations such

as the GRE, TOFLE, and Chinese Civil Servants, as users can practice the questions from

previous examinations after they watch the lecture videos (Shi & Yu, 2016).  By October

2015, Yun-Ketang published more than 16 majors, 18 teaching fields, more than 10,000

courses, and a total of more than 150,000 course videos.  The platform has cooperated

with 1,000 institutions, 700 instructors, and 17 million registered users (Yun-Ketang,

2019).

Dingni Xuetang, which means "a school/classroom always supports you" in

Chinese, is also known as Top-U and is one of the university and enterprise joint

platform.  This platform is the first paid platform in China, developed by the Guolairen

Education Technology Group (GETG), which started in October 2012.  Top-U began to

release creditable courses within over 100 higher education institutions, including PKU,

THU, HKU, USTC, and other top Chinese universities (Dingni Xuetang, 2019).  The

Top-U courses are reliable for professional skills development regarding IT training,

foreign languages, overseas study pre-training, job researching skills, and other career

development courses.  By the end of 2015, Top-U covered more than 10 subjects, like

computer science, economics, employment guidance, entrepreneurship, history,

humanity, innovation, mathematics, and mechanics (Dingni Xuetang, 2019).

The platform of xuetangX, is also known as THU-Academy and is the first

institutional-based platform.  This platform was founded in October 2013 by one of the

top universities, Tsinghua University (THU).  Global users could access 22 online

courses in Chinese in 2013.  In order to ensure the high-quality of the course lecture,

THU collaborated with approximately 20 well-known Chinese universities in China.

Their platforms established more than 500 online courses (xuetangX, 2017).

Furthermore, THU has more than 40 EdX institution partners worldwide, and all the

schools provide and share online courses on the platform.  The priority of xuetangX is

developing Chinese courses to meet all Chinese speaking users' needs.  As an

institutionally-based platform, xuetangX analyzes the data regarding the users' learning

behaviors on the platform.  Based on the learning data, the developers create new

functions that can assist users in taking online education.  For instance, they may localize

other language courses by adding Chinese subtitles, provide lecture resources with

multiple perspectives from different websites, add keywords to assist search engines in

locating content videos, and solve the issue of properly displaying the formula formats

for science students (xuetangX, 2017).  THU, as one of the top Chinese universities, leads

in building Chinese MOOC platforms (Shi & Yu, 2016).  The xuetangX and THU remain

greatly supportive and generating innovators in the Chinese online education.

Huawen MOOC, which means Chinese MOOCs in Chinese pinyin, is a university

and enterprise collaboration-based platform.  Peking University (PKU) and Alibaba

Group developed this platform in February 2015.  Huawen MOOC is a free-sharing and

open-course platform.  This platform served primarily to publish Chinese courses that

also target the Chinese speaking users worldwide (Shi & Yu, 2016).  Chinese MOOCs,

more specifically, promise to provide services such as a variety of course choices for

undergraduates, provide a platform for graduates' lifelong learning, exchange knowledge

of the teaching methods for college instructors, and offer a forum to discuss the higher

education institutions' teaching models (Huawen MOOC, 2019).  All the courses on

Chinese MOOCs are free and high-quality and are mainly devoted to PKU and Taiwan University (Taiwan-U) professors.  By the end of December 2015, the platform offered more than 30 courses in 10 subjects, including computer science, humanity, and pedagogy (Huawen MOOC, 2019).

Guokr MOOC, is also known as Nutshell MOOC College, was established by Beijing Guokr Interactive Science and Technology Media Co., Ltd. (Guokr MOOC, 2019).  The platform is the largest MOOC learning community in the network of China. The objective of this platform is to promote MOOCs let more Chinese users know about MOOCs, allow users to write comments to recommending valuable online courses, and assist Chinese-speaking users in learning the global MOOC courses without any language difficulties (Guokr MOOC, 2019).  MOOC College is a translation partner that assists many MOOC providers worldwide, including the top three world MOOC vendors EdX, Coursera, and Udacity.  Furthermore, Guokr MOOC College has a long-term cooperative partnership with EdX, Udacity, Future Learn, xuetangX, the Taiwan-U MOOC project group, and Fudan-U (Guokr MOOC, 2019).  Through translating and creating their own Chinese online courses, they explore the most effective ways for Chinese MOOCs to develop.  By the end of 2015, more than 40 courses added Chinese subtitles and were published on the website for access, and the registered users reached nearly 120,000, approximately 60% of Chinese online learning users (Shi & Yu, 2016).

Chinese University MOOC, is also known as ICourse, was established by the National Publishing Organization in 2013.  The Chinese Higher Education Press (HEP) financially supports this platform, and the MOE owns this MOOC platform.  The goals of this platform are to present high-quality online courses and support the reform of

teaching and learning at HEIs (Chinese University MOOC, 2019). Chinese University

MOOC committed their platform and resources as free and open to all Chinese HIEs, as

well as to the community. This platform had 84 courses and was available to 74 HEIs

nationwide by the end of 2015 (Shi & Yu, 2016).

### Creating a Chinese Online Education League

Another approach in Chinese online education development is to develop online

learning alliances. Chinese online education began only a few years ago; more

universities have since realized that online education needs to be united and organized as

a league, as the single, local institutions themselves cannot afford long-term online course

development (Shi & Yu, 2016). Chinese universities built several major MOOC leagues,

such as Shanghai Course Center (SCC), the Curriculum League for Universities in East

and West Regions (WEMOOC), and the Online Course Alliance for China's Local HEIs

(UOOC).

The Shanghai Education Commission officially founded the SCC league in April

2012. SCC is the largest online teaching platform in Shanghai, which provides

Shanghai's universities the abilities to share their educational resources, including the

library facilities and resources as well as the resources of faculty members. A total of

nearly 30 universities in Shanghai, including the well-known East China Normal

University (ECNU), Fudan-U, SJTU, and Tongji University (Tongji-U) (Shi & Yu,

2016). SCC primarily serves the students who study at those universities. Students can

select general online courses from the inter-institutional resources and pursue a minor

online degree at any allied universities. SCC has the responsibility of organizing the

online resources that are provided by the allied universities in their different forms, such

as pre-recorded lecture videos, learning materials, and face-to-face video chat teaching. Furthermore, SCC is also in charge of assisting students in transferring the completed course credits between the universities in the league (Shi & Yu, 2016).  In order to meet the students' preference of having to have face-to-face courses while taking the online courses, SCC built several teaching stations across the city, and each station provides classrooms.  Additionally, in 2013, more than 10,000 students registered over 80 online classes, and nearly 20 teaching stations were in use; also, many professors and teaching assistants assisted the students in learning.  (Guan, Gao, & Zhang, M., 2014).

The Curriculum League for Universities in East and West Regions (WEMOOC) was established in April 2013.  The institutions involved with WEMOOC are the Project 985 universities located in east and west China, including Beihang University (BHU), BIT, Chongqing University (Chong-U), Fudan-U, Harbin Institute of Technology (HIT), Lanzhou University (Lan-U), Renmin University of China (RUC), Sichuan University (Chuan-U), and SJTU.  The headquarters of WEMOOC is located at Chong-U.  The goal of WEMOOC is to develop several series of online open courses because the members of the university are from different provinces across the country and the education department standards vary.  The online courses include the sciences, the arts, education, and so on.  Those courses help to balance the different educational resources of the wealthy Eastern universities and the Western Universities in China to ensure the allied universities' students have high-quality courses and resources.  A total of 44 universities agreed to be partners of the WEMOOC by July 2013 (Guan et al., 2014).

Universities in the WEMOOC league have three types of online teaching

methods.  The first type is to have online courses from the WEMOOC league resources.

Instructors and staff members hold small classes in seminar form at their own universities

to discuss learning materials.  The second type is also an online and physical classroom

combination learning method but on a larger scale.  The universities provide larger

classrooms to carry on the students' group discussions.  The role of WEMOOC is as an

online resource provider to offer high-quality online courses and relevant materials.

Universities' faculty members are responsible for leading the students in discussion and

for other guidance to ensure the course work is applied to the learning.  The third type is

completely online learning; both small seminar classrooms and substantial classroom

discussions are conducted online.  As for the types selected, instructors have the right to

determine the needs of their students.  In order to ensure the quality of online courses,

each university, as a partner of the WEMOOC, is encouraged to be a part of the online

courses' development.  Additionally, the WEMOOC collaborative frameworks invite

both partnered universities and those not in the league to work as a team in developing

online courses and teaching (Shi & Yu, 2016).

Shenzhen University (SZU) created and launched UOOC in May 2014.  The

UOOC league was built for uniting all Chinese universities' online courses and resources.

UOOC can also represent the name of resource-sharing networks.  SZU collaborated with

56 local universities at the beginning.  A lack of outstanding faculty and staff members is

what most Chinese universities are facing (Guan et al., 2014).  Besides promoting the

local HEIs collaborating, UOOC also developed its own online education system and

MOOC courses.  The primary functions of the system focus on building the platforms

that connect universities in the league, sharing the resources with allied universities, building the credit transfer function, providing open courses to the public, and creating the discussion sections for the users to share their experiences with the MOOC promotion for development purposes.  UOOC expects to select outstanding instructors among the online courses and share their teaching courses with the HEIs in the league to resolve the shortage of high-quality instructors issue.  UOOC has quickly developed in the past few years, as nearly 100 local Chinese HEIs have become partners of UOOC.  The next goal of UOOC is to involve more than 200 local universities, provide over 1,000 high-quality courses online, and serve 4 million students within 3-5 years (Liu, Z., 2014).  UOOC currently is the most influential Chinese MOOC league.

The Ministry of Education (MOE), the Chinese government department, demonstrated strong support of higher education, such as designing educational development strategies, planning programs, providing primary funding, and being an administrative leader.  Chinese higher education started to expand its influence globally.  Project 985 and Project 211 are the two representative plans that the MOE made to promote Chinese higher education and reach world-class universities.  The year of 2013 was recognized as the year of the Chinese MOOC due to several well-known Chinese universities becoming partners of the MOOC platforms.  Chinese MOOC developers developed multiple domestic MOOC platforms to support Chinese-speaking users in studying online, such as Yun-Ketang, Top-U, xuetangX, Huawen MOOC, and Guokr MOOC College.  Another approach of MOOCs and online education development is to establish online learning alliances through several major MOOC leagues, including the Shanghai Course Center (SCC), the Curriculum League for Universities in East and West

Regions (WEMOOC), and the Online Course Alliance for China's Local HEIs (UOOC).

The MOE's establishment of online education policies, creation of domestic MOOC

platforms, and development of MOOC leagues assist online education development in

China.

**Southwestern China Background Information**

Yunnan is one of the provinces in China, located in the far southwest region of the

nation and bordered by Laos, Burma, and Vietnam (Gan & Xu, n.d.; Zhang &

Verhoeven, 2010). Yunnan spans approximately 152,000 square miles (394,000 sq. km),

and 90% of the landscape is mountainous or covered with hills, with the highest point of

elevation at 22,113 feet (6,740 meters), located in the northwest, and the lowest point of

elevation in Yunnan being 2,395 feet (730 meters) above sea level; the average elevation

in Yunnan is 6,496 feet (1,980 meters) (Gan & Xu, n.d.). Eastern Yunnan connects to the

Guizhou and Guangxi provinces, the north side is next to the province of Sichuan, and

the Tibet Autonomous Prefecture is to the northwest (Gan & Xu, n.d.). Due to the

significant differences in elevation, from north to south, the province experiences a range

of weather from snow to humidity. The diverse geographical and climate factors also

make Yunnan one of the most biologically diverse regions in the world. In addition,

cultural expansion is part of the Chinese plans to internationalize Higher Education (Li

F., 2016).

Yunnan province's primary economic income relies on the region's industries of

tobacco, tourism, biologically related investment, power, and mining (Gan & Xu, n.d.).

Due to the remote geographical location, Yunnan province's 2016 gross regional income

was $2,110,073 (14.788 billion yuan), which was below the average of the national gross

income of $3,590,453 (25.163 billion yuan) (Annual by Province, 2019).  Additionally,

the MOE has established and recognized a total of 31 regular 4-year universities and 30

short-cycle institutions in the Yunnan province (Number of Higher Education

Institutions, 2016).  According to the *2018 Yunnan Yearbook*, a total of 705,900 college

students studied in Yunnan's tertiary education in 2017, and approximately 170,000

higher education graduates (2019).

Yunnan is one of the most significant ethnic minority (EM) provinces nationwide.

According to the *2018 Yunnan Yearbook*, Yunnan's population is 48.005 million in 2017,

and the population of Han ethnic is approximately 31.890 million, which is 66.4% of the

total population in Yunnan (2019).  A total of 25 types of EMs live in this region, which

makes up over one-third of the total population in Yunnan.  15 types of ethnic groups

only live in Yunnan.  They are Achang, Bai, Blang, Dai, Dulong Deang, Hani, Jino,

Jingpo, Lahu, Lisu, Nu, Wa, Nahsi, and Pumi.  The other 16 ethnicities whose

populations resided in Yunnan and other regions across China (2018 Yunnan Yearbook,

2019; Gan & Xu, n.d.).  Each one of the ethnic minorities has a population of over 5,000

and has unique cultural differences in clothing, food, language, and history.  All of the

minorities' cultures combine to create the distinctive characteristics of the Yunnan

province (55 Ethnic Minorities in China, 2016; Zhang & Verhoeven, 2010).  Moreover,

Due to most of the ethnic minorities' populations existing in distinctive settlements, each

large ethnic minority has its own autonomous prefecture — a total eight Autonomous

Presectures in Yunnan (2018 Yunnan Yearbook, 2019).  For instance, this includes the

Honghe Hani Autonomous Prefecture, the Dali Bai Autonomous Prefecture, the Wenshan

Miao and Zhuang Autonomous Prefecture (China's Cities and Provinces Yunnan

Province, 2016).

Additionally, the majority of the EM population lives in rural areas, with most of

the rural residents being low-income householders that need government support;

however, most of the Han population lives in urban areas that have more economic

resources (Hong, 2010; Zhang & Verhoeven, 2010).  Zhang and Verhoeven stated, "most

of the regions with EMs are socially and economically underdeveloped" (p.  290).  Zhang

and Verhoeven (2010), and Hong (2010) also stated that, due to low-income financial

backgrounds, the EM students have lower access to secondary and post-secondary

education, especially higher education opportunities.  EMs' higher education enrollment

rates are lower than that of the Han ethnic students.  Hong (2010) claimed that the

outlying geographic locations and low economic income backgrounds lead to the lack of

financial resources and uneven higher education access opportunities between EM and

Han students in the west and southwest regions.  However, the equality of educational

access is an essential part of educational democracy (Zhang & Verhoeven, 2010).  Equal

access to resources and knowledge is a worthwhile pursuit and the eternal ideal of

education. The *Constitution of the Chinese People's Republic of China* demonstrates the

importance of this principle for the Chinese government (The second session of the Ninth

National People's Congress, 1999).  The Law regarding Ethnic Regional Autonomy, and

the Compulsory Education Law of the People's Republic of China, in which provisions

for supporting the development of the education of EMs have been clearly stipulated

(Zhang & Verhoeven, 2010).  One way the Chinese Ministry of Education (MOE) tries to

increase the equity and quality of education is by applying digital learning.  The MOE

declared the Ten-year Plan for Educational Informationization Development (2011-2020)

in order to balance the development of information development in China (2012).  The

Chinese government is willing to establish policies to assist Yunnan universities, as well

as other universities, with the development of online education programs that help every

citizen.

**Summary**

Based on the Chinese Ministry of Education's higher education development

strategy plan and the status of online education development worldwide, online education

development is quickly developing.  Existing literature demonstrates that MOOCs are the

primary platform that Chinese higher education institutions adopt.  Chinese colleges and

universities developed different domestic MOOC platforms and created online education

leagues as the strategies in developing online education nationwide.  Chau (2010) also

states that the HEIs must examine the need for online education before rushing in

expanding their online education.  According to Baghdad (2011), Jackson and Helms

(2008), and Merrill (2003), online education needs the involvement of stakeholders,

including faculty, staff members, administrators, and students.  The goal of online

education is to provide the same, high-quality education equal to traditional in-class

instruction.  However, limited research exists showing how online teaching might fit into

higher education in Southwestern China.  This mixed-method study (2019) aimed to

discover the best practices of online education by examining the online education

stakeholders' perceptions from four universities in Yunnan.  By analyzing previous

studies of online education, the researcher had an understanding of existing online

education development.  Then the researcher determined the best practices of online

education in the southwestern region.  The following chapter describes the methodology

applied to this study.

## Chapter Three: Methodology

**Research Purpose**

According to Baghdadi (2011) and Merrill (2003), the efficiency of online education is relevant to the collaboration of stakeholders, including instructors, technical specialists, administrators, and students.  The purpose of this mixed-method investigation of online education (2019) was to explore the best practices of online education in Southwestern China by evaluating the perceptions of students, faculty, staff members, and administrators.  Online education in Southwestern China was in the initial stage at the time of this writing.  Data about students' Internet usage was not available for the investigator to examine in regards to the evaluation of the stated hypotheses.  Therefore, the researcher designed the online survey as the quantitative study instrument to collect the data.  The researcher utilized an online survey to collect students' necessary information, level of the online learning experience, and perceptions related to the development of online education.  The researcher utilized the survey's outcomes to analyze and determine students' online learning satisfaction across different years of study, investigate whether there was a correlation between the amount of time students spend on the Internet and their frequency of using the Internet to study, and check for equal access to technology between ethnic minorities (EMs) and Han ethnic students.

Furthermore, according to Fraenkel, Wallen, and Hyun (2015), interviewing is an essential data collection tool in qualitative research.  The third party assisted the researcher in conducting face-to-face interviews in order to collect feedback from instructors, staff members, and administrators at four universities.  The researcher used qualitative data to answer the three research questions.  The feedback also assisted in

evaluating the current issues of online education in universities at Yunnan and the

development of online education, at the time of this writing. Additionally, interviews

provided opportunities for online education research and concerns about integrating

online education at their institutions. Particularly, the interviews focused on the concerns

associated with time and effort commitments, funding, and expected outcomes. Based on

the perceptions of the stakeholders involved and review of the literature, the study is to

identify the best practices in online education implemented across four specific

institutions and other institutions of higher education in Southwestern China.

**Background of This Study**

At present, among the 31 regular four-year universities and 38 short-cycle

institutions (Number of Higher Education Institutions, 2016), only a few universities

started online education regularly, as most of the HEIs in this region only offered few

online courses, or had not yet integrated online offerings into their curriculum.

According to the statistics of web-based class enrollments (Chinese Online Students

Enrollment in Higher Education, 2016), the number of students learning online in

Yunnan remained unknown. Therefore, this Mixed-method Investigation (2019)

regarding online education development in Southwestern China is original.

The Primary Investigator (PI) grew up in Yunnan (the southwestern region of

China), and experienced the local economy and education offered in Southwestern China.

The PI has a particular understanding regarding the development of local higher

education, due to the PI's father, a higher education administrator in the region, sharing

experiences from his administrative responsibilities. Also, the PI worked in the visual

design field, has several years of website design and information illustrate experiences,

and as a result sees the value of technology in education.  The PI wanted to conduct this

research to discover the best practices to assist institutional leaders in the implementation

of online educational offerings in the region.  No coercion existed in the process of

collecting the study's data, because the PI never worked in this region or had contact with

any of the participants.  One of the PI's committee members, Dr. Yu Gu, was a vice

president at one of the study sites - Wenshan University.  Gu assisted the PI in organizing

the study, such as ensuring the validity and reliability of the study instruments, sending

out the online surveys, and finding the third party to conduct the interviews at each study

site.  Also, the PI did not know the students' identities, because all of the surveys and

assessments were anonymous.  Fraenkel et al. (2015) stated the interviewees needed

anonymity in order to ensure the valid responses to the sensitive questions.  To further

ensure that anonymity was maintained, Gu coded interviewees' identities before the

surveys were sent to the PI to analyze the data (see Table 1).

**Research Sites and Participants Recruitment**

According to the HEIs enrollment statistics report, there were over 610,000

college and university students studying in Yunnan (Chinese HEIs Numbers, 2016).  A

total of 31 traditional, four-year universities and 38 short-cycle institutions were in this

region (Chinese HEIs Numbers, 2016).  Yunnan had 25 different kinds of EMs; each

minority had a population over 5,000, which made up 34% of the total population in

Yunnan (Zhang & Verhoeven, 2010).  Moreover, Yunnan had eight Autonomous

Prefectures (China's Cities and Provinces of Yunnan province, 2016).  The researcher

conducted the study in Southwestern China and wanted the outcome to represent the

cultural diversity prevalent in the region.  The four selected universities in this mixed-

method study (2019) are located in the ethnic minority autonomous areas, which could

most represent the EMs' culture and condition in the Yunnan.  The following universities

were located in the respective prefectures of Yunnan province: Dali University (located

in Dali Bai Autonomous Prefecture), Honghe University (located in Honghe Hani and Yi

Autonomous Prefecture), Wenshan University (located at Wenshan Zhuang and Miao

Autonomous Prefecture), and Yunnan Minzu University (located in Kunming, the capital

city of Yunnan) (Zhang & Verhoeven, 2010).  Yunnan Minzu University (also called

Yunnan University for Nationalities) was one of the most significant and largest

universities to recruit and support ethnic minority students in Yunnan (Zhang &

Verhoeven, 2010).

According to the formula of the minimum sample size of a proportion population,

Bluman (2014) claimed in a situation of the population proportion (p⁀) is unknown, the

value should be 0.5, thus, $q\hat{} = (1 - p\hat{}) = 0.5$, $p\hat{}q\hat{} = 0.25$ would be at the maximum level

which could generate a sufficiently large sample size that ensured an accurate prediction

with a 95% confidence level and 5% confidence interval.  In a population of 610,000, the

minimum sample size was 384.  The researcher chose to use the same sample size of 400

to run the three hypotheses tests in this study (2019), due to the easy divisibility.  The

integer number 400 could be evenly divisible by four (groups) and/or two (groups) in the

calculation process.

The researcher obtained permission from the four universities' administrators to

conduct this study (see Appendix A 1-4).  The entire student population at the four

universities received the online survey in a Chinese translation (see Appendix B-2) link

via email or WeChat (social media software).  The administrator who signed the research

permission from each university sent the links to participants.  The participants remained

anonymous to encourage honesty, and participation was strictly voluntary.  The

participants were able to withdraw their replies at any time.  Students' survey population

included female and male, ethnic minority and Han ethnic students, as well as students in

all grades of study.  In order to ensure that the participants had a clear understanding of

the study and their rights, the informed consent form, translated into Chinese (see

Appendix G-2), described the process in the introduction of the survey (see Appendix B-

1 & B-2).  Their names in the survey were not provided, to protect their identities.

Moreover, the quantitative method in this study (2019) only targeted students aged 18

and up; students under the age of 18-years-old were excluded and informed of this

exclusion in advance.

This mix-method investigation researcher (2019) developed an online survey to

assess the student population's perspective regarding online education.  Similarly, the

researcher conducted third-person interviews to ask HEIs' employees to collect

qualitative data.  Gu coded all 40 interviewees' names by the first letter of the institution,

where they worked, along with a number from 1 to 10.  Four third-party interviewers who

worked with the interviewees at the same university conducted 10 face-to-face

interviews.  Gu did not inform the researcher about their identities, but only their gender

and occupations.  The interviewees included faculty, staff members, IT personnel, and

administrators.  Gu provided the list of coded interviewees, along with the responses

transferred to the researcher in Table 1.  Due to the variation in the participants'

professions and online education experience, their responses varied and included a wide

range of perspectives.

Table 1

*Forty coded interviewees in the qualitative study.*

| Code | Gender | University | Occupation | Code | Gender | University | Occupation |
|------|--------|------------|------------|------|--------|------------|------------|
| W1 | Female | Wenshan | Faculty | H1 | Male | Honghe | Staff |
| W2 | Male | Wenshan | IT | H2 | Male | Honghe | IT |
| W3 | Female | Wenshan | Admin | H3 | Male | Honghe | Faculty |
| W4 | Male | Wenshan | Staff | H4 | Male | Honghe | IT |
| W5 | Male | Wenshan | Staff | H5 | Female | Honghe | Staff |
| W6 | Male | Wenshan | IT | H6 | Male | Honghe | Faculty |
| W7 | Female | Wenshan | Admin | H7 | Female | Honghe | Faculty |
| W8 | Male | Wenshan | Admin | H8 | Male | Honghe | Staff |
| W9 | Male | Wenshan | Staff | H9 | Female | Honghe | Staff |
| W10 | Female | Wenshan | Staff | H10 | Female | Honghe | IT |

**Continued.**

Table 1. Continued.

| Code | Gender | University | Occupation | Code | Gender | University | Occupation |
|------|--------|------------|------------|------|--------|------------|------------|
| D1 | Male | Dali | Admin | M1 | Male | Yunnan Nationalities | Staff |
| D2 | Male | Dali | Faculty | M2 | Female | Yunnan Nationalities | Faculty |
| D3 | Female | Dali | IT | M3 | Male | Yunnan Nationalities | Admin |
| D4 | Male | Dali | IT | M4 | Male | Yunnan Nationalities | IT |
| D5 | Male | Dali | Staff | M5 | Female | Yunnan Nationalities | Staff |
| D6 | Female | Dali | Faculty | M6 | Male | Yunnan Nationalities | Faculty |
| D7 | Male | Dali | Faculty | M7 | Male | Yunnan Nationalities | Staff |
| D8 | Male | Dali | Admin | M8 | Female | Yunnan Nationalities | Faculty |
| D9 | Female | Dali | Staff | M9 | Male | Yunnan Nationalities | Staff |
| D10 | Male | Dali | IT | M10 | Male | Yunnan Nationalities | IT |

**Instrumentation and Procedure**

The researcher initially designed two separate sets of questions in the online survey - basic survey questions and assessment forms. The survey aimed to collect students' online education feedback through multiple choice questions and assessment forms to evaluate the students' experiences with online education by using Likert scale questions that provided a variety scale of options (What is a Likert scale, 2017). The researcher combined the two sets of questionnaires into one suit, to make the survey process more straightforward for students, with a total of 47 questions (see Appendix B-1 & Appendix B-2). The online survey asked a broader set of questions. First, the questions asked about general student information (1-15). Then, the questions addressed those students without having online education experiences (16-21), followed by questions for those who had online education experiences (22-32). The survey also included questions about the perceptions regarding the development of online education in the students' schools (33-47).

Moreover, the researcher designed online questionnaires to ask the participants to respond to a particular subject. These questions avoided bias by not using confusing words and no double-barreled or double negatives that could mislead the participants (Bluman, 2014). The survey designed alternative questions to prevent biased answers. For instance, some participants might not know anything about the subject. Question 15 asked whether or not the participant had online education experience to avoid such bias. If the answer "no" selected, then the participant would start to answer questions 16 to 21, because the researcher designed those questions for the students who did not have online education experiences. Besides, if a participant chose "yes", the participant would

automatically skip to questions 22 to 32.  In this circumstance, questions 16 to 21 would

not show, and online education satisfaction relevant questions (22-32) would

automatically pop up.

The researcher interviewed a total of 40 personnel that contained 10 faculty, staff

members, and administrators at each university.  The objective was to discover the

current situation of online education regarding the development of campus online

education facility, the quality of the online learning, the technical support provided by the

university, and the comments and suggestions regarding the implementation of online

education (see Appendix C-1 & Appendix C-2).

The university administrators sent out online surveys between July and September

2017, which was close to the end of the Chinese universities' spring semester.  The

researcher adopted a survey website - *Survey Star,* to design and send the online survey,

as well as collect the survey responses.  An electronic platform through the website

presented all outcome data.  The PI also provided access to each university's

representative administrators.  The PI and school administrator who assisted in this

mixed-method study (2019) had access to the responses.  They could view and download

the survey results from the website.

After the 40 face-to-face interviews conducted (July to September 2017), Gu

created an online storage, Dropbox, folder to transfer the interview data to the PI.  The

school administrator involved in this study (2019) also had access to the Dropbox to see

the qualitative data.  The PI transferred the survey data and interview responses in

Microsoft Excel and Word for analysis.  The researcher created the online survey to

collect all student data utilized in this study; their replies identified as primary data.  The

researcher used the data to evaluate the three hypotheses. Gu finished all quantitative and qualitative information collected, then sent all data to the researcher by the end of September 2017.

**Quantitative Study and Data Analysis**

*Null Hypotheses 1*: There will be a significant difference in student satisfaction as it pertains to a student's academic year of study.

*Null Hypotheses 2*: There will be a correlation between the frequency of a student's daily Internet usage and the time spent on the Internet study.

*Null Hypotheses 3*: The university's ethnic minorities and Han ethnic students have unequal access to technological resources.

Participants completed the online survey through the *Survey Star* from July to September 2017. The researcher used the first part of the online survey questionnaires (1-15) to collect the students' general information, such as gender, major, school year, ethnic minority, and devices used to access the Internet. The PI utilized those responses to analyze whether EMs and Han students had equal access to the available school IT facilities. By collecting the data from the second part (16-21), the PI used the outcomes to investigate the correlation in the time spent on the Internet and the frequency of using the Internet to study. The PI used the third part (22-32) of the survey's data to examine online students' satisfaction at different school years. Lastly, the PI used the fourth part's (33-47) data to determine the perceived future of online education in Southwestern China from the students' perspective. Among all the data from the online survey, some outcomes described the current situation of the development of online education at the four universities. The data collected, along with interviewees' feedback, assisted in

answering the three research questions to some degree.  Also, the replied online survey

datasheet included the time the students spent on the 47 questions, IP addresses, devices,

and the platforms they used to access the online surveys.  That data was also useful for

analyzing and identifying the reliability of the study, which benefitted further

investigation of the questionnaire's design.

Fraenkel et al. (2015) claimed that the researcher could measure and/or judge

participants' behavior or product by using a numerical rating scale as an educational

research instrument.  The online survey in this study (2019) included three variations for

the multiple-choice questions, such as single-answer, multiple-answer, and Likert scale

questions.  Each answer valued "1" point in the multiple-answer questionnaire, and the

sum of all selected responses was the question's score.  The PI designed Likert scale

questions answer scores like the following: strongly agree-5, agree-4, neutral-3, disagree-

2, strongly disagree-1, and skipped-0.  The PI calculated the scores depending on the

questions related to the hypotheses.  Due to the large population of the participants and

the different testing purposes of the three hypotheses, the researcher used three different

sampling and statistical methods to test the hypotheses.

Fraenkel et al. (2015) stated that study sampling (selecting individuals) could

assist the researcher in defining the results of a small group to represent the finding of the

population (larger group).  Sampling methods included random sampling and nonrandom

sampling.  More specifically, random sampling methods included cluster sampling,

simple random sampling, stratified random sampling, and two-stage random sampling;

nonrandom sampling methods included convenience sampling, systematic sampling, and

purposive sampling.  Therefore, the researcher used different random sampling methods

to ensure the reliability of the study and the representation of the outcomes.  For instance, the researcher used the stratified sampling and systematic sampling methods for examining hypothesis one, systematic sampling method for hypothesis two, and disproportional stratified combined with systematic sampling method for hypothesis three.

First, the researcher designed the survey questions 26 to 31 related to those who experienced online education.  The researcher used the ANOVA (analysis of variance) to compare (freshman, sophomore, junior, and senior) students' online education satisfaction in each school-level.  The ANOVA method could test three or more means that use sample variances (Bluman, 2014).  The researcher adopted the multistage sampling method – stratified and systematic sampling, which first split all data into four groups based on their school years by answering the survey question 3 (Fraenkel et al., 2015).  Due to the proportion of different school levels' responses, the researcher used a stratified sampling method to calculate the number of each group to meet the needed sample sizes (Fraenkel et al., 2015).  Then a systematic sample was chosen from the obtained numbering in the population; for example, selecting every fourth, 10th, or 12th, and etc.  The researcher applied the systematic sampling methods for selecting samples for the other two hypothesis tests.  The researcher converted the participants' satisfaction into an average number and adopted the sampling size for the ANOVA test.

Secondly, the researcher used the correlation and scatter plots to test the frequency of students' daily Internet usage and their study time spent on the Internet.  The correlation method indicates that an independent and dependent variable needed to be identified.  The independent variable is used in a regression that is controlled and/or

manipulated (Bluman, 2014).  In this case, students' Internet usage was the independent

variable designated on the x-axis.  Students' time spent on the Internet to study was the

dependent variable designated on the y-axis.  The reason for the difference between the

variables was the researcher's assumption that the more time students spent on the

Internet, the more time students used the Internet to study.  Also, the researcher used a

scatter plot to demonstrate the independent variable and dependent variable through the

pairs of x and y coordinates.  The scatter plot visual can effectively assist in illustrating

the relationship in nature between the independent and dependent variables (Bluman,

2014).  Additionally, the researcher used a systematic sampling method to select 400

answers from the whole data sets to test the hypothesis two.  The researcher designed

questions 9, 11, and 16 related to students' Internet usage, and questions 17, 18, 19, 20,

and 22 associated with the study time on the Internet.  Thus, the researcher used the

average score of Internet usage (questions 9, 11, and 16) as the independent variable and

considered the average score of study time on the Internet (questions 17, 18, 19, 20, and

22) as the dependent variable in the correlation test.

Thirdly, the researcher used a $z$-test for difference in two means to examine the

equality of online education access.  The $z$-test examined whether ethnic minorities

(EMs) and Han students had equal access to relevant online learning resources.  Bluman

(2014) stated the $z$-test could be used to compare two proportions, and this test method

would require that both samples were randomly selected.  Also, an independent sample

that had no relationship between subjects and sample sizes would be equal to or greater

than 30.  The researcher firstly divided the whole data set into two groups by the answer

to survey question number 4 – either EMs or Han students.  Although the total responses

of each group were different, the researcher used a disproportional stratified and systematic sampling method to select 400 from each group to test this hypothesis. Survey questions 8, 10, and 13 provided information related to accessing online education; the researcher adopted the average numbers in both EM and Han student groups for the $z$-test. The researcher expected the test outcomes to reject the three null hypophyses.

**Qualitative Study and Data Analysis**

*Research Question 1*: What are the college student's needs and limitations when faced with online learning in Yunnan?

*Research Question 2*: What differences exist in online education between Southwestern and other regions of China?

*Research Question 3*: How do universities manage online learning resources in ethnic minority areas?

Among the nine interview questions (see Appendix C-1 & Appendix C-2), the PI used the responses from questions 1, 7, and 8 to answer research question 1, questions 2, 5, and 6 to answer research question 2, and question 3, 4, and 9 to answer research question 3. The PI expected that the interviewees' feedback could answer the three research questions in a wide range of perspectives. The finding aimed to investigate the available online education statuses and existing issues. The study utilized a broader set of questions to understand the perceptions of the online education stakeholders, and relied on the literature reviewed to propose the best practices of online education in Southwestern China.

**Internal Validity and Reliability**

Fraenkel et al. (2015) stated that the factors of location, time, frequency, administration, and the type of study instruments might influence researchers to draw accurate conclusions.  Furthermore, validity defined the researcher's specific outcomes to be meaningfulness, appropriateness, correctness, and usefulness, as well as the process of collecting and analyzing evidence to support the inferences (Fraenkel et al., 2015).  In order to minimize and reduce the factors' impact and invalidity risks, the researcher discussed the implementation methodology with the dissertation chair, contacted the four study sites, and received the study permission from the administrators (see Appendix A-1 & Appendix A-2).  At one of the study sites – Wenshan University – Faculty, IT personnel, and administrators reviewed questionnaires and provided valuable comments in ensuring the validity and reliability of this study (2019).

According to Fraenkel et al. (2015), the internal validity defined, "any relationship observed between two or more variables should be unambiguous as to what it means rather than being due to something else" (p.  167).  Some threats to internal validity exist, which can cause skewed data, if not controlled by the researcher.  The consideration must be carefully made in all aspects of the study to avoid the threats to internal validity, such as standardize the conditions of the study, collect and use more information of the study, and choose an appropriate design (Fraenkel et al., 2015).  The researcher conducted the study to collect and analyze the data to test survey questions in a small group before actually sending out to all the students at four universities, which was to decrease the internal validity affecting the outcome.  The pre-test of the questionnaire and/or interview could assist in discovering the ambiguities, poorly worded

in questions, hard to understand questions, and unclear answer choices (Fraenkel et al., 2015).

In order to avoid threats to internal validity, such as data collector characteristics, locations, and language, the researcher included the third person to conduct the interviews in classrooms, offices, or lounges of the institutions.  Furthermore, the school administrator/personnel from the same institutions as the interviewees arranged and conducted the interviews at each study site.  The 40 interviews asked the same nine questions by using the native language - Chinese.  The same interviewers collected and transferred all the replies to the researcher for analyzing.

The researcher chose the mixed-method (quantitative and qualitative) in the study because the mixed-method research can assist in clarifying and explaining the outcomes between variables, as well as exploring and defining the result in depth (Fraenkel et al., 2015).  Online survey (quantitative) and face-to-face interview (qualitative) implementation were the primary methods that the researcher used to conduct this study (2019).  Since online education in Yunnan had not generally started, the secondary data of the students' online education in Southwestern China did not exist.  Due to a lack of regional research in online education, the previous data were not available for use in testing the defined hypothesis.  Fang and Chen (2015) designed online questionnaires in online education and hybrid courses in other regions of China.  The researcher referred to Fang and Chen's (2015) methodology to create online surveys to collect students' relevant online education research.  Fraenkel et al. (2015) indicated that online surveys have greater access to distant and hard-to-reach participants and conveniently allow survey access from portable devices.

Additionally, the researcher used more information to support this online education investigation study (2019).  While analyzing the literature, the researcher compared the development of online education in different regions of China and the United States.  The researcher studied available Chinese higher education and online education formats in the present, examined higher education environments and existing online education resources in Southwestern China, and applied several components of best practices on how to develop online education.  The researcher focused on the following literature categories to design the questions: status of online education resources in a local university, student's online learning usage, ethnic minority students' IT resources, online teaching, and management, etc.  The researcher listed a full version of the survey and interview instruments in Appendices B and C.

**Limitations**

This study of the mixed-method investigation of online education (2019) utilized surveys and interviews conducted in other languages, which included an online survey translated from Chinese to English (see Appendix B-2) and interview questions also translated from Chinese to English (see Appendix C-2).  As the researcher conducted this study in China, all the participants' responses were in Chinese.  Even though the researcher made great efforts to ensure the interpretation of the interview responses were clear and accurate, misunderstandings could also occur when the PI translated from Chinese to English in chapter four.

The study conducted from July to September 2017 took place close to the end of Chinese higher education institutions' spring semester.  Four universities senior students were busy preparing for their graduation examinations and job hunting.  Among all of the

4,448 replies, 1,782 were freshmen, 1,276 were sophomores, 1,305 were juniors, and 85

were seniors.  The percentage of senior students involved was 1.91%.  Online survey

replies of seniors were lower than the other three school-level students, which might

affect the accuracy of the null hypothesis' examination of the different school-level

students' online education satisfaction.  In addition to the discrepancy of replies, Dali

University had a different school calendar than the other three universities.  They

supplied fewer online survey replies than the other three study sites.  For instance, while

1,486 students replied from Honghe University, 1,646 replied from Wenshan University,

and 976 replied from Yunnan Minzu University, only 337 students replied at Dali

University.  Dali University's reply rate was 7.58% of the total replies.  The lower reply

rate might also misrepresent the students' perceptions of Dali University.

**Summary**

The Chinese Ministry of Education (MOE) mandated that all universities in China

adopt and integrate online education into their institutions by the year 2020 (Chou & Lu,

2013).  The PI used an online survey and face-to-face interviews to investigate the

students' perceptions of available online education resources and gained feedback from

university faculty, staff members, and administrators regarding online education

development.  The mixed-methods approach in this study (2019) attempted to obtain

extensive sample data from students, as well as feedback from the HEIs' employees in

Southwestern China.  This type of research method collects information about the

development of online education not only through students' perceptions, but also by

receiving relevant stakeholders' responses to online teaching and learning.  The following

chapter describes the outcomes attained from the study with mixed-methods.

**Chapter Four: Research Findings**

**Introduction**

The researcher conducting this investigation of online education used a mixed-method study (2019) at four universities in the Southwestern region of China.  The primary investigator (PI) utilized the outlined procedure in Chapter Three to conduct the study in Chinese in the semester of the Chinese spring semester 2017 from July to September.  The mixed-method study included a quantitative data-gathering method, through the use of an online questionnaire that surveyed and gathered student answers, as well as a qualitative method with interview questions that collected feedback from faculty, staff members, and administrators.  Both quantitative and qualitative research provided descriptive, rich, and significant results and descriptions of online education development in the Southwestern region of China.

The PI received a total of 4,448 participants in the online survey by the end of September 2017 through the quantitative study, along with the qualitative data compiled from the 40 interview responses at the four study sites.  The researcher distributed the voluntary online survey to the whole student population at the four universities, and according to the data spreadsheet, students took approximately 15 minutes or less to complete and submit the survey.  The PI used students' replies as the primary data to test the three hypotheses.  The researcher received the coded interview responses from university faculty, staff members, and administrators, which did not include the interviewees' names or other identifying data.  Participants' feedback helped the researcher to analyze the available online education status at the universities in

Southwestern China.  This chapter organizes the collected information and sequentially

presents the findings of the quantitative and qualitative study.

**Quantitative Study Findings**

The online survey in the study (2019) included three variations for the multiple-

choice questions, such as single-answer, multiple-answer, and Likert-scale questions.

Each answer valued the "1" point in the multiple-answer questionnaire, and the sum of all

selected responses determined the question's score.  The PI also designed the scores for

the Likert scale answers like the following: strongly agree-5, agree-4, neutral-3, disagree-

2, strongly disagree-1, and skipped-0.  The PI calculated the scores, depending on the

questions' relationship to the hypotheses.

In order to ensure the outcomes to be valid and reliable, the PI used three different

sampling methods to select a sample size of 400 from the population (4,448) to examine

each hypothesis.  The PI avoided using the same 400-sample group while testing the

hypotheses three times.  The following sections describe how each sample was selected,

the hypotheses testing process, and the testing results.

**Null Hypothesis 1**

The PI randomly selected 400 individuals to serve as the sample used to test the

hypothesis from the students' survey replies.  According to the total replies of the online

survey in the mixed-method study (2019), the number of freshman replies was 1782,

which was 40.06% of the total responses, 1267 in the sophomore category (28.69%),

1305 in the junior category (29.34%), and 85 in the senior category (1.91%).  The PI used

the stratified sampling method (Fraenkel et al., 2015) that randomly selected 8% of

freshman, sophomore, and junior survey replies.  Due to the low responses of senior

students, the PI adopted a systematic sampling method of 50 replies randomly selected

from the 85 senior students' replies.  *Hypothesis 1*: There will be a significant difference

in student satisfaction as it pertains to a student's academic year of study.

   *Null Hypothesis 1*: There will be no significant difference in student satisfaction

as it pertains to a student's academic year of study.

   The PI used the numeric system to score students' Likert-style questionnaires

between the highest score of "5" points and the lowest of "1" point, and "0" points for

skipping the question.  The PI used the Excel spreadsheet to store and calculate students'

scores for each question.  The PI adopted the analysis of variance (ANOVA) to test

hypothesis one.  Table 2 shows the results for students completing the online survey in

the spring of 2017.

Table 2

*Results of Different School Year Student Scores from Survey (26-31): Spring 2017*

| Groups | Count | Sum | Mean | Variance |
|--------|-------|-----|------|----------|
| Freshman | 6 | 16.44 | 2.74 | 0.05 |
| Sophomore | 6 | 11.84 | 1.97 | 0.03 |
| Junior | 6 | 10.99 | 1.83 | 0.01 |
| Senior | 6 | 11.11 | 1.85 | 0.01 |

*Note*.  Freshman Group: $n = 143$; Sophomore Group: $n=102$; Junior Group: $n=105$; Senior Group: $n=50$.
"Count" in the table is the number of survey questions *(26-31)*.

   The results in Table 2 display the number of survey questions used for the

calculation in each group (count), the total of the scores of the six questions (sum), the

scores averaged for each group (mean), and the difference between the scores of each

group (variance).  The numbers indicate a small difference.  The researcher adopted the

ANOVA method to analyze the difference more specifically.  Table 3 displays the results

from each group of students who completed survey questions 26 to 31.

Table 3

*Results from ANOVA Test for Survey (26-31): Spring 2017*

| Source of Variation | SS | df | MS | F | P-value | F crit |
|---|---|---|---|---|---|---|
| Between Groups | 3.35 | 3.00 | 1.12 | 41.54 | 0.00 | 3.10 |
| Within Groups | 0.54 | 20.00 | 0.03 | | | |
| Total | 3.89 | 23.00 | | | | |

*Note*.  The α value used 0.05, $F_{0.05; 3,20} = 41.54$ (SS: Sum of squares; df: Degrees of freedom; MS: Mean square; F: *F* test value).

Table 3 lists the ANOVA results from survey questions 26 to 31.  Since the *F*-

value was higher than the *F*-critical value, the PI must reject Null Hypothesis one.

Additionally, *p*-value can be used to examine the strength of the evidence, so values less

or equal to the alpha value show strong evidence against the null hypothesis (Bluman,

2014).  As Table 3 displays, the *p*-value is close to 0.00, which is much less than the

alpha (0.05).  Therefore, the PI firmly rejects the null hypothesis one.

Furthermore, the PI used the Scheffe Test after ANOVA to test and indicate the

significant difference in the two group means.  Overall, the freshman group has the

highest mean, and the junior group, by contrast, has the lowest mean.  Table 4 displays

the difference in means between every two groups by using the Scheffe test.

Table 4

*Scheffe Test: Survey (26-31): Spring 2017*

| Groups | $F_s$ | F crit | Significance? |
|---|---|---|---|
| Freshman vs. Sophomore | 65.43 | 9.30 | Yes |
| Freshman vs. Junior | 91.92 | 9.30 | Yes |
| Freshman vs. Senior | 87.96 | 9.30 | Yes |
| Sophomore vs. Junior | 2.25 | 9.30 | No |
| Sophomore vs. Senior | 1.66 | 9.30 | No |
| Junior vs. Senior | 0.04 | 9.30 | No |

*Note.* Significant differences in the two group means, (Fs > F crit = significance; Fs < F crit = no significance)

As seen in Table 4, there are no differences between the means of the sophomore, junior, and senior students, except when examining freshman versus other school years. The PI included the Null hypothesis one discussion, along with recommendations in Chapter Five.

**Null Hypothesis 2**

The PI used the systematic sampling method to select 400 survey replies randomly from the population. The PI first divided all reply populations into 10 groups and then selected every 10th group for testing hypothesis two. The PI calculated students' scores for each question and listed the scores in the Excel spreadsheet. The PI adopted the regression and correlation method to test null hypothesis two.

*Hypothesis 2*: There will be a correlation between the frequency of a student's daily Internet usage and a student's Internet use for study.

*Null Hypothesis 2*: There will be no correlation between the frequency of a

student's daily Internet usage and a student's use of the Internet for study.

The researcher used the scores of survey questions 9, 11, and 16 to compare with

questions 17, 18, 19, 20, and 22. Bluman (2014) stated that the *R*-square with a higher

value (larger than 0.5) better fits the model data theoretically, which means the regression

model accounted for the larger and the closer the data points variance. More specifically,

a model can explain 100% of the variance. All the data points would fit the regression

line if the adjusted values equal the observed values. At a confidence level of 95%, the

determination coefficient was 0.432, which projected a 43.2% variation in the

independent variable. In other words, although 43.2% of students were using the

Internet, the correlation with students' general Internet usage is uncertain. Table 5 lists

the detailed results analysis.

Table 5

*Regression Results for Comparison of Internet usage and use the Internet to study Scores*

| Regression Statistics | |
| --- | --- |
| Multiple R | 0.658 |
| R Square | 0.432 |
| Adjusted R Square | 0.431 |
| Standard Error | 0.574 |
| Observations | 400 |

*Note*. Multiple R = square root of $R^2$; R Square: $R^2$; Adjusted R Square: Adjusted $R^2$ used if more than one x variable; Standard Error: The standard deviation of the error; Observations: Regression used number of observations.

ANOVA

|  | df | SS | MS | F | Significance F |
|---|---|---|---|---|---|
| Regression | 1.000 | 99.911 | 99.911 | 303.293 | < 0.001 |
| Residual | 398.000 | 131.109 | 0.329 |  |  |
| Total | 399.000 | 231.020 |  |  |  |

*Note*. The ANOVA table splits the sum of squares into its components. (SS: Sum of squares; df: Degrees of freedom; MS: Mean square; F: *F* test value).

Interpret Regression Coefficients Table

|  | Coefficients | Standard Error | t Stat | P-value |
|---|---|---|---|---|
| Intercept | 1.612 | 0.046 | 35.300 | < 0.001 |
| X Variable 1 | 0.452 | 0.026 | 17.415 | < 0.001 |

*Note*. The table shows the most interest in the regression of coefficients and associated output. "*Coefficient*" provides the least R squares estimates; "*Standard Error*" provides the estimated standard deviation of the least squares. "*t Stat*" provides the computed t-statistic for *Null Hypotheses 2 ($H_0$)*. "*P-value*" gives the p-value for the test of $H_0$.
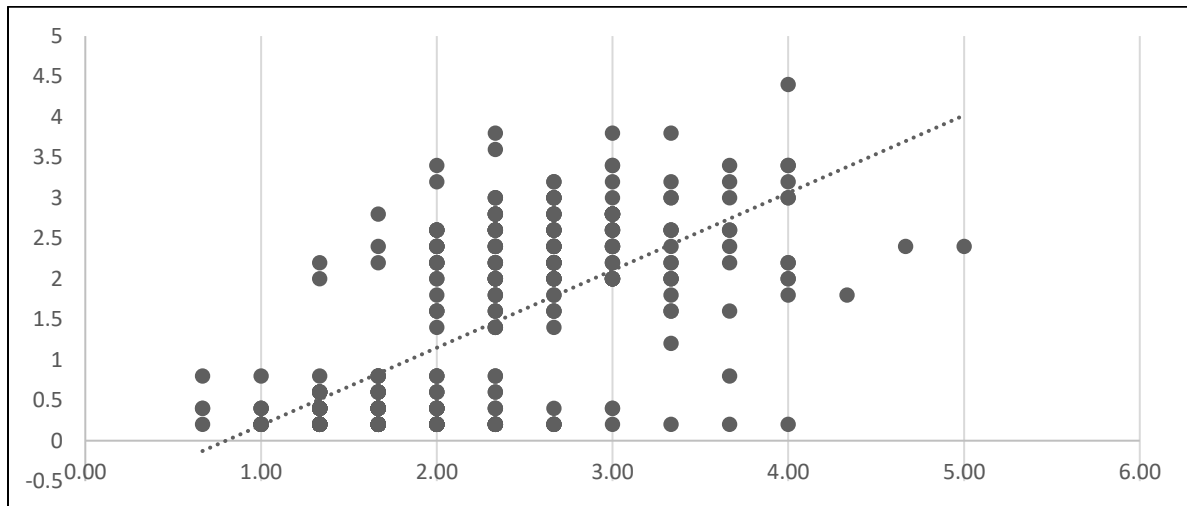


*Figure 1*. Correlation coefficient for survey question 9, 11, 16 vs 17, 18, 19, 20. N=400; R-square=0.432; p <0.001 (P-value closes to 0).

The scatter plot demonstrates the averages of scores between the two sets of

questions. If the two variables were similar, the plots would gather close to the

regression line; however, since the plots are in various points spread around the graph,

the *R*-square is 0.432 and the *p*-value is close to 0, the result signifies a medium to low

correlation.  Therefore, the PI rejected the null hypothesis.  Chapter Five discusses and

makes recommendations to the null hypothesis two.

### Null Hypothesis 3

The researcher designed online questionnaire three to determine students' ethnic

groups at the four study sites.  Online survey question three assists in splitting all

participants' population into two groups: either ethnic minorities (EMs) or the Han ethnic

majority.  Among all the 4,448 replies, 1,543 were ethnic minorities, and 2,905 were Han

ethnic students.  The researcher used the disproportional stratified and systematic

sampling method to select 400 from each group for examining hypothesis three

randomly.

*Hypothesis 3*: The universities' ethnic minorities and Han ethnic students have

different opportunities to access technological resources.

*Null Hypothesis 3*: The universities' ethnic minorities and Han minority students

have equal access to technological resources.

The PI used the survey scores to get the average scores of survey questions 8, 10,

and 13, then adopted a 95% confidence level and measured in a two-tailed *z*-test for

comparison for means.  Table 6 presents the calculation results between EMs and the Han

ethnic students.

Table 6.

*Ethnic Minorities and Han Comparison: Access the Online Education Technological Resources: z-Test: Two-Sample for Means*

| | Ethnic Minorities | Han Ethnic |
|---|---|---|
| Mean | 2.14 | 2.09 |
| Known Variance | 0.3861 | 0.3896 |
| Observations | 400 | 400 |
| Hypothesized Mean Difference | 0 | 0 |
| z | 1.02 | 1.02 |
| P(Z<=z) one-tail | 0.15 | 0.15 |
| z Critical one-tail | 1.64 | 1.64 |
| P(Z<=z) two-tail | 0.3068 | 0.3068 |
| z Critical two-tail | 1.96 | 1.96 |

Note. The α value used 0.05. The *p*-value for the two-tail is 0.1008.

The average of the EMs' use of technological resources to access online education was not statistically higher than the Han students. The difference in the testing results between EMs and Han ethnic students was not significant within the *z*-test, in which *z* equals 1.02, located between -1.96 and +1.96, and the *p*-value is 0.3068, which is greater than 0.05. Therefore, the PI could not reject the null hypothesis. The outcome data supported the null hypothesis; in other words, the university EMs and Han ethnic students had equal access to opportunities and online education resources. The PI also discusses null hypothesis three and provides recommendations in Chapter Five.

**Qualitative Study Findings**

The researcher designed nine interview questions to answer the three research questions (see Appendix C-1 & Appendix C-2). For instance, the researcher used

responses from interview questions 1, 7, and 8 to answer research question 1; interview

questions 2, 5, and 6 to answer the research question 2; and interview questions 3, 4, and

9 to answer the research question 3.  The participants included faculty, staff members, IT

personnel, and administrators.  The PI listed the coded anonymous interviewees in Table

1.  The PI also organized, translated all interviewees' feedback from Chinese to English,

and presented the most typical responses of each interview question in the following

sections.  The PI used students' online survey data to assist in answering research

questions.

### Research Question 1

*Research Question 1*: What are the college student's needs and limitations when

faced with online learning in Yunnan?

The researcher designed interview questions 1, 8, and 9 to answer research

question 1 (see Appendix C-1 & Appendix C-2).  The researcher organized the answers

from the portion of the interviews addressing the necessity of offering online courses in

full-time undergraduate education in Yunnan.  The researcher attempted to identify

students' online learning experience, as well as the quality of online education.  The next

sections demonstrated the most representative feedback in answering the interview

questions 1, 8, and 9; the PI then summarized the responses to answer question one.

Interview Question 1

*Interview Question 1*: Do you think it is necessary to open an online course in

full-time undergraduate education in Yunnan? Why?

The PI translated and paraphrased the representative answers from respondents

D3, D9, H4, H7, H10, M4, M6, W4, and W8 for this question (Y.  Hao, personal

communication, September 30, 2017).  Interview question one intended to ask the

participants' opinions regarding whether or not it is necessary to offer online courses in

full-time undergraduate education in Yunnan.  As a result, all 40 interviewees agreed that

it was essential that Yunnan's HEIs provide online education programs for full-time

undergraduate students.  The summarized interviewees' responses are as follows.

Dali University's interviewees' responses covered the usage of online education.

D3 stated that many ways to access the information/knowledge were present, and

students could choose their own ways to find the information.  However, D3 considered

that students and instructors should use online lectures as a supplement to traditional

courses, rather than becoming the primary resources to teach students.  D9 also agreed

that a wide range of information/knowledge is accessible online, but the value of face-to-

face interaction between classmates and the teacher is even more important.  D9

expressed that higher education develops students in many areas, and the online courses

will be more extensive for college students.  D9 also said, "[trans.] the online courses

break the traditional limitations of time and location to meet the needs of students in

learning" (Y.  Hao, personal communication, September 30, 2017).  Both D3 and D9

stated that the broad education information in undergraduate education is relevant to the

general education courses at Dali University, which involves a great amount of

information that the traditional classroom educational method cannot achieve.

Honghe University's responses indicated that their university must pretest online

education before massive use; the interviewees' replies also listed the benefits of online

education.  H4 replied that the new educational model (online education) could not easily

replace the traditional face-to-face educational method because teaching and learning is a

complex process.  In addition to H4's reply, H7 responded that university personnel should pre-examine online courses in teaching and learning on a small scale before offering the courses for broad uses.  H7 continued that during the small-scale test, university administrators should continually evaluate and adjust the related course content, software, and hardware to meet the educational qualification requirements and societal needs.  In the meantime, H7 commented that personnel should guide students to use new media in learning and even promote online learning in a lifelong learning process.  D9 stated that the online education method uses a modern educational technique to enrich classroom teaching and ensures that students are flexible in learning so that learners can arrange their own time and learning materials.  H7 also stated, "[trans.] online education is necessary for HEIs and is a valuable additional resource to existing courses that allow the frontier (Southwestern) areas to use the excellent curriculum resources.  Online learning methods will assist higher education development in the region" (Y.  Hao, personal communication, September 30, 2017).

Yunnan Minzu University interviewees introduced the features of online education, such as the short-video form to display, and students could take the online classes without restrictions of the time and locations.  M4 stated that in the available traditional education curriculum, the enrichment and knowledge capacity levels were far behind the needs of students, especially for general education courses.  M4 also said, "[trans.] online courses make up the majority of the courses at Yunnan Minzu University" (Y.  Hao, personal communication, September 30, 2017).  M6 noticed that due to after-school activities or part-time jobs, college students have limited time.  M6 expressed that a feature of online courses is a course lecture video, which can be divided

into several short clips (5-10 minutes) so that students can take full advantage of their

scattered time to learn.  Meanwhile, M6 replied that online education should not only be

the video recording of the traditional classrooms that were adopted for Internet display.

M4 mentioned, "[trans.] if all online courses were just videos, then there would be no

need for such an online course" (Y.  Hao, personal communication, September 30, 2017).

M7 also agreed that online instructors should determine the needs of the students to

create well-designed online course content.  Both M4 and M7 found that by using the

online functions, such as a variety of learning resources, students can learn at anytime

and anywhere to serve students in their education better.

Wenshan University's interviewees expressed students' perspectives on how

educators should focus on the needs of students while designing online courses.  W4

introduced the idea that Chinese education from primary to tertiary is more exam-

oriented.  The educational goal is to make students memorize other people's ideas, which

can lead to students lacking their own ideas and being persuaded into certain fields of

study.  W8 added, "[trans.] online learning could improve students' self-supporting

abilities by studying independently" (Y.  Hao, personal communication, September 30,

2017).  W4 stated that online education is open and has diverse resources, which

facilitates students in developing self-learning abilities and time management skills in the

process of learning.  Furthermore, W4 expressed that online teaching is a relatively new

educational technique compared with the traditional face-to-face teaching method.  W4

also stated,

>  [trans.] college students can quickly accept new ideas and online teaching
>
>  methodologies because they live in the information technology period that almost

everyone has a smartphone or portable device; online teaching is distinct to

students and can attract them more in learning resources. Thus, students' interests

can be one of the elements to consider in online course design. (Y. Hao, personal

communication, September 30, 2017)

W4 agreed with W8 that the creative content could lead students to study through the

isolated Internet environment. Also, both W4 and W8 noted that higher education

educator needs to focus on the demands of students while designing online courses; the

online learning is beneficial to students' higher education learning and even lifetime

learning after they graduate.

Interview Question 8

*Interview Question 8*: What are the factors that have shaped students' online

education experience?

The PI paraphrased the representative answers from respondents D4, D9, H1, H3,

M1, M4, W5, and W8 for this question (Y. Hao, personal communication, September 30,

2017). The researcher designed interview question eight to ask what factors limited

students' online learning. Responses included that the insufficient online education

hardware and software facilities influenced online education programs in Yunnan's HEIs.

The PI summarized interviewees' responses and described in the following sections.

The responses from Dali University introduced the lack of online resources that

impact students' online learning experiences. D4 expressed that due to some of the

school computers and IT facilities' weak conditions in online learning, there was some

online access delay. D4 found that online instructors' feedback was not prompt, which

influenced the students' learning. In addition to D4's response, D9 pointed out that Dali

University established a new multimedia library on campus, which improved the students' multifaceted online learning. For example, D9 stated, "[trans.] the new multimedia library has gone to a great extent to meet students' needs in improving lecture knowledge, perceptions, and their ability to operate the technology" (Y. Hao, personal communication, September 30, 2017). In contrast, D4 listed influencing factors, such as the time limits of the online course content, course content that is unattractive to students, the irrelevance of online courses for hands-on skills development, and the lack of certificate/credit recognition after the students complete the courses, made online learning less enjoyable.

Honghe University interviewees believed that lower-quality online education performance impact students' online learning. H1 introduced the factors that affect students' e-learning experiences are online guidance, such as the teacher's monitoring, feedback, and quality of teaching methodology to students at diverse levels. H1 suggested that the combination of online and offline in-classroom teaching, along with available learning resources, can significantly lead students to a different direction in learning. In addition to available online resources, H1 stated, "[trans.] IT professions and programmers should design online courses to be more considerate of different devices" (Y. Hao, personal communication, September 30, 2017). H1 explained that students might use mobile devices more often to conduct online learning rather than on a computer. H3 considered that the circumstances of an online course inappropriately applying to small-screen devices would influence students' online learning experiences. Thus, both H1 and H3 recommended that in order to lead a student's learning to a better

outcome, the online course design must consider all kinds of platforms, and institutions

need to provide students with sufficient necessary resources.

Yunnan Minzu University interviewees responded that overall, their school is

trying to establish a good e-learning environment, but some issues existed, such as the

students' financial status and online teaching management.  M1 pointed out that students

needed to have some necessary computer operation skills and independent study abilities

to succeed in online education.  In addition to learners' preparation, M1 observed,

"[trans.] lower economic background students are more likely to be unable to purchase

personal computers for Internet access" (Y.  Hao, personal communication, September

30, 2017).  Therefore, M1 commented that financial status might also influence the

students' online learning experience.  From the online learning administrative

perspective, M4 stated, "[trans.] effective monitoring of students' work in the online

teaching process is an essential factor" (Y.  Hao, personal communication, September 30,

2017).  M4 explained that, due to a lack of monitoring and course management in online

education at Yunnan Minzu University, students might be distracted and fail to learn or

fall behind by doing other things during the process of an online course.  Therefore, M4

stated that even if students have enough online learning resources, they may choose not

to engage in their class and miss an educational opportunity.

Wenshan University interviewees responded that their university did not regularly

use online courses when the interview conducted, and many teachers had little experience

in online teaching.  W5 found that due to most teachers had to lecture many classes in a

semester; they lacked the ability to maintain the balance of online (including adopting the

Internet) and the traditional in-classroom of teaching.  W5 stated, "[trans.] because

teachers do not require students to use the Internet in their studies, students do not have access to as much information" (Y. Hao, personal communication, September 30, 2017). Furthermore, W8 stated, "[trans.] the Internet network is a complex environment in study. Students are particularly distracted in many ways while learning online" (Y. Hao, personal communication, September 30, 2017). W8 shared the personal experience that students could be easily disturbed by something else when turning on the computer for a course lecture, like checking e-mail, online shopping, reading the news, or other distractions. W8 expressed that most of the college students aged between 18 and 22 remain lower ability in self-control and decision making. Hence, W8 suggested that IT Professions should provide a relevant network block application to prevent disturbing pop-up information while conducting online courses. In addition to assistance from IT professions, W5 commented that school administrators' support for students' achievements is also essential because the administrator's decisions assure in providing enough online resources. Both W5 and W8 agreed that administrator's supervisions that allocate school facilities and teachers or staff members assist students in selecting study materials affect the quality of online teaching.

Interview Question 9

*Interview Question 9*: What do you think are the important factors that determine the quality of online instruction?

The PI paraphrased the representative answers from respondents D1, D4, H1, H3, H4, M1, M2, W2, W4, and W9 for this question (Y. Hao, personal communication, September 30, 2017). The researcher planned to use interview question nine to inquire about the factors that define the importance of the quality of online instruction.

Responses introduced primary factors such as communication, online learning

motivation, and university support that determine the quality of online teaching.  The PI

reported summarized interviewees' responses in the following sections.

Interviewees at Dali University mentioned that the communication functionality

of online platforms, hardware facility improvement, and the development of instructors'

abilities are important factors to determine online instruction quality.  D1 stated that the

platform must enable students to participate with their instructor during the online

classroom interaction so that teachers can quickly answer students' questions,

discussions, and communications.  D4 commented that to improve the quality of online

education, the HEI needed to upgrade and replace the poor-condition hardware such as

computers and other IT facilities equipment.  D4 also expressed, "[trans.] online

instructors' teaching concepts need to improve, as do computer operation skills in online

course teachings" (Y.  Hao, personal communication, September 30, 2017).  Similar to

D1 and D4, other interviewees at Dali University mentioned that the functions of online

learning platforms, school hardware facilities, and the role of instructors are important

factors to determine the quality of online education.

Honghe University's interviewees replied that the students' online learning

environment, study methods, and educators' roles influence the quality of online

education.  H1 introduced the idea that the school administrator should first develop the

faculty and staff members' involvement in online teaching.  H1 continued that

instructors' teaching plans and courseware would bring more student interest in learning.

H1 argued, "[trans.] students need guidance before taking a course online, which should

start with a test to know what students' expectations are for a particular course" (Y.  Hao,

personal communication, September 30, 2017).  Additionally, H1 introduced the idea that

the online instructor should provide some necessary training to the students who take a

course online before the instructor starts teaching course content, such as where to find

the learning materials, additional information, and some necessary computer operation

skills.  H1 noted, "[trans.] faculty and staff members should not force students to take

online courses; the enrollment of online courses should be a completely free choice" (Y.

Hao, personal communication, September 30, 2017).  Meanwhile, H3 commented that the

relevant online learning school administrator should ensure that the school's online

education resources and computer facilities are sufficient for their needs.  H4 added that

staff and IT professionals should consistently support students and instructors through the

online education process.  H4 agreed with H3 that the course evaluation assured the

quality of online education; the quality of online teaching would eventually impact

students' online learning outcomes.  H3 believed that the attractiveness of an online

course lecture is fundamental to the whole process that determines the online

instruction's quality.  H3 said, "[trans.] online course lecturing cannot merely record

classroom instruction as a video model; students using online courses need to have

interaction and communication with the online instructor" (Y.  Hao, personal

communication, September 30, 2017).  H4 agreed with H3 and reaffirmed that school

administrators should have more supervision while establishing a campus online learning

climate so that students can take the initiative to learn.  Interviewees at Honghe

University responded that the students' online learning environment, study methods, and

educators' roles influence the quality of online education.

Yunnan Minzu University interviewees expressed that the quality of online education is fundamentally affected by the maintenance of the university's hardware equipment as well as the online teaching methodology.  M1 explained that online university teaching is affected by computers, Internet networks, computer servers, and other IT facilities.  In addition to the physical facilities, M1 added, "[trans.] an appropriate curriculum design for the students to learn would also ensure quality" (Y. Hao, personal communication, September 30, 2017).  Lastly, M1 stated that the method of teaching impacts the quality as well; for example, online instructors should give students prompt feedback on any problems if possible.  Likewise, M2 referred to the significant influence that instructors have, adding that a good online teaching method design would effectively ensure the quality of online education.  Therefore, Yunnan Minzu University interviewees recognized that the university's IT equipment and online instructors' roles determine the quality of online instruction.

Interviewees from Wenshan University believed that online courses credit recognition, curriculum design, students' learning styles, and funding determine the quality of online education.  W2 stated, "[trans.] the establishment of the online course credit system and certificate ensures online education quality" (Y.  Hao, personal communication, September 30, 2017).  W2 explained that the school administrator needed to align online education with traditional classroom education curriculum standards, such as the participation rate, test scores completion rate, and other data to create a standardized assessment to examine the quality of online education.  W4 considered the teacher's point of view and claimed that instructors should be the organizers of instruction and the developers of curriculum resources; from a student's

perspective, the most critical foundation is a learner's self-study and self-control abilities.

W4 also commented that on the teaching environment side, the school administrator

needed to ensure that online teaching resources are well-equipped and that the facilities

are running properly.  W9 stated, "[trans.] all participants of online education need

collaboration to determine the quality of online education" (Y.  Hao, personal

communication, September 30, 2017).  Furthermore, W9 observed that the school facility

aspect needs support from government funds, while school leaders should also recognize

and address the importance of online education.  Wenshan University interviewees

concluded that all shareholders of online education need collaboration to determine the

quality of online education in order to control the quality of online education.

**Research Question 1 Summarized**

*Research Question 1*: What are the college student's needs and limitations when

faced with online learning in Yunnan?

To begin, all 40 interviewees at four study sites agreed to the need to establish or

continually develop online education in Southwestern China.  The interviewees expressed

that the development of online courses was essential in Yunnan for full-time higher

education.  According to the responses, compared with traditional courses, online courses

have remarkable advantages.  At the time when the researcher conducted interviews, the

interviewees stated that online education was an emerging phenomenon in China.

However, their responses also stated that Yunnan province, located in the southwestern

region, was a developing educational area, which lacked educational resources.

Interview participants agreed that online learning was an excellent strategy to import

digital courses from other regions under the uneven educational resources condition.

Interviewees also found that the content of courses might not be taught in traditional

classrooms in the region, but the purchasable online content could improve the quality of

tertiary education graduates in lower-income areas where education resources are limited.

Physical facilities and stakeholders' ideologies are the primary limitations existed

in online education in Southwest China.  The responses illustrated that the restriction of

institutions' physical facilities was more financial, such as building and/or upgrading

libraries, computer labs, learning resource servers, and Internet networks.  According to

the interview responses, the 40 interviewees all agreed online education in Yunnan's

universities was in the initial stage.  Computer equipment and Internet network facilities

for online education were generally in the building process.  Online survey question 10

data (see Figure 2) show the inadequate online learning resources in their schools.  The

data showed that 57.22% of college students considered the network environment in the

school slightly satisfying, while nearly one-third of college students (28.37%) considered

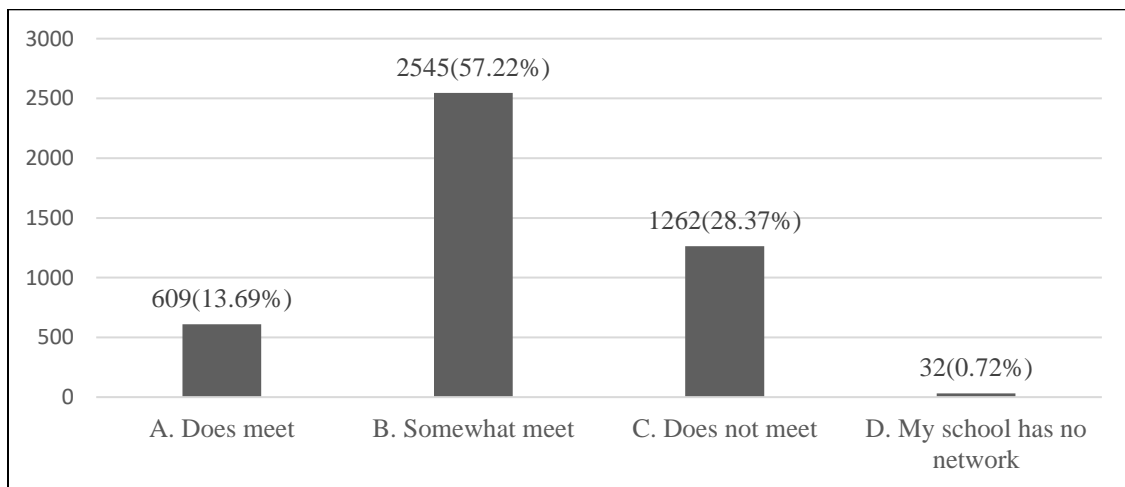that their resources could not meet their Internet needs.



*Figure 2.* The school network environment meets students' Internet needs on campus.
The total study population of students is 4,448.

Additionally, Figure 3 displays factors that limit students' learning in online courses. More than 54.85% of college students responded that they could not find satisfactory online courses, 39.71% of students recognized that the online learning environment was weak because study online was difficult to concentrate, and 32.61% of students did not know how to use online courses. Many college students studied through the Internet network in their institutions and felt restricted by the network speed and the traffic of the Internet. The poor network environment disturbed the students' online study time, which eventually affected their online learning experiences and the outcomes.
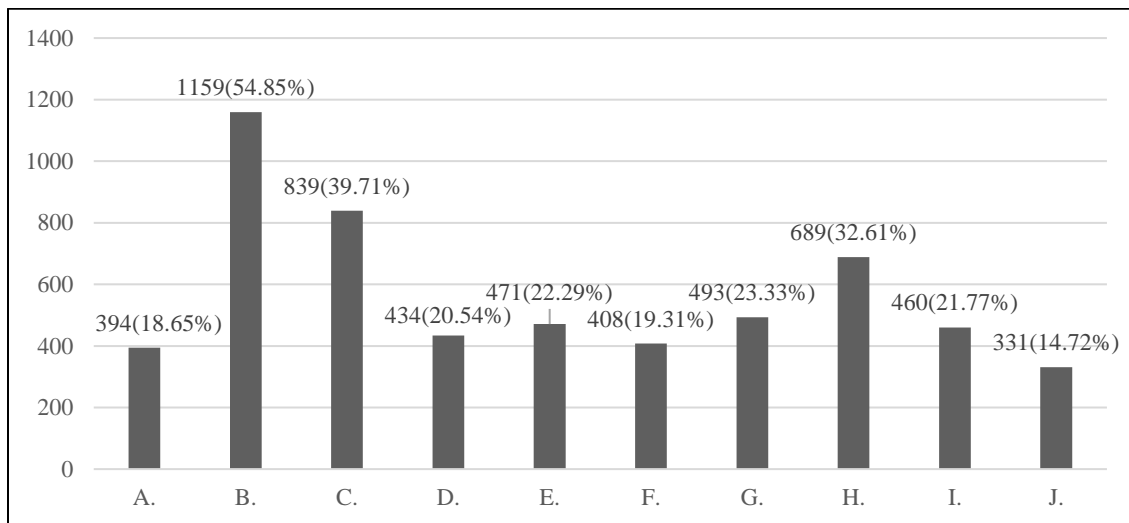


*Figure 3*. Factors that limited students' online course studies. The total study population of students is 4,448. A: The teachings of the class already meet students' knowledge needs; B: Satisfactory online course resources cannot be found; C: The online learning environment is poor, and it is difficult to concentrate to study; D: The equipment is used excessively for entertainment purposes; E: The curriculum resource system takes a lot of time; F: Curriculum resource system has poor compatibility; G: The outcome is not as good as expected; H: Does not know how to study online; I: Schools, courses, or teachers have no requirements to use the Internet to study; J: Other.

The development of online learning resources also needed financial support from the government, enterprises, and other social sectors. Four universities' interviewees claimed that funding was needed to support and build, or constantly upgrade, the IT hardware and software facilities in Southwestern China. Respondents indicated that the

deficiency of IT hardware and software resources reflected online education limitations

in computer facilities.  Many explained that both hardware and software were

foundational to the quality of online education.  Hardware sources were limited, such as

computers and the Internet network facility that schools in Yunnan continually needed to

build and/or upgrade.  The software was the next limitation of online education in

Southwestern China, such as online course designs and the structure of their interface.

Based on the survey data in Figure 2, 22.29% of students replied that the current online

learning curriculum resource system took too much time, and 19.31% of students thought

the curriculum resource system's compatibility was poor.  Even 32.61% of students did

not know how to study online.  Yunnan's HEIs needed to bring in domestic and well-

known online university course software that could efficiently resolve the problem of

unbalanced educational resources, which allowed for the sharing of online learning

resources and improved students' interests in learning in the region.

In addition to facilities development needed, online education stakeholders'

understandings primarily revealed the restriction of ideology.  According to the

interviewees' replies, many online instructors, TAs, and staff members did not adequately

support and promptly reply to the students' questions and report their learning outcome

feedback to students.  Many responses recommended that online learning educators

needed to evaluate the online courses according to the relevant online course standards.

Meanwhile, online students were unable to participate in course assessments to provide

feedback for instructors and/or classes at the end of the semester.  Universities' personnel

needed continuously to provide feedback to the online education relevant departments of

the school to improve the online education methods and the functions of the platform so

that online education could obtain better results.  Some parts of those online teaching and

assessment procedures were missing or insufficient, as interviewees mentioned.

For students, since online education was at its beginning, relevant institutional

online learning regulations were not completed.  The interview participants reported that

the students' online learning guidance and related training could not be achieved as

needed, which resulted in a lower quality of student's online learning.  Based on the

survey data in Figure 3, 39.71% of the college students stated that studying online was

difficult to concentrate, and 32.61% of students did not know how to learn in online

courses.  Some interviewees suggested that students' abilities to self-manage and be

active learners needed to improve.  Interviewees noticed that the college students' study

time in online education in Yunnan also lacked guidance or support from the school IT

staff and instructors.  Several responses stated that universities needed to encourage

students to improve their self-control abilities, time management skills, and independent

learning abilities.  Some of the interviewees pointed out that most students in China

(including Yunnan), the college entrance-examination influenced the education

environment, which created an increase in exam-oriented education.  Few interviewees

argued that college students were faced with transitioning from being a follower to being

more independent and taking the initiative in their studies.  Therefore, the limitation of

students' self-control abilities existed in online learning, creating the need for HEIs'

teachers and personnel to guide the students into an active self-study learning mode.

### Research Question 2

*Research Question 2*: What differences exist in online education between

Southwestern and other regions of China?

Overall, interview questions 3, 5, and 6 were relevant to answering research question 2 (see Appendix C-1 & Appendix C-2).  The researcher organized the interview answers from the perspective of how the online education programs served students' education needs, Yunnan's online education environment (hardware: computer, networks and digital resources), and the local universities' technical support for online education (software: online communication, platform design, management, and user experience). The next sections demonstrated the most representative feedback in answering the interview questions 3, 5, and 6; the PI then summarized the responses to answer to question two.

Interview Question 3

*Interview question 3*: In what ways could online education programs serve students' educational needs?

The PI translated and paraphrased the representative answers from respondents D4, D9, H2, H5, H7, M3, M10, W4, and W7 for this question.  Interview question three intended to ask the universities' employees' opinions regarding how online education serves college students' education needs.  The responses showed that online education serves students' education needs by appropriate-use online educational resources, stakeholders' responsibilities, and consider the educational need of students to decide whether or not to take courses online.  The summarized interviewees' responses are as follows.

Interviewees at Dali University expressed that online education itself has great potential to serve college students well.  D4 expressed that if educators used online education well, the quality of online education outcomes would be better or even higher

than the quality of traditional education because students could connect to the Internet

network every day.  D4 stated, "[trans.] education conducted through the Internet makes a

convenient connection that students do not limit to their region; thus, students can study

at anytime and anywhere" (Y.  Hao, personal communication, September 30, 2017).  D4

founded that many Chinese HEIs (including the southwestern region universities) did not

understand the real meaning of online education.  D4 explained, "[trans.] online

education means that students can study without the restriction of time and location;

students are free to study" (Y.  Hao, personal communication, September 30, 2017).

However, at the time of the interview, D4 continued that online education in Chinese

higher education was in the beginning stage; therefore, online learning programs did not

currently serve students' educational needs well.  In addition to the usage of online

education, D9 mentioned, "[trans.] the quality of traditional education and online

education are different" (Y.  Hao, personal communication, September 30, 2017).  D9

continued that traditional education had many years of experience from being

systematically supervised and tweaked, while the current online curriculum relatively

lacks supervision and management.  Therefore, D9 commented that school administrators

need to develop online education management provisions to supervise and obtain the

same or similar effects as traditional teaching, which serves the students' online

educational needs.  Dali University's D4, D9, and other interviewees responded that in

order to adopt online education to serve students' educational needs, college students

should know the meaning of online education.  Also, school administrators should

support them in learning online continuously.

Honghe University interviewees compared the online curriculum standards with traditional in-class education and stated that online major-study course needed some improvement. H2 expressed that because of the different types of education methods, the curriculum standards and the constraints were distinctive, so the students' online education needs were difficult to judge the best way/programs to serve. H2 added that the education outcome quality would be the standard measurement to evaluate the prevailing teaching method between online and traditional in-class education. However, H2 claimed, "[trans.] the evaluation of a better teaching method is a complex process" (Y. Hao, personal communication, September 30, 2017). H2 commented that if only based on the results to evaluate the education method and decide its quality, the current traditional education was better because of the exam-oriented teaching method. H2 continued,

> [trans.] exam-oriented teaching focuses on the grades and better scores, and teachers directly, face-to-face, guide students. Online education's quality is not only defined in examinations. However, it is also reflected in information gathering through independent learning, which traditional education cannot provide. (Y. Hao, personal communication, September 30, 2017)

In addition to the comparison, H5 commented that traditional education should be better than online teaching in practices of major class study. H5 explained, "[trans.] students study their major classes through online lectures; students may not adequately handle their professional knowledge skills" (Y. Hao, personal communication, September 30, 2017). H5 pointed out that online major-study classes lacked was depending on the three aspects: instructor, student, and administrator. H5 stated, "[trans.] the online instructor

has a more significant impact on students' learning" (Y. Hao, personal communication,

September 30, 2017). H5 continued that designing a major-study online course, by only

switching to the online platform would make students depend more on their teacher. H5

stated that the learning course content information should base more on the real-world

experiences and only from the instructor instead of the Internet description. H5

continued that some courses that require hands-on instruction, like technical courses,

which would not do well online. H5 found that major lecture professional skills though

the hands-on practices are better to interact with the teacher in the traditional classroom.

H5 also commented from a student perspective that since online education just started in

Southwestern China, a student's lack of self-control ability remained the most influential

in the outcome of online learning. Additionally, H5 observed from the school

administrator's perspective that in order to serve students' online education needs, online

courses needed to be examined to maintain a standard. H5 also stated that online courses

standard would determine the quality of outcomes, monitor students learning, test

learning software, and assure that the curriculum is designed to meet standards of online

education.

H7 expressed that the understanding of students primarily reflected the quality of

online education at Honghe University. H7 stated, "[trans.] if students recognize the

features of online learning, they will spend time studying the platform and course

contents" (Y. Hao, personal communication, September 30, 2017). However, H7 also

stated that if the students did not accept the new teaching method, the outcome would not

be as good as traditional education. Additionally, H7 expressed, "[trans.] students'

characteristic personality defines the students' learning trend and shows what method

they should take to study" (Y. Hao, personal communication, September 30, 2017). H7

stated that introverted personality students prefer to study alone, which is more

appropriate for online education; the extroverted personality students fit more with

traditional face-to-face teaching, which has more interaction during the lecturing. H7

continued that teachers or staff should base their courses on the needs of students and

provide different choices, and suggestions for the students depend on their attributes to

meet their successful learning needs. Honghe University interviewees stated that

traditional in-classroom education is more appropriate to operate a major-study course

rather than an online education method and also pointed out that introverted personality

students more fit to online education.

Yunnan Minzu University interviewees responded that their university's online

courses should be a supplement to traditional in-class education. M3 stated that in

comparing online with traditional education, shortages existed from a lack of

communication and prompt feedback in e-learning. In the meantime, M3 expressed that

students could utilize high-quality lecturing video materials from well-known institutions

scholars from Eastern China. M3 stated, "[trans.] students can benefit from the outside

resources by having a chance to view the famous university teaching style and expand the

class content" (Y. Hao, personal communication, September 30, 2017). Moreover, M10

considered, "[trans.] e-learning is not suitable for all subjects, either general education or

major-study courses" (Y. Hao, personal communication, September 30, 2017). M10

believed that all the higher education courses require teachers to give face-to-face in

classroom lessons to help students learn practical hands-on skills, which students would

rely on to live after graduation. However, M10 also stated that if universities must teach

online courses, there should be an announcement to keep students on track, or necessary

course information should appear on their learning platforms to make them productive,

but specialized course content should be taught in the traditional in-classroom mode.

Yunnan Minzu University interviewees stated that online courses should remain as a

supplement to traditional education, especially for the major-study courses.

Wenshan University interviewees reported that students could flexibly arrange

their time to study in online education learning, but they should consider the learning

courses according to their needs and interests because of online learning issues.  W4

expressed that the instructors of the existing online courses at their school could not

assure students already had studied the class materials.  W4 found, "[trans.] the issues

existed in monitoring online learning, as well as communication" (Y.  Hao, personal

communication, September 30, 2017).  W4 continued that the interactive feature between

teachers and students in traditional education held more direct and allowed for prompt

communications during class time; thus, through the direct interaction, the instructor

could quickly solve students' questions.  W4 pointed out, "[trans.] online education has a

time delay issue, which cannot resolve students' questions immediately" (Y.  Hao,

personal communication, September 30, 2017).  Additionally, W7 mentioned online

education was unlike the traditional education in which, instructor supervised students to

study during the class time.  W7 continued that even the traditional in-class teaching

mode might cause students to be nervous that students behaved not to participate in the

classroom learning activities, but the final grades could achieve the standard by assurance

because the instructors held the methodology to manage those students.  Additionally,

W7 stated, "[trans.] online education has less supervision, which might affect the final

grade of the online course" (Y. Hao, personal communication, September 30, 2017).

Thus, W7 stated that lower grades might misrepresent the lower quality of online

education. Wenshan University interviewees claimed that students could flexibly arrange

their time to study in online education learning, but they should consider the learning

courses according to their needs and interests. Wenshan University interviewees

explained that online education existed issues and suggested students should consider the

need to take whether or not to take courses online.

Interview Question 5

*Interview Question 5*: How do you view your online education environment?

(hardware aspects: computer, networks and digital resources)

The PI translated and paraphrased the representative answers from respondents

D1, D3 D5, H2, H5, M1, M6, M7, W3, W6, and W9 to answer this interview question

(Y. Hao, personal communications, September 30, 2017). Interviewees expressed that

all four universities had significant accomplishments in online education facilities

development, but insufficient online learning hardware still existed. The PI summarized

interviewees' and described responses in the following sections.

At the time when the interview conducted, Dali University interviewees

responded that their university online education environment was getting better but still

had some issues. D1 found that due to the completion of a new media library and the

operational online learning resources upgraded in better conditions, online learning

and/or adopting the Internet to study became quite convenient. Moreover, D1 expressed

that Dali University established, utilized, and shared some of the online learning

resources with other colleges and universities in China, which the users could easily

select the resources they wanted to learn.  However, D1 stated that one of the biggest

problems was a lack of instruction and management regarding online resources, which

might confuse the users when accessing the resources.  D1 introduced the example that

some of the students might not know where to click to find learning materials.  D1 said,

"[tran.] the confusion may mislead students in their independent study outcomes" (Y.

Hao, personal communication, September 30, 2017).  Meanwhile, D3 also confirmed that

the online learning environment at Dali University was relatively better than most HEIs

in Yunnan, but the main problem was that students did not have online learning

awareness to study by themselves.  D3 continued that although the learning resources

remained available, the guidance of the students in online learning was insufficient.

Additionally, D5 mentioned that a relatively small scope of teachers and students

executed e-learning; most of the teaching activities were still through the traditional face-

to-face mode.  D5 mentioned, "[trans.] online education was at the exploration and

experimental stage" (Y.  Hao, personal communication, September 30, 2017).  Dali

University D1, D3, D5, and other interviewees claimed that although the online education

at their school was in better condition in the southwestern region, online education at Dali

University had much more for improvement to develop in the nearly future.

Honghe University interviewees replied that some online education hardware

facility challenges existed, such as the low-speed Internet, lack of technical personnel

support, and students did not own a personal computer.  H2 mentioned that more and

more students starting to know what online learning is.  However, H2 stated that the

current issue of online education at their school was the low-speed of the Internet, which

restricted the lecturing video replay function.  Moreover, H5 pointed out, "[trans.] some

instructors have technical difficulties in the use, and lack of technical personnel's support" (Y. Hao, personal communications, September 30, 2017). In addition to the school facilities' difficulties, H2 reported that most of the freshman students did not own a personal computer, which created the difficulty of studying online. H5 further described the online learning improvement strategies that Honghe University set up the school's own online education environment, and also imported some external learning resources such as software from Tsinghua University's (well-known university) educational resources. Honghe University H2, H5, and other interviewees listed some existed challenges at their school, also described hardware and software at Honghe University improved significantly by using external online resources.

Yunnan Minzu University interviewees responded that Yunnan Minzu University's online learning environment significantly improved but also faced many challenges. M1 responded that their school invested a large amount of funding in upgrading the online learning facilities on campus to ensure students' online learning needs. M1 also listed the upgraded digital learning resources that included the school computers, Internet networks, resources server, and other IT hardware facilities. However, some hardware equipment still needed development, such as online education needed more computer labs to support, and the WIFI coverage did not sufficiently cover the full campus yet. M6 also replied, "[trans.] school online programs only currently offer one online learning software/application to the students" (Y. Hao, personal communication, September 30, 2017). M6 continued that the school's online learning resources are relatively few, and the school needed to add more variety to the kinds of learning resources available to attract more online learning students. M7 also suggested

that Yunnan Minzu University needed to create a better online learning environment to

encourage student's independent study in a variety of online courses; current (2017)

online learning channels and resources are not enough.  Yunnan Minzu University M1,

M6, M7, and other interviewees reported that their school online education programs still

needed more improvement in established and more computers, Internet networks, and

other hardware facilities, as well as provided variety online education programs.

Wenshan University interviewees expressed that online education hardware

facilities are relatively inadequate at their school.  W3 responded that Wenshan

University's investment in online education equipment has significantly increased in the

past few years.  W6 expressed that in addition to adopting the governmental funds,

Wenshan University also used the enterprise fund and/or loan and some self-financing

from scientific research projects to support the school facilities building and upgrading.

W6 continued that school increased the significant amount of multimedia facilities in

classrooms and computer labs.  W6 also mentioned, "[trans.] Wenshan University

currently has approximately 70 multimedia classrooms, and over 1,000 computers on

campus are running properly.  However, the number of computer facilities were still far

from meeting the needs of the school's online education" (Y.  Hao, personal

communication, September 30, 2017).  W3 reported, "[trans.] students own computer

and/or other Internet network access devices are even less" (Y.  Hao, personal

communications, September 30, 2017).  W6 expressed that the school hardware facility

needs continually upgrading for online education.  Additionally, W3 expressed, "[trans.]

almost every college student owns a smartphone, students can view online learning

materials through their mobile applications" (Y.  Hao, personal communication,

September 30, 2017). W6 explained that the school's Internet network properly

supported students' online learning on their portable devices. However, W6 claimed that

in the long-term of online education development, the school's computer and other

network equipment need further development to meet the needs of extensive online

education open.

Moreover, W9 responded that online education facilities recently were quickly

developing due to the university's administration awareness-raising on the digital

learning building. W9 expressed that even though the school built the broadcasting

studios, and expanded the WIFI coverage, but the overall facilities remained insufficient.

W9 explained that online education essentially needed computers and Internet network

equipment to support; without the foundation of IT facilities, online learning cannot be

accomplished. Wenshan University W3, W6, W9, and other interviewees introduced the

lack existed in online education facilities at their school, also provided the online

education development recommendation in the short- and long-term.

Interview Question 6

*Interview Question 6*: How helpful do you think technical support provided from

the university? (software aspects: online communication, platform design, management,

and user experience)

Regarding school technical support for online education, all the interviewees from

the four universities responded that their institutions' personnel provided some degree of

technical support in online education. However, the shortages existed at the four study

sites in online communication, platform design, management, or user experience. The PI

translated and paraphrased the representative answers from respondents D1, D4, H2, H8,

M10, W1, W5, and W10 for this question (Y. Hao, personal communications, September 30, 2017). The following sections show the summarized interviewees' responses.

Dali University interviewees responded that the technical support for online education well maintained on campus. D1 mentioned that several faculty and staff members conducted a team in charge of technical support at Dali University. D4 mentioned that since the university's computers, Internet network, and other IT facilities were gradually improving, Dali University administrators encouraged some courses' instructors to use the purchased from the well-known universities' high-quality online courses. D4 added that the excellent courseware covered various subjects such as English, Civil Servants Preparation, and General Education Curriculum Database. D1 commented that although many of the online teaching and learning difficulties exist, the technician was always willing to assist the teachers and students. D1 believed, "[trans.] the troubleshooting process will continuously make online education improve" (Y. Hao, personal communication, September 30, 2017). D1 and D4 claimed that the small scope of online experimental experiences would assist a massive online education implementation in the future. Dali University D1, D4, and other interviewees expressed online education at their school had well technical support. Although many online teaching and learning challenges existed, the interviewees believed their school would overcome the difficulties by continuously online experimental and experiences.

Honghe University interviewees noticed that most of the online teaching faculties at their school possessed difficulties in using the teaching technology (Y. Hao, personal communications, September 30, 2017). H2 listed that online faculty needed to know how to produce course instructional videos online; they also felt the recorded lecture resources

were difficult to upload due to the large size of the video file and slow-speed of the

Internet.  H2 added that without the network infrastructure in place to support video,

online offerings could often fall short.  Furthermore, H2 stated that the Honghe

University online education platform is a purchase base; most faculties lack

understanding and training to use the platform, causing the teachers to spend lots of extra

time experimenting with the software, class video recording, and uploads.  H2 added that

online faculties expected the school could provide a professional technical personnel

team to assist them in video production, and teachers should only need to focus on

content design.  H2 pointed out, "[trans.] the collaboration will achieve a better quality of

lecture video in online teaching" (Y.  Hao, personal communication, September 30,

2017).  However, H2 provided the current issue was that teachers lacked enough

technical support in Honghe University.  H8 expressed that the school strived to great

support online education, which offered electives and general education courses online.

H8 continued that their university purchased the MOOC and other online course software

to encourage the faculties to create and upload high-quality content materials to the

online course server to share with other universities.  However, H8 commented that

online education in Honghe University just started; much improvement demanded to

support in online teaching.  H8 also listed, "[trans.] for instance, the school needs to

recruit more technical personnel, constantly offer online teaching training programs, and

have IT staff support online instructors as educational needs" (Y.  Hao, personal

communication, September 30, 2017).  Honghe University H2, H8, and other

interviewees claimed online education at their school lack of online teaching and learning

support, but university's administrators and technicians strived to solve the difficulties,

such strategies as offered more choices of online courses, recruited more IT professions, and continually offered online teaching training programs.

Like Honghe University, inadequate technical support in online education also exists at Yunnan Minzu University. M10 replied, "[trans.] Yunnan Minzu University IT department's support needs improvement" (Y. Hao, personal communication, September 30, 2017). M10 illustrated that some computers and other equipment in the classroom were not appropriate maintenance and repair so that computers and some of the IT facilities were temporarily functioning for an extended period. M10 experienced that the technical personnel came to repair equipment when the instructor was lecturing, which seriously influence classroom teaching. Thus, M10 proposed that their university's IT department staff needed to be well-trained in order to help to maintain the IT facilities properly. M10 stated, "[trans.] the IT staff's role is important because online education conduct cannot exist without normally running computers and Internet networks" (Y. Hao, personal communication, September 30, 2017). Yunnan Minzu University interviewees shared the low technical support experiences and suggested their school need to well-train IT professions in order to serve online education participants properly.

Wenshan University interviewees expressed that the current multimedia facilities and WIFI networks covered all classrooms, but many classrooms that support online education still needed improvement. W5 mentioned that many faculty and staff involved in online education development, such as educational technology research, testing equipment, and resources management. However, W5 commented, "[trans.] online university teaching needs more efforts because the online learning system itself involves in a wide range participate in advising" (Y. Hao, personal communication, September

30, 2017). W5 expressed that online education must involve the school administration

level, in which the administrators make the decisions of choosing teaching resources and

platforms. W10 responded that Wenshan University began to implement online

education in recent years that several online courses opened in 2016-2017, but online

education development takes the time that online technology was still in the beginning

phase. W10 reported, "[trans.] while university teaches more and more online courses,

the school's online learning platform functionality and management will continuously be

enhanced" (Y. Hao, personal communication, September 30, 2017). W10 believed that

the more online courses there are, the mature online course teaching will be. Wenshan

University W5, W10, and other interviewees reported their school online education needs

improvement, especially needed to involve the school administrators' support. The

interviewees also assumed that numerous online teaching experimental would assist in

online education development.

### Research Question 2 Summarized

*Research Question 2*: What differences exist in online education between

Southwestern and other regions of China?

Based on respondents' feedback, higher education online learning in

Southwestern China overall was still in the initial stage. Interviewees responded that

insufficient online education resources were the primary difference between

Southwestern and other regions of China. Additionally, many online education facilities

- such as computer labs, media library, resource servers, and other IT facilities in

Yunnan' HEIs - were still in the building process. Interview participants compared the

Southwestern region with the developed Eastern and east coast areas in China, the

university facilities in the Yunnan province were slowly updating the hardware facilities.

Many responses claimed the following issues that most of the current school network

coverage was low, and the school's online education platform did not catch the demand

of the students.  Most of Yunnan's HEIs had no data server.  Heavy online visiting traffic

on the platform caused the online education system to fail quickly.  Online course

resources from inside and outside the school could not satisfy the needs of users.  Some

universities in Yunnan lacked computer equipment.  The computer-owning ratio was low,

the number of computer labs was not enough for students to use for online course

learning, and most of the computers needed upgrading.  These current computers and

other IT facilities shortage issues affected students' online education.  Therefore, several

interviewees observed that traditional face-to-face teaching dominated the education

method in Southwestern China at the time when the researcher conducted this study

(2019), and the domination might easily continue in the future.

In the use of online education, according to the online survey question 15 (see

Figure 4), approximately half of the students in the four universities in Yunnan had prior

experience with online education, and nearly half of them did not experience online

learning.  According to interviewees' responses, many online education participants did

not accept online education, including instructors, students, and school administrators.

The new technological learning concept was underdeveloped when the researcher

conducted this study (2019), which naturally created a lag for Southwestern China and

also explained one of the reasons for Eastern China's prevail.  Because online teaching

less used than traditional in-class teaching, Yunnan's HEIs' adopted the traditional

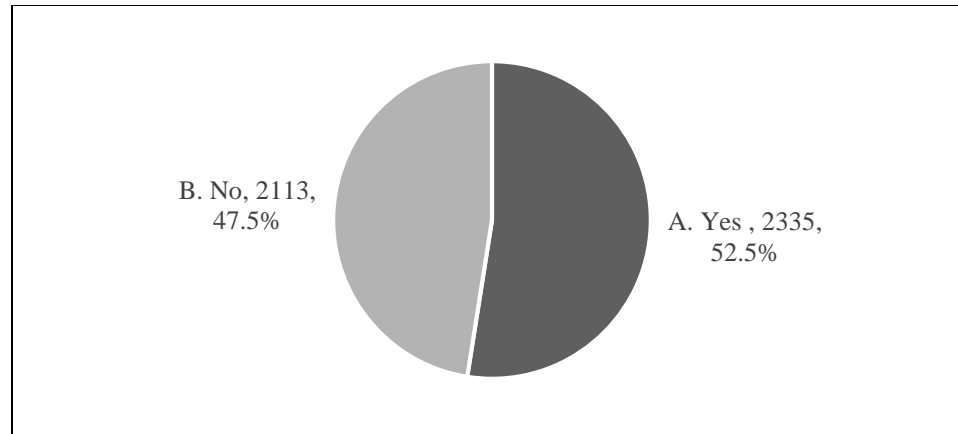education model as the primary teaching method.

*Figure 4.* The percentage of students experienced in online course learning.

Figure 4 also explains that online education promotion was insufficient; nearly half of the students did not know about online education at that time when the research was conducted. Figure 5 illustrates the factors leading to students' Internet use of query learning materials. Only 35.97% of students used the Internet to query learning materials because of teachers' requirements. Many interview responses claimed that online learning was not well-developed, and the technical support remained short. Based on the interviewees' responses, student's self-learning awareness and time management ability needed improvement.

According to the online survey question 18 data (see Figure 5), 78.8% of university students used the Internet to inquire about the learning materials to complete homework, and 27.69% of the students studied online learning materials to expand more understanding of the course information. Students actively learning the class materials online was low; the majority of students used Internet inquiries to complete homework. Therefore, the students' inactivity with online study, along with the diversity of school methods, made for the lower quality of online learning. The quality of online education in Southwestern China was quite insufficient when compared to the developed areas in

China.  Online university education, particularly in the EM areas of Yunnan, has much

more to work on for improvement.
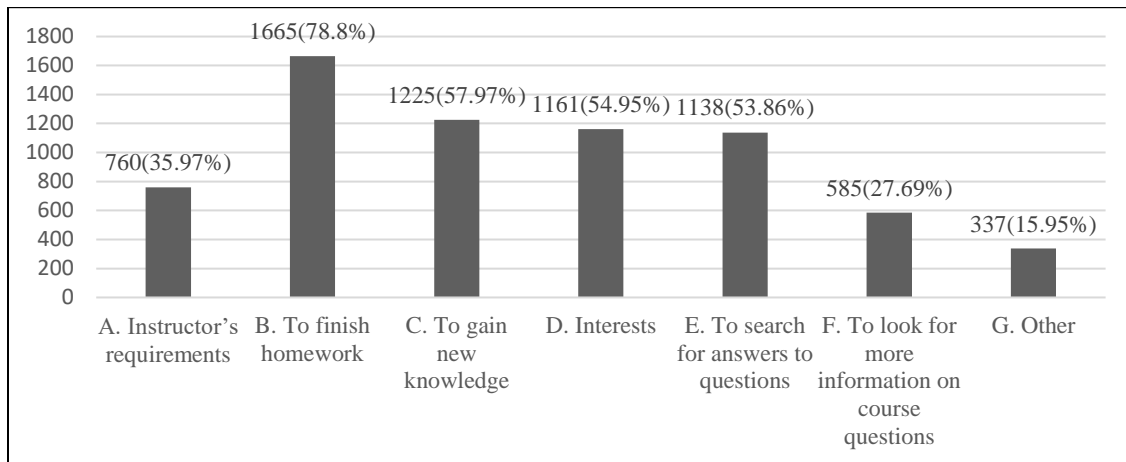


*Figure 5*. The reasons for students use the Internet to query learning materials.

### Research Question 3

*Research Question 3*: How do universities manage online learning resources in

ethnic minority areas?

Overall, the qualitative data from the interview questions 2, 4, and 7 answer

research question 3 (see Appendix C-1 & Appendix C-2).  The responses replied to the

methodology that university personnel used to manage online learning resources, the

procedure adopted to improve the online education quality to align with traditional in-

class education, and suggestions regarding online education should be implemented.  The

next sections describe the most representative feedback in answering interview questions

2, 4, and 7; the PI then summarized the responses to research question three.

Interview Question 2

*Interview Question 2*: Do you have online teaching or learning management

experience? If so, please describe it.

The researcher translated and combined the responses from D9, H2, H8, H9, M5, M7, W2, and W3, who all have online teaching or management experience (Y. Hao, personal communications, September 30, 2017). Interview question three sought real-world online teaching and management experience and suggestions in the region. However, most of the 40 interviewees responded that they had little or no experience in teaching online classes and resource management. The educators all shared the limited online experience at each of the four study sites, even at the four study sites had educators with limited online experience, which showed that current online education in Yunnan was still in its beginning period. The summarized interviewees' responses are as follows.

Interviewees from Dali and Honghe University responded that online learning resources remained important, that school administrators must well-consider which courses to select for students, and considered to improve online learning students' self-management abilities also remained essential. D9 responded, "[trans.] instructors should consider their online learning materials before choosing them" (Y. Hao, personal communication, September 30, 2017). Honghe University's H2 replied that the platform of online learning remained essential, which allowed students to directly know where click, find, and/or download class materials. H2 also commented that the online learning platform needed to have a communication function that allowed the instructor and students to have online discussions. H2 stated, "[trans.] throughout the communication via online study. Students should be able to obtain the instructor's attention, so the instructor can understand the students' problems, which would help students in learning" (Y. Hao, personal communication, September 30, 2017). Additionally, H8 expressed,

"[trans.] Honghe University's students prefer MOOC materials from Tsinghua University and other well-known universities" (Y. Hao, personal communication, September 30, 2017). H8 explained that those imported MOOC learning resources from well-known universities had many great features, such as timely feedback to answer the student's questions and flexibility in learning. H9 taught two classes, the subjects being career planning for college students and college students' entrepreneurship. H9 reported that at least five students did not complete the online courses due to the lack of time-management skills in learning. H9 found, "[trans.] Honghe University's students gradually realized that the abilities of self-control and time management are essential in online learning" (Y. Hao, personal communication, September 30, 2017). Dali and Honghe Universities' interviewees D9, H2, H8, and H9 responded that school administrators and teachers should consider students' needs when selecting the appropriate online learning courseware. Also, students' effective self-management skills remained important while taking online classes and aid students' success in online learning.

Yunnan Minzu University's interviewees suggested adopting third-party communication tools to support conversations in online learning in order to manage students' online learning activities properly. M5 had some online education management experience and expressed that online instructors should utilize social media software outside of the communication functions of the online learning platform to contact students, such as QQ and WeChat. WeChat and QQ were the most uses of social messaging in China. The two applications allowed users to contact their friends and family. Like most of western social media software, WeChat and QQ allowed users to

send out and receive text messages, photos, and video clips, as well as make voice and

video calls.  Similarly, M7 replied, "[trans.] social media tools like WeChat and QQ

sufficiently assist online instructors in communication with students during the online

learning process" (Y.  Hao, personal communication, September 30, 2017).  M7 further

argued for the efficiency of social media tools in communication to help send out

announcements, class PowerPoint (PPT) files, and other study reading materials.

Likewise, M7 added that students could quickly post their study questions, contribute to

discussions, and present their assignments via the social media app.  Yunnan Minzu

University's interviewees M5 and M7 recommended that social media tools should be

used in the online teaching process.

Wenshan University's interviewees analyzed online education components and

provided several successful online learning solutions.  W2 noticed, "[trans.] students

usually only focus their attention on the teacher for the first 20-30 minutes out of a 45-

minute regular class in the traditional classroom" (Y.  Hao, personal communication,

September 30, 2017).  W2 believed that instructors need to apply the flip-classroom

principle concept that adopted the hybrid course mode instead of fully online education.

W2 added, "[trans.] during the blended course, instructors should focus on discussion and

answering students' questions while in the traditional classroom and let students study

independently online before the class meets" (Y.  Hao, personal communication,

September 30, 2017).  W2 continued that, in addition to providing teaching materials

(PPTs, lecture videos, graphs, or text documents) on the online learning platform, a

discussion held extremely necessary for learning in order to build understanding through

their own reflections, rather than only receiving the instructor's lecture.

Furthermore, from the instructors' perspective, W3 introduced the critical strategies that online resources use to attract students to keep up their interest in studying, regardless of online teaching and management. W3 expressed that these approaches included creative course content, proper-working platform functionality, and technical support. W3 also stated, "[trans.] the most challenging task is how to ensure students are actively studying in a completely independent study environment" (Y. Hao, personal communication, September 30, 2017). W3 recommended that in order to ensure the quality of Wenshan University's online education, online instructors must ensure and encourage that the students are consciously studying. W3 continued that school administrators must establish monitoring and management regulation to measure the school's internal online education. W3 stated, "[trans.] if students actively learn to study online, along with standard teaching, supervision, they will achieve a successful online education" (Y. Hao, personal communication, September 30, 2017). Wenshan University's Interviewees W2 and W3 provided several successful online learning solutions, such as adopting a hybrid-course method, encouraging students to study consciously, and establishing school regulations to guide online teaching and learning.

Interview Question 7

*Interview Question 7*: What could you do to improve the quality of online education so that it aligns with traditional in-class education?

The researcher translated and paraphrased the responses from D4, D7, D8, H1, H8, H10, M1, M5, W2, and W9 to answer this question (Y. Hao, personal communications, September 30, 2017). Online education is a relatively new teaching method compared to the traditional education model in the region. The researcher

believed the quality of online teaching to be identified should be traditional in-class education. Interview question seven attempted to discover the interviewees' expectations and suggestions of equal quality for online education and traditional education in the region. However, since current online education in Yunnan was still in the beginning stage that most of the interviewees had not yet experienced online teaching, so scattered online education recommendations were provided. The summarized interviewees' responses are as follows.

Interviewees from Dali University responded that educators at their school improved online education quality by helping students to select high-quality, imported course materials, by improving students' online study abilities, and by the collaboration of the educators and staff member. D4 expressed that Dali University purchased online course content from Beijing University and other well-known universities. D4 added that online students could pause and/or playback their course's lecture videos at any time based on their study progress. D4 observed, "[trans.] traditional in-class education cannot provide the playback feature. Online learning students can view the learning lectures as many times as needed without disturbing the instructor's lecturing plan of the traditional in-class education" (Y. Hao, personal communications, September 30, 2017). Meanwhile, D4 mentioned that those high-quality, imported online course materials could broadly match students' learning needs and align with the quality of online education or rate even higher than traditional in-class education. D4 also reported, "[trans.] the imported online learning materials assist Dali University in having a more competitive advantage in online education among the HEIs in Yunnan" (Y. Hao, personal communications, September 30, 2017). However, D7 also replied that online

learning required students to have higher independent study awareness. D4 explained, "[trans.] if students are studying something that interests them, they are more likely to study independently and receive more information than the others. Otherwise, online learning will not be helpful in students' learning because they cannot control themselves to only focus on watching the lecture video without doing something else" (Y. Hao, personal communications, September 30, 2017). Furthermore, D8 stated that although online courses had many advantages, instructors should not leave the students to study alone without any management. D8 continued that students needed more supervision from their instructors, which psychologically encourages students to learn through communication. D8 commented, "[trans.] the teacher and/or TAs also need to provide offline assistance, such as tutoring or meeting if needed" (Y. Hao, personal communications, September 30, 2017). D8 finally pointed out that a successful online education must have a collaboration of an online instructor, an assistant, and/or a staff member to help manage technology and educational content. Dali University's D4, D7, D8, and other interviewees introduced the strategies of increasing online education quality that include high-quality, imported courseware, improving students' online study abilities, and the collaboration of the educators.

Honghe University interviewees introduced several approaches to improve online education quality, such as providing online education training, providing support for mobile devices, and purchasing high-quality resources. H1 mentioned that, due to the students growing up in an informational and technological environment, they had more opportunities to explore technology devices, such as computers, smartphones, and tablets. H1stated, "[trans.] most of the college students in the 21st century naturally had the

necessary skills to operate computers and mobile devices" (Y. Hao, personal

communication, September 30, 2017). Thus, H1 agreed with most of the other

interviewees that online education must be a part of higher education. H1 considered,

"[trans.] although students know how to operate computers and/or other electronic

devices, university personnel still need to provide students with some training before

delivering the lectures online, especially for the freshman students" (Y. Hao, personal

communication, September 30, 2017). H1 continued that, in addition to providing

general-education courses online, university educators must provide the elective and

major-study courses online gradually so that students could study the relevant course

information as they need; training for the elective and major-study courses was also

demanded. Meanwhile, H8 found that online courses should be created to adapt to

multiple platforms because students currently own more smartphone devices than

computers. H8 stated, "[trans.] offering online courses on mobile devices could alleviate

the shortage of computers that impact online education at present" (Y. Hao, personal

communication, September 30, 2017). Regarding the quality of online education, H10

expressed that the school should import high-quality curriculum resources instead of

spending time to create their own coursewares. In the meantime, H10 observed that

university administrators must focus on upgrading the hardware and software facilities to

support the students' online education implementation. Honghe University's H1, H8,

H10, and other interviewees pointed out the procedures they believe are required to align

online education quality with traditional in-class education. Those strategies included

providing online education training to the students, developing online platforms for

mobile devices, and purchasing high-quality resources to increase the online learning

quality.

Interviewees from Yunnan Minzu University compared the online and traditional

in-class education to determine that the learning content must be diverse to meet the

interests and needs of different levels of students.  M1 stated that the choice of course

content should be distinctive in different HEIs in Yunnan.  However, M1 commented that

due to students taking multiple classes online and/or in-class during the semester study,

students' time management abilities must be more integrated with online and traditional

education.  M1 expressed, "[trans.] the university requires students to gain knowledge

from the guidance of instructors, but college students need to have the independent study

ability to inquire and seek out information throughout their lives, which is the most

valuable skill one receives from higher education" (Y.  Hao, personal communications,

September 30, 2017).  Meanwhile, M5 replied that the traditional education classroom

was aimed at essential knowledge and/or technical skills teaching.  M5 commented,

"[trans.] online education is a comprehensive development of education, which is a more

broad and open education path to enhance students' understandings of class information"

(Y.  Hao, personal communication, September 30, 2017).  Yunnan Minzu University's

M1, M5, and other interviewees considered the fact that online education aids college

students in developing a broad range of information-seeking skills.  However, in order to

study online education successfully, students should equip independently study abilities.

Wenshan University interviewees analyzed the different types of courses within

their school in order to increase the quality of the beginning stages of online education.

Interviewees believed that school educators need to discover the students' course material

learning interests to design relevant online courses. W2 expressed that using creative

course materials for general education could make online course content more attractive

and also promote independent study. However, W2 found that major-study courses

should not rely on the students' interests. Instead, W2 recommended, "[trans.] instructors

must analyze the procedures of delivery for major-study courses because specialized

skills are related to the professional training aspect, and the curriculum must be designed

according to standard assessment to ensure a good quality outcome" (Y. Hao, personal

communication, September 30, 2017). W2 continued that online instructors could use the

online tools to connect the learning materials with the needs of society, in regards to

skilled careers, in the major-study courses. W2 further recommended, "[trans.] providing

real-world professional experiences to students is a strong example for the major-study

course settings" (Y. Hao, personal communication, September 30, 2017). In addition to

providing real-world experiences through the major-study courses, W9 argued that the

university should provide similar online educational content to the vocational programs

for working students to study online. W9 explained the reasons for providing those

vocational courses were because the same or similar online course content could save the

courseware-creating budget and that those contents hold up-to-date professional

resources, knowledge, and abilities training, which could renew the working students'

professional skills. W9 addressed another feature of the online vocational course,

describing that "[trans.] the flexibility helps working students balance their work, family,

and education. Students with more convenient study times allow for a more flexible

work schedule" (Y. Hao, personal communications, September 30, 2017). Wenshan

University's interviewees believed that students' active learning attitudes determine the

outcome quality.  Thus, several interviewees proposed that online general education courses should be diverse and creative in order to increase students' willingness to study. Interviewees also recommended that online major-study courseware should be used to teach full-time, regular university students and also to those in vocational programs.

Interview Question 4

*Interview Question 4*: What are your suggestions for how online education should be implemented?

The PI translated and paraphrased the responses from D2, D5, H1, H4, H5, M1, M2, M4, M5, W1, and W8 to answer this question.  (Y.  Hao, personal communications, 2017).  Interview question four attempted to discover the interviewees' expectations and recommendations of online education implementation in the region.  The interviews introduced suggestions that included the school administrator's supervision, staff members' support, awarding outstanding online instructors and programs, and collaborating between all online education stakeholders.  The summarized interviewees' responses are as follows.

Dali University interviewees recommended that online education implementation should not be greedy so that school administrators can develop a plan thoroughly.  D2 suggested that the university administrative level should contemplate the online learning blueprint before being widely implemented.  D2 added, "[trans.] school administrators should establish online course supervision regulations.  The quality of online learning needs to assess and improve based on the needs of teaching and studying" (Y.  Hao, personal communication, September 30, 2017).  Additionally, D5 mentioned that since the current online course materials remained from well-known universities, well-

considered online curriculum establishment was urgent and necessary.  D5 also expressed

that the evaluation would help improve online educational resources' designs, online

instructors' teaching methodologies, and student learning outcome qualities.  Dali

University's D2, D5, and other Interviewees claimed that school administrators should

adequately consider the online education development plan and also develop the online

education regulations within the existing online programs.

Honghe University interviewees emphasized that their university must establish

an independent department in charge of online programs to assist in implementing the

online programs.  H1 expressed,

> [trans.] the establishment of the online supervision department would gradually
>
> cooperate with the IT department and different schools that have online courses.
>
> The mission of the department would be to develop an online education content
>
> management structure, assist in purchasing, creating, and/or updating the online
>
> course materials, and support the needs of online participants. (Y.  Hao, personal
>
> communications, September 30, 2017)

In addition to the online department establishment, H4 also responded that the school

technician must regularly update the report of school IT facilities to those who remain in

charge of the online programs and also encourage online education administrators to

invest funding into the building or upgrading the IT facilities.  H4 continued that, in order

to improve the teaching efficiency of the instruction, technical support should not only

assist educators in the maintenance of their computers but also in creating the course

lecture videos and operating the online teaching platform.  H4 expressed, "[trans.] due to

online education continuously utilizing new technologies; teachers should be open-

minded and willing to learn the modern teaching techniques.  Strong familiarity with the

online learning platforms would help effectively guide students" (Y.  Hao, personal

communications, September 30, 2017).  Also, H5 pointed out, "[trans.] teamwork is

particularly important, which can be accomplished the complex online courseware design

and approach" (Y.  Hao, personal communications, September 30, 2017).  H5 continued

that a good outcome of online education required instructors' strong teaching knowledge,

IT personnel' professional design, school leadership's funding support, and

administrators' supervision.  Honghe University's H1, H4, H5, and other interviewees

replied that, in order to implement the online programs, the university must establish the

online department, along with the team needed to assist the online program in achieving

successful development.

Yunnan Minzu University interviewees responded that forming relevant online

teaching regulations would guide online education implementation.  M1 recommended

that the university administrators should create award for outstanding outcomes of online

course policies to encourage and ensure online education implementation.  M1 continued

that the polices also serve to inspire the online instructors' courseware preparation

abilities.  Additionally, M1 expressed that, in addition to granting the awards to excellent

online instructors, school administrators should promote outstanding online course

material through the shared online teaching platform.  M1 explained, "[trans.] the

outstanding courseware created by the schools' instructors can advertise the university

and educational quality of the university, which can enhance the competition between

universities through the network" (Y.  Hao, personal communication, September 30,

2017).  In addition to the rewarding policies, M2 considered that online education

advantages should not be limited to higher education.  M2 claimed, "[trans.] online

education must continually spread throughout society in order to enhance the lifelong-

learning features of online self-learning" (Y.  Hao, personal communications, September

30, 2017).  M2 also responded that college students should use the online learning

medium to connect professional training knowledge with future employment.  M2

explained that school administrators should expand resource materials of online learning

to be available to the public; therefore, the open learning resources would ultimately

become a form of continuing education that supports the students' lifelong study.

Additionally, M4 replied that e-learning could enrich the traditional in-class education

curriculum further to meet the needs of students, regardless of their interests or

employment.  M4 claimed that in either a fully online or hybrid course, a relevant

assessment for students' learning progress remained essential.  M4 agreed with most of

the interviewees, "[trans.] online related courses content planning and delivery must

follow the online regulation criteria" (Y.  Hao, personal communication, September 30,

2017).  Furthermore, M5 expressed that, in order to effectively implement online

education, the university should invite some experts in the online education field from

well-known universities or software companies to give some online program

development instruction.  M5 commented, "[trans.] those with successful online

education experiences would provide some guidance in all aspects to stakeholders in

online education, which would save much experimental time spent finding the right path

in online education development" (Y.  Hao, personal communication, September 30,

2017).  Yunnan Minzu University's M1, M2, M4, M5, and other interviewees expressed

the online education implementation methodologies, such as awarding outstanding online

instructors, promoting excellent online courseware, creating online related curriculum

regulation, and asking the online education experts for guidance.

Wenshan University interviewees believed that all of online education's

stakeholders must collaborate in order to implement online education successfully.  W1

stated that, in addition to high-quality online courseware imported from well-known

universities, university leadership must ensure sufficient funding upgrades of online

education hardware equipment.  Additionally, W1 stated, "[trans.] online instructors and

IT personnel should be hands-on to create online courseware" (Y.  Hao, personal

communications, September 30, 2017).  Furthermore, W8 replied that after online

education platforms build-up, students should not be alone to learn by themselves.  W8

added, "[trans.] the instructor should play a guiding role while teaching online rather than

traditional teaching, which avoids tends to cram in too much information" (Y.  Hao,

personal communication, September 30, 2017).  W8 continued that online education

implementation requires administrators, faculty, and staff members to more deeply

consider the methodology used to integrate the online platform, so that courses may be

taught more efficiently in order to achieve the true value of online courses.  Therefore,

W8 recommended, "[trans.] online education should not merely be a combination of

teaching with IT devices.  Instead, online education needs to combine online teaching

with the traditional teaching model in daily life, to blend the massive information with

the discussion between instructors and students" (Y.  Hao, personal communication,

September 30, 2017).  W8 claimed that the idea-exchange process would assist students

via the online environment in 21st-century learning and gain the best new technology

learning outcomes.  Wenshan University' W1, W8, and other interviewees suggested the

collaboration of the online education stakeholders and wisely used new technology would

assist in successful online education implementation.

**Research Question 3 Summarized**

*Research Question 3*: How do universities manage online learning resources in

ethnic minority areas?

First, according to the survey question four, the ethnic students' survey data

showed that 34.69% of responses are from minority students, which matches the lecture

description in chapter two that one-third of the population in Yunnan were ethnic

minorities.  The high ethnic minority (EM) ratio proves that the Yunnan province is one

of the predominantly EM residential areas in China.  In addition to the EM evidence in

the questionnaires, as the survey question five (see Figure 6-Right) displays, 81.92% of

students at all four universities were from rural areas.  The high percentage of rural areas

students typically means their economic background is low-income.  According to

interviewees, due to low financial or social status, students may not be able to buy a

personal computer to access the Internet, which may have a significant impact on their

online learning experience.  Therefore, several responses agreed that one of the HEIs'

essential roles remained to ensure that students who participate in online education can

have a school computer and/or online resources for support.  According to (see Figure 6

(data from survey question 13), 75.09% of students knew the institution was offering

online courses.  As Figure 2 displays, more than half of the students believed that the

school's online learning resources met or slightly met the needs of Internet access.  The

survey and interview data represented that HEIs in the Yunnan province strived to

alleviate the issue of low economic impact in online learning.  All 40 interviewees from

the four universities responded that HEIs' personnel and educators collaborated to solve

financial difficulties for students in online learning.  Interviewees also claimed that the

establishment of computer labs and/or media libraries served to meet the need for
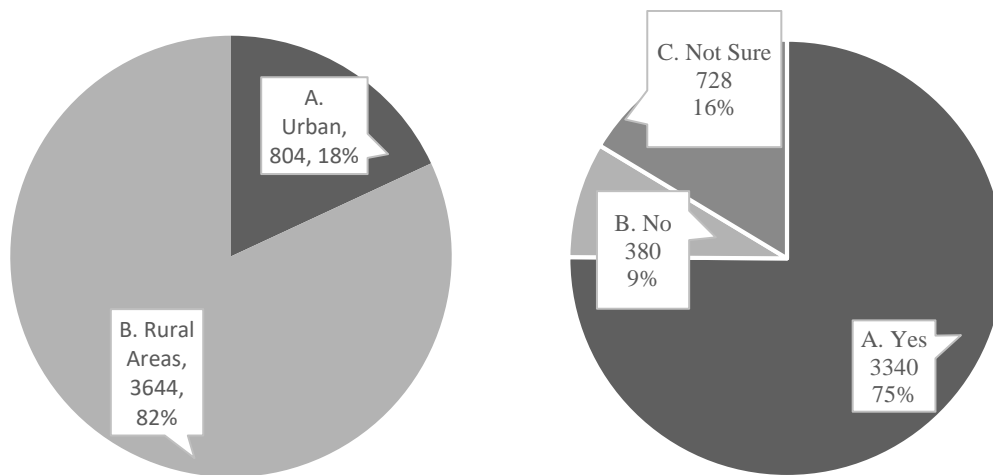
students lacking computer and Internet access.



*Figure 6.* Left: students' home location; Right: the students' awareness of university
online learning resources.

        Secondly, according to the interview participants, online education development

in Southwestern China improved significantly.  However, due to the advanced

requirements of the hardware and software in online education implementation, the

average quantity of hardware equipment was still low in institutions that have far more

room for improvement, which needs a great amount of funding to support.  Some

interviewees highlighted that some of Yunnan's universities already had an online

education platform, but most of the schools in the region were still in the platforms'

research process.  According to many respondents, online learning was in its beginning

period, but efforts were seen at some of the universities in Yunnan, including hardware

and software purchasing, learning software management, and upgrading.  Responses

claimed that online education resources were gradually developing in the region to meet

the needs of students.  Furthermore, interviewees expressed that some universities in

Yunnan selected high-quality online curriculum resources from the well-known

universities in Beijing, Shanghai, Guangzhou, and other Eastern and east-coast areas.

Those imported online courses enabled Chinese southwestern universities' students to use

high-quality educational resources.  Therefore, many interviewees agreed that the

development of online education not only expanded students' learning experiences but

also helped to resolve the region's inadequate economic learning problems.

Thirdly, internal online course materials were under development in most of the

Yunnan HEIs.  According to the interviewees' responses, the educators from the

southwestern region highly recommended the hybrid-course method that blended online

teaching with the traditional in-class education.  Traditional in-class teaching remained as

the principal educational method in this region.  They also noted current Yunnan's higher

education should not use only one of the instructional methods.  Many interview

responses stated that online learning in Southwestern higher education was not the

primary resource in education at present because of limited online resources.  However,

at that time, when the study (2019) conducted, online learning still had a variety of

benefits regardless of the existing platforms' lack of communication functions, which

needs a third-party application or social media account to support communication

between students and teachers.  Interviewees also introduced many online learning

advantages that included allowing students to inquire after class, search for answers to

complete homework, and explore other interests in self-learning activities.

In addition to online learning communication, the four study sites' interviewees

recommended that online education at that time needed support from social media like

WeChat and QQ in communicating with students during the online learning process.

Meanwhile, Figure 7 shows that QQ (96.81%) and WeChat (92.72%) were the most-used

online platforms that students chose to interact with other people. Interviewees also

suggested that those social media platforms could assist the management of the current

online learning for prompt communication. Teachers and TAs can present class reading

materials, hold a discussion, and send course announcements through the social media

application. Furthermore, according to survey question eight's data (see Figure 8),

94.45% of college students accessed the Internet through their smartphones, but only

60.57% of students used laptops. Interviewees also claimed that online course

application development for mobile devices is important to the students in Yunnan

because of the smartphones' popularity so that those students can view the online

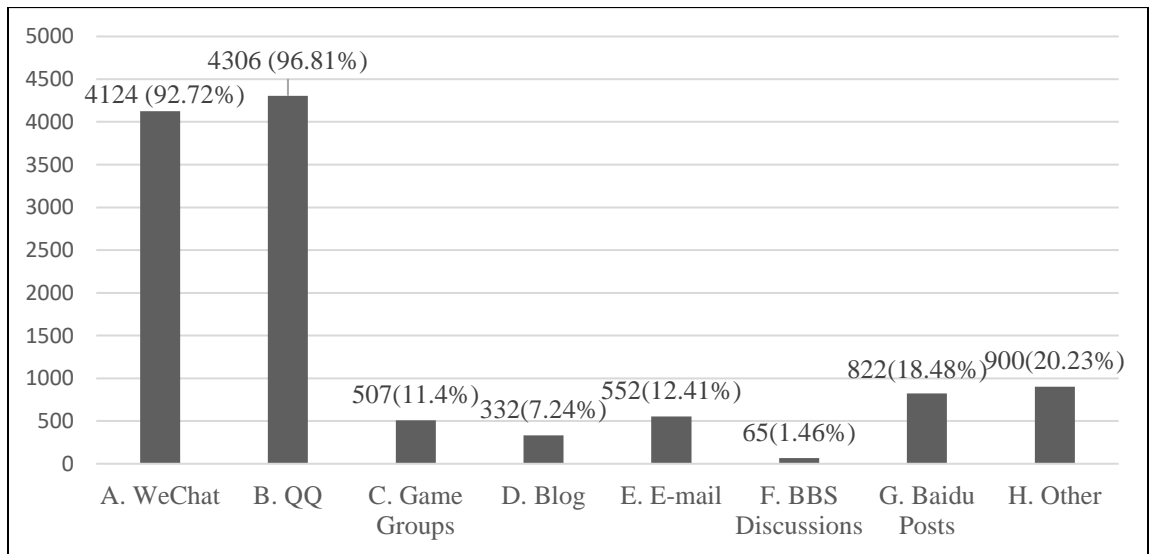learning materials through their mobile devices.



*Figure 7.* The students' most used platform to interact with other people online.
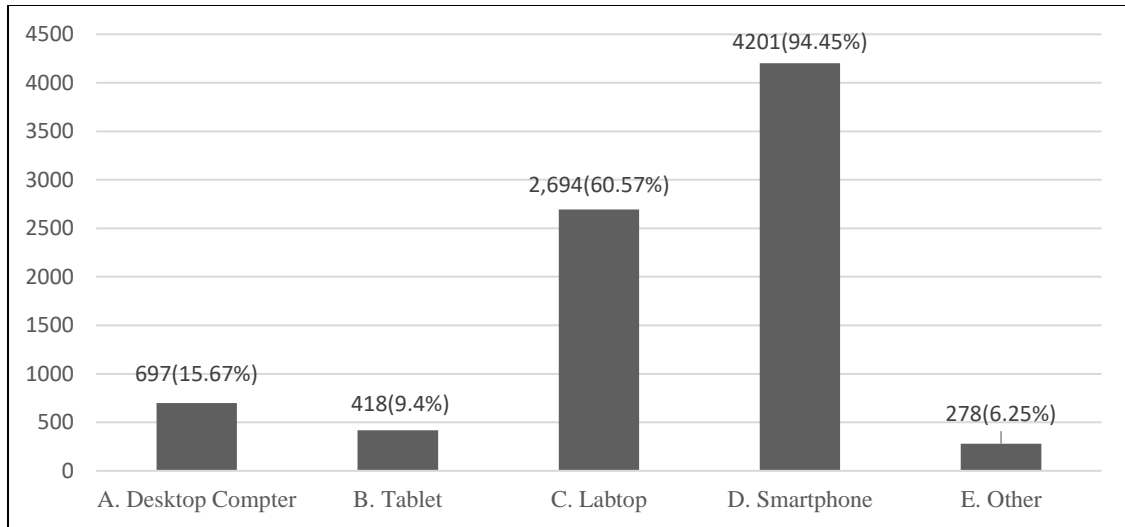
*Figure 8.* Equipment students normally used to access the Internet.

Interview responses claimed that universities' IT personnel, teachers, and school administrators were essential in managing higher education online learning in Southwestern China.  Several responses stated that online education students should be focused on their learning stages and adjust their time to learn flexibly, such as watching lecture videos as needed.  Thus, school IT personnel must assist the online instructors in designing the courseware, recording lecture videos, and the uploading process. Meanwhile, many interviewees recommended that IT personnel, teachers, and administrators needed to collaborate in analyzing students' online learning data to create the curriculum requirements.  Many interviewees claimed that online course learning standards were needed because students were from different academic backgrounds, or studying either for general education, elective, or major-study courses.  The splitting of specific requirements would encourage students from different backgrounds in learning by acknowledging their needs.  No matter the school year, study field, or ethnicity (EMs or Han), all students could learn at anytime, anywhere on the web platform, without being bound by the same requirements.

Lastly, many responses considered that the regulation of online learning supervision and management needed to be created or strengthened in order to control the quality of online learning in Southwestern China.  Several interviewees claimed that new software and tools were needed to enhance the online education environment and that students would benefit from having software prevent them from using the Internet for leisure.  Many responses agreed that the well-designed examination would assist relevant personnel in collecting students' learning outcome data for future online learning improvement.  Several others commented that since online education could not be a massive implement action at most of the universities in Yunnan at the time when the interviews were conducted, online teaching methods could be used as a valuable component.  In the meantime, interviewees recommended that promoting online education programs on and off campus could assist in expanding the scope of online learning for students.  Universities needed to continue creating the environment of online education by improving instructors' understanding and skills as online teaching is needed.  Interviewees also added that developing students' traditional classroom education thinking into the way of online learning was also necessary, which is required for students to enhance their learning abilities like self-control and time management.  Students also needed to be aware of the online course requirements before choosing their courses.  Finally, many responses indicated that university personnel needed to continuously provide a training program for students and teachers, which could help them to be more familiar with online education platforms and better guide students.

**Summary**

This mixed-methods study (2019) showed that higher education online learning development in Southwestern China needed improvement. The researcher collected the data from quantitative assessments through the online survey, as well as adopted the data to examine the three hypotheses in order to measure current students' online learning status. The qualitative study's feedback from university faculty, staff members, and administrators provided various observations and suggestions for online education implements. For instance, the study produced feedback regarding the general university employees' beliefs on current and future online education implementation. A limitation existing in Yunnan's higher education online learning expansion. It is a necessity to prepare all stakeholders of online education in thinking and methodology. Moreover, Chapter Five explains the outcome of the three hypotheses. The researcher observed and discussed the reasons for rejecting the three null-hypotheses as satisfaction differs in the different school levels, no correlation coefficient exists between students' Internet usage and using the Internet to study, and there were equal opportunities for online education resource access between EMs and Han ethnic students. Chapter Five provides recommendations derived from the analysis of the data presented in Chapter Four for best practices regarding online education in the higher education of Southwestern China and suggestions for future research.

**Chapter Five: Discussion and Reflection**

**Overview**

In order to discover the best practices of online education in Southwestern China, the researcher opted to use online surveys and third-party face-to-face interviews to investigate the perceptions of online education stakeholders.  Study participants included the students, faculty, staff members, and administrators at four universities in the Yunnan province.  The data collection process took place during the Chinese higher education spring semester - from July to September in 2017.  By using the online survey data, the researcher examined the subjects related to identify the hypothesis by number: the satisfaction between students in different grades in online education, the correlation between Internet usage and the frequency of using the Internet to study, and whether there is equal access to the online educational resources between the ethnic minorities (EMs) and Han ethnic students.  By completing qualitative data summaries in chapter four, the researcher determined university personnel's perceptions of the existing online education structure and the needs of students and instructors for future developments in online education.  The researcher also analyzed the survey data from the students' perspectives as support in answering the three research questions.  Through the investigation of the collected data and interviews', analysis, and discussion, the researcher provided a specific explanation of the hypotheses' outcomes and the best practice suggestions for online education in this region.  This chapter also presents the conclusion of this mixed-method research (2019), as well as recommendations for future online education research.

**Hypothesis 1 Discussion**

By using the four universities' online survey data collected between June and September in the spring semester of 2017, the researcher adopted the analysis of variance (ANOVA) method to examine the differing satisfaction rankings for online courses from freshman, sophomore, junior, and senior university students. The null hypothesis one states that there will be no significant difference in student satisfaction as it pertains to a student's academic year of study. Since the F value (41.54) was significantly higher than the F critical value (3.10), and the P-value was close to 0.00, which was much less than the alpha (0.05), the primary investigator (PI) rejected Null Hypothesis one (see Table 3), and supported Hypothesis 1. Then, the PI used Scheffe Test after the ANOVA to test and indicate the significant difference in the two group means. Overall, the freshman group has the highest mean (2.74), and the junior group (1.83), by contrast, has the lowest mean. More specifically, the examined results show that the means in all school levels at the four study sites, freshman university students score 2.74, sophomores are 1.97, juniors are 1.83, and seniors are 1.85 (see Table 4). The analyzed results show that there is a significant difference in students' satisfaction with their school's online education between the freshmen and the sophomores, juniors, and seniors. However, only an insignificant difference exists in the satisfaction of using online courses between sophomore, junior, and senior groups.

Students' study ideology is the first evidence to explain why freshman university students have higher satisfaction rates than sophomores, juniors, and seniors. According to several interview responses, Chinese high school students study harder than students in other levels of education in the Chinese education system, including elementary, middle school, and college. Post-secondary education students study the hardest because tertiary

education is separate from the nine-year compulsory education and high school; to continue their education, students must be well-prepared for the college entrance examination. Interviewees stated that students study hard to obtain better grade results for the entrance exam, so that the score can assist them in applying for higher quality and/or more reputable universities. Most of the freshman-year university students who entered higher education maintain their hardworking high school study habits and always stay focused on the learning that the teacher requires. They actively search for homework answers through the Internet or study for online general education classes that the school offers. The college freshman students' hard-working study approach eventually drives them to achieve good grades in the first college year, including both in the traditional in-class and online educations. Since they correctly use the online education tool, first-year college students have a higher satisfaction level. However, after completing the freshman year of study and rising to the next college level, students who are not choosing to go to graduate school start to enjoy college life because lack of pressure from the graduate school entrance examination. Therefore, many university sophomores, juniors, and seniors may not care about the unique features of online learning because they just need to focus on passing the courses they are taking, regardless of being in a traditional in-class setting or online course. The PI believes the study-attitude shift explains the reason that there are no significant differences regarding satisfaction levels among the sophomore, junior, and senior university students.

The PI considers late-start online education as the second piece of evidence that explains the satisfaction differences in lower college levels versus higher college levels. Many interviewees expressed that the popularization of online education in Yunnan was

not as extensive in the last few years.  Many universities' computers, data servers, high-speed Internet networks, and other online education-related hardware facilities in the southwestern region a few years ago were even poorer in quality than the conditions of online education when the researcher conducted this study (2019).  According to the interviewees' responses from the four universities in Yunnan, some higher education institutions (HEIs) recently had completed the building of multimedia libraries, classrooms, and more computer labs, as well as upgrading of school computers, the Internet speed, and expanding the Wi-Fi coverage on campus.  Although Yunnan's HEIs upgraded some online education hardware facilities, the standards of online programs still required upgrading hardware to support them.  Thus, with increasing requirements for online education, more universities need to upgrade their hardware and facilities.  The Yunnan's college sophomore, junior, and senior students from the survey in the mixed-method study (2019) likely experienced the period of the most inadequate online education resources, especially the junior and senior students that scored the lowest satisfaction mean in the survey – 1.83 and 1.85 (see Table 2).  Freshmen having the highest mean of 2.74 and sophomores having a 1.97 mean represents that they utilized the online tools with the most current updated hardware facilities to study online.

The results of the interviews and surveys suggest that the software format and content of online courses remain the third reason that led freshman university students' online learning satisfaction levels to be higher than other grades of college students.  The four university interviewees responded that several universities in Yunnan purchased the online learning platform, but most of the HEIs had not completed the decision-making process of strategically choosing an online platform.  Similarly, to the inadequate online

platform support, multiple interview replies also stated that many HEIs' online course

contents were insufficient.  Although some of Yunnan's universities imported general

education courseware from well-known domestic universities in China that helped to

improve the quality of general education teaching online, the contents of the elective and

major-study online courses were missing in general.  Interviewees claimed that university

educators and IT personnel strive to work on the school-specific teaching content of

elective and/or major-study courses.  Online general education courses were the majority

of classes that Yunnan's college students could take online.  Yunnan's HEIs did not

broadly offer the elective and/or major-study courses on the online network bases for the

higher-grade level students.  However, the lower college-level students, like the freshmen

and sophomores, had the opportunities to complete their general education courses online

within the university's existing online resources.  Therefore, the PI concluded that

incomplete online learning platforms and uneven course content selection created the

students' different satisfaction in online learning.  Additionally, the inequality of online

learning choices enhanced traditional classroom teaching, which continued the more

primary in-class educational model in Yunnan, especially in the elective and major-study

courses.  Hence, the freshman students who could study a variety of general education

courses online have a higher average score that is significantly greater than the other

three groups of students with the limited choices of online courses.

Moreover, the online survey question 21 further delineated the components of the

low satisfaction rate in general.  Question 21 asks the factors restricting students in online

learning.  The most important three restrictions from Figure 3 in chapter four indicate

that: students could not find satisfactory online course resources (54.85%), students

thought the online learning environment was poor, therefore making the online

environment difficult to concentrate while studying (39.71%), and students did not know

how to study online (32.64%).  However, although students responded with low

satisfaction with the existing online courses for their higher education, students insisted

that online study remains necessary to have at HEIs in Yunnan.  Although many issues

exist in Yunnan's online learning platforms and course content, students still recognized

the need for online education in Southwestern China.  According to Figure B9 in the

appendix, the data showed that 85.7% of students believed that online education was

essential to the experience in higher education.  In addition to the majority agree that the

implementation of online education needed, all 40 interviewees from the qualitative study

agreed that establishing or continually developing online education in Southwestern

China is necessary.

**Hypothesis 2 Discussion**

To measure students' daily Internet usage and online study frequency, the PI

utilized the scores form survey questions 9, 11, and 16 vs.  17, 18, 19, and 20 to

implement the linear regression method.  The researcher conducted all the online surveys

at four universities between June and September in the Chinese HEIs' spring semester of

2017.  The null hypothesis two states that there will be a correlation between the

frequency of student's daily Internet usage and students' use of Internet studying.  The

hypothesis outcome shows that the frequency of daily Internet usage was not related to

Internet network usage for learning.

Based on many interviewees' replies, the researcher believes that using the

Internet to study is an essential learning process for 21st-century college students to study

independently.  Many interviewees claimed that the Internet could assist college students

in gaining new information, answering questions, and completing teachers' assignments.

Survey question 22 asked about the frequency of students' general online learning from

those who had experienced online education at the four universities.  The researcher has

new and unexpected findings on the collected data from survey question 22 (see Figure

B10).  Nearly half of the student population used the Internet to study on a fixed weekly

or even daily basis.  The result shows that 55.25% of the students were uncertain how

often they studied online and did not study online regularly.  In other words, although

these students did study online less consistently than the others, the students still had the

opportunity to check the study materials when they needed.  According to the interview

responses, the majority of students utilized the Internet for entertainment, hobbies, and

access to new knowledge.  Even though the online survey showed that Internet usage was

not always directly used for academic study, the online tool is closely related to the

students' inquiries for information.  In addition to the high amount of time spent online,

according to survey question 16, which captured the same Internet use frequency from

those students who were inexperienced with online course study, 69.05% of students use

the Internet to study weekly.  A smaller percentage (28.35%) of students have the

possibility to inquire about learning information via the Internet every week.  Even

though some of Yunnan's universities lack the resources to provide students with

systematic online learning opportunities, the Internet via the available electronic devices

fulfills students' e-learning needs.

Moreover, among students who did not experience any online courses, 78.8% of

students searched the Internet to finish their homework assignments, which comprises

what most students use the Internet for in their academics (see Figure B11).  Furthermore,

the next three highest-percentage factors in college students' Internet use for education

were to acquire new information (57.97%), explore their interest (54.95%), and search for

more answers to questions (53.86%) (see Figure 5).  In addition to students' Internet

usage, the most popular search engines used by students were Baidu (94.56%), Sogou

(40.89%), and 360 Search Engine (36.91%) (see Figure B12).  Furthermore, the survey

data described that approximately half of Yunnan's college students use the Internet to

study on a weekly basis.  Students perhaps use the Internet to complete their homework

and search for new information according to their interests.  However, as described by

several interview participants, the unequal distribution of online education access causes

Yunnan's HEIs to remain predominantly traditional in their teaching method.  The

traditional in-class education instructor requirements for using the Internet to study were

low, which left plenty of room for improvement to promote using the Internet to study.

Also, Chinese domestic software dominated the applications and search-engines on the

Internet; approximately one-fifth of imported software was from other countries or lesser-

known platforms.  Therefore, domestic technology development companies could

potentially produce free or cheaper online learning platforms and/or courseware to give

students online learning opportunities.  Because of the high percentage of Internet usage

from the survey data, the researcher believes that although many students in Yunnan's

higher education did not fully experience online learning, traditional in-class instructors

could guide students to study in the Internet environment.  The instructors could give the

students assignments in order to prepare college students to use the online tool in the

future and increase independent study abilities.  The researcher also thinks future lower-

cost online platform support from the domestic software companies could help improve the students' online learning.

Based on the survey data and interview responses, the PI predicts that after Yunnan's HEIs regularly offer online education, the southwestern region college students would study more actively than college students in other regions of China. The PI also believes that students would adopt Internet network resources to research more work. The southwest region college students are possibly more active than the eastern developed region's students because they realize the precious nature of online learning opportunities through their higher education. The unequal distribution of high-quality educational resources will remain in the Chinese higher education system for a long time because almost two-thirds of well-known universities are geographically located in Eastern China. Due to the highly valuable online learning opportunities, Southwestern university students have more interest in learning about online course content from well-known universities, hence making the students want to expand their knowledge toward classwork. Although the students' daily Internet use is not related to online study at universities in Yunnan, using the Internet is a learning process where students use modern technology to research new information and answer questions. Using the Internet to study meets the independent learning features of online education. This data demonstrates that, even though conducting university-level online courses in Yunnan is at its beginning stage, educators should consider arranging students' assignments to be associated with the Internet. In addition to increasing the opportunity for Internet usage in assignments, instructors and staff members must help students to improve their time management abilities and educational independence in order to prepare students for

online education in the future.  Thus, even though Yunnan's HEIs did not regularly offer

online courses at the time of this study (2019), students learning through traditional in-

classroom education can still use the Internet to check for course-related information,

expand on the course content, and practice computer operation skills.  The researcher

believes students equipped with these online abilities could achieve a successful outcome

in online education because of the independence students are given in an online learning

environment.

**Hypothesis 3 Discussion**

Based on survey questions 8, 10, and 13 at four universities between June and

September of 2017, the researcher examined the online education resources of EMs and

Han students.  Null hypothesis three states that the university's ethnic minorities and Han

ethnic students have equal access to technological resources.  The results show that

minority students and Han students had the same amount of resources for accessing

online learning at universities in Southwestern China.

According to the survey data, approximately 81.92% of the students who studied

at universities in Yunnan come from rural areas (see Figure 6).  In addition to the survey

data indicators, many responses claimed that students of rural areas in Southwestern

China had a relatively poor financial status, and few owned personal computers or other

electronic devices.  The interviewees also indicated that HEIs in Yunnan did not have

enough hardware and software facilities for widespread online education to become

popular.  Several others also stated that online course application development for mobile

devices remained essential to the students in Yunnan because it increased accessibility.

Survey question 8 asked how they typically accessed the Internet (see Figure 8).  The

data showed that 94.45% of college students access the Internet through personal

smartphones, but only 60.57% of students used laptops.  Due to the scarcity of computers

and the surplus of smartphones, implementing course content via mobile devices would

be much more effective.

The researcher discovered that students' information accessing is shifting from

print to digital.  The survey data indicated the information media change, as students

obtained 92.31% of their information via the Internet, 55.17% through social media, and

50.99% from television (see Figure B13).  Interviewees claimed that smartphones

generally support access to the Internet and some online learning applications.  Online

learning through mobile devices has become quicker and presents information more

clearly.  After reviewing the interview responses, implementation of short learning videos

that though online education provides a unique benefit for increased learning.  Because

videos are short in length, which allows students to use their little extra time to study

independently rather than having to review lecture notes after lengthy in-class sessions.

Interviewees expressed that mobile devices support massive open online course (MOOC)

learning applications, which turn the smartphone into a medium for learning resources,

thus, assisting students in online learning.  Therefore, although the university's online

learning resources were insufficient, all students of various ethnicities, regardless of

financial background, had the opportunity to use the resources of online education.

Similarly, to Facebook and Twitter in the United States, WeChat and QQ were the

most used social media platforms in China (Hui, 2019).  According to the survey data, the

usage rates of WeChat and QQ respectively reached 92.72% and 96.81% (see Figure 7).

As the interviewees expressed, educators could use WeChat, QQ, and other social media

platforms to announce notifications about online courses, initiate discussions, and

manage class discussions.  The PI suggests that online or hybrid-course instructors could

use these social media platforms to improve the shortage of online communication in

education, even with most of the existing online learning platforms in Yunnan.  However,

several responses argued that students who study online materials through mobile devices

might have experienced less efficient learning outcomes because the screen is much

smaller than a computer monitor and cellphone networks' traffic restrictions.  Multiple

interviewees claimed that, along with the upgrading of Yunnan's universities' online

education-related facilities, HEIs plan to improve accessibility for students who do not

own a computer.  The improvement would also ensure that all students in higher

education had equal access to online resources to learn at any-time and anywhere.

**Best Practices of Online Education Recommendations**

**Status Overview**

After using this mixed-method study (2019) to investigate the online education

development in the Yunnan province, the researcher determined that online education in

Southwestern China is in its infancy, but the situation is complex.  Many responses

introduced issues that included insufficient funding support, a lack of government and

school management, and the stakeholders' (administrators, instructors, staff members,

and students) change in ideologies as they actively participated.  Online education's

curriculum system and platforms need a vast amount of funding to support them.

However, several interviewees claimed that a shortage of funds for investment generally

existed at most institutions in Yunnan; the deficiency was especially intense in the

autonomous minority regions.  The professional instructors and staff members lacked

knowledge in online course development which therefore impacted colleges and universities because they could not develop their own systematic web-based learning courses.  All the existing online courses present, via MOOC platforms, were imported from well-known universities or corporations in the eastern region.  At the time when the researcher conducted this study (2019), the regular HEIs only provided online courses in general education and were limited in elective and major-study courses.  Practically all online course resources available were from commercial online course resource companies located in Eastern China, such as Beijing, Shanghai, and Guangzhou.  Thus, accessing these resources required a large amount of funding.

Other indicators that proved that online education in Southwestern China was in its beginning stage included that computers and Internet network equipment were still being built and gradually updated.  Therefore, many schools could not accommodate the massive amount of students using online educational resources.  However, due to the popularization of smartphones and the development of MOOC learning applications, mobile devices are an alternative way to support online education in the region.  Students could view online learning materials on their cellphones.  The interviewees' feedback showed the inadequacy of supervision in online learning among school administrators.  Also, the traditional in-person education model remains the most common method of teaching.  For example, most of the educators teaching concepts and class management methods through available online education resources implemented these through the traditional way of instruction.  Some instructors were not fully aware of the online teaching model.  However, online learning is a simple way to change from in-person to

online digital teaching. The instructors' lack of online teaching knowledge deemed the online courses not yet suitable for classroom teaching.

According to the survey data, students had a high percentage of interest in using the Internet to access information, answer questions, and expand course learning. However, many students also pointed out the lack of online learning resources at HEIs in Yunnan. Thus, most students who studied at universities depended on the traditional in-class classroom teaching model. In today's Internet-dependent environment, the traditional educational model may affect college student's learning and innovative thinking. As such, college students were forced to rely on the traditional instructors that cram in too much information in their teaching, and students were limited to expanding their knowledge through online searching.

All these components have created a great need for improvement in the online education of full-time universities in Southwestern China. Based on the level of development of online higher education and the needs, the researcher of this mixed-method online education investigation (2019) referred to the existing literature as well as practices for online learning in the United States. The following are best practice recommendations for online education in Southwestern China.

**Funding**

As the responses from this mixed-method study (2019) demonstrated, online education needs a great amount of financial resources to support the medium's development. Many responses stated that the costs associated with online education included physical facilities' initial establishment, maintenance, and upgrades. For financial support, in addition to government funding, Yunnan's universities need to

increase awareness of the online education market and explore a profit-making model to support online education development in this region. With the assurance of funds, the development of online education can happen steadily, and the curriculum resources can continuously improve without the negative impact of financial limitations. Yunnan's universities must consider improved school finance management to increase revenue and save expenditures in order to have a fund to develop their schools' online educations.

The United States' online education, as a successful example, has a productive way to recruit financial support that comes from the state, the federal government, charitable donations, enterprises, and schools themselves (Urahn, Susan K.; Conroy, Thomas P., 2019). Chinese HEIs cannot expect the funding income model in China to be as it is in the United States because of economic differences, particularly because Chinese colleges and universities have limited available financial resources. However, Yunnan's HEIs can still learn from the American university's self-finance methods. Several interview responses concluded that aside from the most well-known Chinese institutions, most other colleges and universities in China are unable to afford the radical development costs of online courses independently. Thus, governmental financial support is indispensable. Governments at all levels, including local, province, and the country, should allocate money and consider setting up a special fund to support the development of online education for local colleges and universities in Yunnan. Meanwhile, the local or province-level government should continuously encourage local HEIs to explore legitimate income through various forms of investment used for the expansion of online courses, such as schools and industry cooperation. More collaboration could help to increase investments in relevant online education development. For example, without

distracting students who are studying online, universities may also consider embedding

local company's advertisements on the platform in order to generate some income to

support school funding.  As respondents suggested, the government should provide

enterprises some degree of tax incentives in return.  Additionally, the government and/or

universities should start or continue to establish multiple public donation funds to receive

donations from individuals, enterprises, and charities (Hazelrigg, 2019).  HEIs from

Southwestern China must collaborate with the government and enterprises to generate

more revenue to support the lack of government funding support in higher education

online education development.

Increasing the use of online courses is the second strategy to increase school

funding.  Many responses claimed that an online courseware design required staff and

instructors' time, effort, and school budget input.  Therefore, multiple uses for completed

online courseware can save expenditure in online course redesign.  After educators and

personnel built the online courseware, the online instructor could use the content for

several semesters with minimal updates.  In addition to offering the designed online

course content to full-time university students, universities can also provide online

courses with related or similar content to students in different programs.  According to

the responses from the interviews, most of Yunnan's universities offer vocational training

programs to the working students to promote continuous education.  In order to save the

university expenses, the university can assign the same instructor who created the online

course content to teach the working students.  However, that instructor's workload may

be too heavy, so the university may need to consider hiring an adjunct instructor to use

the created online course materials to teach the students in vocational training programs

and/or full-time university students.  Hiring a part-time instructor could save the

universities significant amounts of money instead of paying for a new full-time faculty,

which includes benefits and salary.  In addition to saving the school expenses in online

course development, using the same created courseware with distinctive requirements for

different program populations would increase enrollment, which would advance tuition

and raise school funding.  The Chinese Southwest region's HEIs need to discover a way

to balance a school's financial income and expenses in order to support online education

development.  Obtaining funding through multiple revenue channels and saving

expenditures of the universities themselves can support online education's long-term

development.

**Government**

According to interview responses, in order to rapidly develop online education in

Yunnan, the government educational departments should establish feasible plans to

enhance the digital network's infrastructure, installation, and upgrading.  The

establishment of educational policies could guide and support HEIs in the development of

online education.  The government and relevant departments should also formulate

policies to strengthen colleges and universities in resource sharing and support.

According to Guan et al. (2014), Chinese universities increasingly realized online

education needs to be united and organized as a league, as the local HEI itself cannot

stand and continue to provide the online courses through any single Chinese MOOC

platform in the long-term.  The Eastern area and several other regions of China have

established multiple MOOC leagues to allow local college students to study online with

more resources, such as the Shanghai Course Center (SCC), the Curriculum League for

Universities in East and West Regions (WEMOOC), and the Online Course Alliance for

China's Local HEIs (UOOC) (Guan et al., 2014).  While many Eastern region

universities built their online resource alliance, most of the Southwestern region

universities do not recognize the importance of sharing online resources.  The

interviewees claimed that Southwestern China had only a few well-known universities in

Yunnan that joined the online learning resources alliance.  However, most of the

universities and colleges were developing their online education separately.  Online

learning resource sharing regulations could help achieve simultaneous development

between both well-known and less popular Chinese universities, and would particularly

enhance Southwestern China's HEIs' online education.  Additionally, the relevant

education departments must construct policies that encourage and support the instructors

to distribute online courses by rewarding the online course contributors for using their

course materials.  The financial reward would promote the development and production

of more useful online learning resources.  In addition to creating the grant policies, the

government needs to encourage the instructors and staff to apply for online courseware

copyright protection.  Because the developers of courseware can conveniently access

through the Internet, plagiarism may occur and violate the instructors' hard-work.

Additionally, university personnel creating similar courseware wastes school funding,

and students may find duplicates of online course content, which does not help them

learn new information.  Therefore, educational departments play a critical role in creating

related online education policies to guide higher education development in Southwestern

China.

In addition to online education policymaking, the government should not encourage universities or colleges to develop their own online learning platform/software but, instead, use the online course materials given in Southwestern China. Many interview responses stated that a similar online learning platform required the government to invest a lot of money to support multiple online education projects in construction and maintenance. This type of online education investment could be wasting financial resources if every single university builds a similar platform/software for their online learning purposes. The government should avoid supporting universities' development of isolated online education platforms. However, the government needs to produce many online education lectures and implement or promote resource sharing. Online course content sharing between HEIs is a more appropriate practice, given the unequal distribution of Chinese educational resources.

Furthermore, according to the interviewees, the ability to study independently and inquire about knowledge remained the goal of online education. The government and relevant education departments should introduce incentive policies to learners from outside of higher education to give them the opportunity to use online learning to study or inquire about information independently. The policies would help to build a learning community that lets residents know that everyone has a chance to learn without the restrictions of time and location. Additionally, the relevant government departments and universities need to consider certifying those self-learning, non-university users who complete a series of online courses. The relevant departments should consider reforming the credits system for online learning certificates, as well as enable corporations and the larger community to accept online-trained persons, which can also promote online

education. In order to expand online education development further, the government

should consider making related policies to promote the university's online education to

the local communities with access to online learning tools.

**Schools**

With the continuous development of online education, the diversified online

course expansion may replace the traditional teaching methods for some subjects of

study. The replacement of in-class education with online education will be a challenge

due to its low quality. As many responses demonstrated, Yunnan's HEIs' online

education had lower education quality issues, and many universities needed to create

online education regulations to guide online education teaching and learning outcomes.

Therefore, university leaders need to solve online courses teaching quality problems in

order to make online education outcomes meet the standard quality of traditional

education, such as import high-quality online course content from the eastern region.

Changing online education fundamentally in the prevalent Internet environment in which

would require the school administrator's decision making, course design and teaching

from instructors, and staff members' online resource management and support. Higher

education institutions (HEIs) are the backbone of the implementation of online education,

which assists in achieving the responsibilities of education. The outcome of traditional

in-class education standardizes the quality of higher education. However, online

education has only existed for a short time since development in the region. After

implementing some online education, it is clear that HEIs need to focus on developing

online education quality to align with traditional education in order to improve its quality.

According to Thrift (2012) and Picciano (2015), the fundamental responsibilities of

tertiary education are educating, researching, offering social services, and culture-leading. Several interviewees also confirmed the four responsibilities in Southwestern China's higher education. Students can learn professional skills from higher education teaching. Colleges and universities in Yunnan need to be ready for a gradual transformation when offering extensive online education.

Meanwhile, in order to strengthen the ability to conduct quality research in Yunnan's HEIs, the school administrators must consider connecting the school's internal digital resources with external universities and databases. Sufficient online resources will enable students to conveniently conduct their research when they connect to the Internet network. The research that students partake in includes finding more in-depth answers to instructors' questions, expanding the course information, and studying independently based on one's interests. Students can still achieve proper research through the online environment in higher education. In addition to fulfilling the teaching and researching responsibilities of higher education, school administrators need to consider providing online education regarding social services for the community. An advantage of online education is free from restraints regarding time and location. Yunnan's colleges and universities could adopt a variety of online education resources and actively offer training programs to surrounding communities, such as providing programs to working students that allowed them to continue their education. Meanwhile, cultural development is an essential priority within Chinese higher education, in which 56 recognized ethnic groups all contribute to China's cultural diversity (UNESCO, 2013). In addition to educating different students' population online, along with a verity of course contents, Yunnan's HEIs online education can also contribute to the functions of cultural-leading through

Internet network resource sharing and help guide people to study online as needed throughout their lives.  Yunnan's higher education administrators need to consider improving online education quality, connecting school digital resources with other resources, and regularly offering training programs in the community in order to align online with the traditional education and address the four responsibilities of higher education.

In addition to planning online education development around higher education's four duties, school administrators should also consider implementing online education in the Chinese Southwestern region to focus on developing the communication skills of graduates.  According to the interview responses, students with introverted personalities preferred the isolated environment of online education to study alone.  Online education is inseparable from the Internet, as such, students are learning independently without physically interacting with others.  The employment requires graduates to have different components towards their future careers, especially in communication skills, which includes written communication, teamwork, the ability to explain, and oral presentations (Silva, Lourtie, & Aires 2014).  In order to prevent students with an outstanding academic performance from having poor social skills, the school administrators should create rules to manage students' online learning and inspire online instructors toward interactive teaching methods in all teaching mediums.  This online education regulation would provide guidelines to improve students' online learning outcomes and standardize students' behavior in their online learning.  Although students would study from an isolated online environment, with the guidance of online regulation regarding their behaviors, students could still learn effectively and respectfully while communicating and

exchanging ideas with their classmates and instructor.  Those useful communication

skills would benefit online students in their future careers after graduating, as they would

know how to interact better with their co-workers.  In addition to creating online

education regulation to help improve students' communication skills, school

administrators should recognize and encourage social media or other contact channels,

along with the online learning platforms for communicating and exchanging ideas

between the instructors and students.  These additions would resolve the issue that

Yunnan's universities' online communication function through the learning platform

needed to improve.  Other responses also suggested that third-party social media and

other communication platforms could contribute to communication functions.  The more

students participate in discussions, the more students will know the most efficient way to

communicate.  In planning online education regulation, the school administrators should

also consider the guidance of online education in developing students' academic and

communicative abilities.

Furthermore, universities and colleges in this region should use the development

of online education to lead educational reform, such as the internationalization of higher

education.  With the expansion of globalization, many countries and HEIs from different

places attach great importance to the development of the internationalization of higher

education (Jibeen & Khan, 2015).  A few of the interviewees also recognized the

importance of local HEIs with insufficient educational resources reaching out to other

universities worldwide.  Conducting online education would support Southwestern China

in having more learning resources for college students.  Additionally, curriculum

globalism offers multi-culture learning content and is one of the major development plans

to achieve internationalization in higher education (Jibeen & Khan, 2015).  Due to the

early stage of online education in Southwestern China, Yunnan's universities imported

most of the learning materials from other regions in China.  However, school

administrators should recognize the importance of customizing online education

development locally to contribute to the globalist curriculum.  For example, Yunnan has

a variety of minority nationalities (EMs), a total of 27 types live in this region.  Each type

of EM has its unique culture, including food, clothing, housing, and language.  In

addition to the population's cultural diversity, the entire area of Yunnan has many

different geographical landscapes and climates.  Vast mountains that cover over 90% of

the land, with the highest point of elevation at 22,113 feet (6,740 meters) located in the

northwest, and the lowest point of elevation in Yunnan is 2,395 feet (730 meters) above

sea level; the average elevation in Yunnan is 6,496 feet (1,980 meters).  Due to the

significant difference, the provinces from north to south experience a range of weather

from snow to humidity.  The diverse geographical and climate factors also make Yunnan

one of the most biologically diverse regions in the world.  In addition, cultural expansion

is part of the Chinese higher education internationalization plan (Li F., 2016).  The PI

recognizes that HEIs in Yunnan can contribute to the exceptional topics and opportunities

for research in humanities, geography, and science.  Implementing this diversity in online

courses would enrich the Chinese curriculum in the internationalization of higher

education.  Overall, online education could assist Yunnan's higher education reform by

supplying more educational resources, while also using Yunnan's unique culture to assist

Chinese higher education development.

**Administrators**

Several responses stated that administrators' leadership significantly impacted online education development. Other interviewees claimed that Yunnan's universities had diverse online education development levels; HEIs' online programs experienced more improvements when administrators had higher recognition of the importance of online education development. The administrators of universities in Southwest China adjust their educational leadership patterns, which should enhance their recognition towards online education and its importance. Most of the recommendations from the interviewees that the school administration needs to consider establishing official online education departments for organizing practical plans, creating online course development teams, supervising online leaning investment funding, and ensuring the implementation of online education.

As indicated by the interviewees, several different online learning platforms exist in China. The domestic online platforms included Xuetangx, iCourses, and Mooc-chaoxing. Each platform has a unique emphasis on curriculum as well as extensive course content, which contains numerous subjects. Most of Yunnan's universities used online platforms, and the course content was from domestic, well-known Chinese institutions and corporations from the eastern region. Several interviewees expressed that Yunnan's HEIs that adopted those imported platforms and course content broadly matched students' learning needs and aligned with the quality of online education even higher than traditional in-class education. School administrators should have some understanding of the online platforms to align the online course content to meet the needs of students with different majors before purchasing them. University administrators have

the responsibility to help students discover, identify, and evaluate the purchased courses.

The school administrators need to include different specialists in the platform-searching

team, including the IT personnel, instructors, and staff members.  As such, each

professional could voice their own needs that would help them make student's online

learning experience successful.  The team would conduct research and compare multiple

online learning platforms to determine their unique features.  Then using their unique

expertise from instructors teaching experiences, staff members knowledge on students'

academic outcomes, and the data administrators could provide on students, they would

identify the most suitable online platform for their school and students.  After selecting

and operating the platform for a while, the research team would need to evaluate the

platform to make sure it was meeting the students' academic needs and make any

necessary updates.

One way administrators could determine if the platform was meeting student's

needs is by tracking the students' usage of the online learning platform.  Multiple

interviewees expressed that the existing online education platforms tracked the students'

learning style, content submissions, frequency of video watching, learning material

viewing, and communication history.  Several responses also stated that school

administrators had not created online education standards because of the relatively new

online teaching method in the region.  Thus, all this data could serve the administrators in

researching students' online learning progress to assist them in determining the online

learning standards.  These online learning standards could then guide students in passing

the online courses, so the standards' requirements need to be achievable for most online

learners.  In order to create appropriate online learning standards, school administrators

need to study users' learning activities through the data. The process of supervising

students, along with establishing and improving the standards, ensure the online courses'

quality. Sharing course materials, both making them and adopting them for teaching,

should be regulated in order to standardize the quality of learning. Furthermore, several

responses reported that some universities lacked the support of online education and

suggested creating a separate online education department in charge of the schools'

online education development. The schools' online education departments or teams

would be in charge of evaluating online programs, which assist in responsibly developing

evaluation criteria, assessing the quality of the curriculum, organizing, and implementing

the assessment. Online education development teams should efficiently present the

assessment outcomes to the instructors making course improvements. By providing the

assessment report, the teams would ensure high-quality online courseware. Meanwhile,

continually conducting online teaching conferences and training programs would

improve the quality of online courses in teaching. Therefore, school administrators need

to study the students' Internet use to establish online regulations, as well as build an

online education department/team to serve as the university's online education support.

**Instructors and staff members**

The higher education faculty in Southwestern China should first modify their

teaching theories and practices, in which the instructor's role needs to shift from a leader

in teaching to a facilitator who assists in learning. According to the interview responses,

most of the Chinese education methods use cramming, in which the teacher educates

students too much information leading students to passively learning in their study.

Students studied inactively and passively received the information, especially in

elementary school, middle school, and high school. Students are more likely to retain the

same inactive study attitudes in their higher education. Tertiary education needs to

change students' learning styles, which reduces the reliability of instructors. Instructors

are initiators who pose questions, play a role in helping students exchange ideas, and

inspire them to find the answers (Baghdadi, 2011). The goal of the discussion forum is to

lead students to be active in the learning process. Students are required to be active in

learning in online higher education, which allows students to master the learning process,

to study on their own time, and to acquire answers through various sources like the

Internet, course content, social media, and other modern information platforms. Several

responses also addressed that instructors, teaching assistants (TAs), and staff members

need to refine and separate the course content by labeling the information on a timeline.

These divided learning materials would make the videos more appealing, as students

could spend a shorter time studying. The more frequently that students study their

learning materials along with the instructor's guidance, the more likely students would

comprehend the course objectives. Although universities have not popularized online

education in this region, faculty also need to adjust the classroom's dominative authority,

by choosing the student-centered education method even in traditional, in-class

education. Instructor roles must change to facilitate the students in active learning

instead of being dominated by lecturing, both in online and traditional education.

     In addition to guiding students' learning, online instructors should also change

their ways of assessing the students' learning. Several responses claimed that most of the

instructors use scores from examinations to determine the quality of students' learning in

traditional education at universities in Yunnan. As many interviewees stated, the

examinations are divided into the forms of regular tests, quarter exams, midterm exams, and final exams.  The goal of the examinations is to evaluate the effectiveness of students' learning, but disadvantages exist.  For instance, the test questions and answers are most likely the same or highly similar to those found in the textbook; students can receive good grades by only memorizing the study guides that instructors give shortly before the test.  This evaluation method may not accurately reflect the students' learning quality at an exact level — the traditional evaluation method tests students' learning based on the results of an examination.  However, online education provides more accurate information for instructors to evaluate the students' learning progress.  According to the responses, the advantages of online education include a precise number of online learning hours, and the modules of the online courses present a certain number of tasks.  The results require students to participate in their classes by clicking and submitting their assignments on time.  The function of supervising students' daily work is more conducive to monitoring their learning progress.  The outcomes of a combination of tasks (daily learning performances, regular tests, quarter exams, midterm exams, and final exams) generate students' final grades in online education.  Although the traditional education method has a similar calculation scheme, the online higher education evaluation model is more accurate in reflecting the students' learning extent and ability because instructors and students can actively participate in the education process.  Online education faculty and staff members in Southwestern China need to be aware of the powers of online learning and adopt the online tools to assist students in their higher education study experiences.

Moreover, educators and staff can discover online tools to create interactive learning for students through the insertion of quizzes in the videos when making online course content.  As many interviewees demonstrated, Yunnan's HEIs' online education should not only change in teaching style from the physical in-class teaching to recorded lectures presented online, allowing for interaction while learning is essential.  Creating an embedded test could enhance the interaction between instructors and students while they are physically separated in the Internet environment and increase the learner's attention. In addition to the embedded tests, the learning platform's timely assignments should carry out small tests after finishing a lesson, chapter, or week of study, which would offer more learning evaluation checks.  These tests would guide students to initiate their study and efficiently assist students in checking which parts of their knowledge are missing, so they could consolidate and review the appropriate learning materials.  Furthermore, the test is not intended to score and rank the students, instead, to discover the students' learning progress.  If the student fails to obtain the desired test result after the first taking, the student can answer the questions repeatedly until understanding all required learning information.  The instructor can decide the calculation of the test scores, but the learning principle is to motivate students to find the gaps in their knowledge and to consolidate and master the knowledge they have learned.  In order to better develop the lack of communication functions in online education, interactive learning in the isolated online environment is essential for educators and staff members to consider while creating the online learning courseware.

Online course content development requires various people with diverse interests and expertise.  Baghdadi (2011) stated that online course designing and developing from

beginning to completion needs the collaboration of educators' and staff members' great

efforts.  Without creative course design, such as in the recording of courses and the

creation of the courseware, the online learning material will not attract students.  Thus,

the learners' outcomes of online courses may not be as good as expected.  The

development of online courses often requires a significant amount of time and effort, as

well as motivation and support Baghdadi (2011) According to several interviewees,

instructors started with a great passion for making online courses, but because of lacking

rewards and assistance, online instructors' passions slowly disappeared.  Educators

should consider the responsibility of their teaching role to keep up with making more

valuable online courseware.  In the meantime, TAs, technicians, or other staff members

must collaborate and support instructors in providing the required course assistance.

According to East-West University Curriculum Sharing Alliance (2015), the Chinese

government education departments will continue to expand online education in

Southwestern China.  Online education in Southwestern China will potentially operate on

a regular basis in the future.  After online education regularly operates in the

southwestern region, the HEIs' universities will be able to share their online courseware

with universities within other regions.  Several interviewees expressed that the online

teaching method would promote the sharing of educational resources between regular and

well-known universities.  After online education is widespread, the increasing online

enrollment between schools will become the competition for curriculum development,

including the introduction of local culture and featured curriculum design.  Yunnan's

HEIs should utilize the advantages of diverse geographical and ethnic cultures to develop

online education courses with local characteristics.  Through the release of those subject

materials and the integration of this material into other regions' institutions, Southwestern

China's colleges and universities could also enhance their reputation.  School faculty,

staff members, and administrators should collaborate to design online courses, and their

time spent in course development deserves to be encouraged and rewarded.  The

collaboration of each participant makes successful online education achievable.

### Students

The college students at Southwestern China HEIs need to possess several abilities

in order to be successful in learning through online courses.  Many interviewees claimed

that college students in Southwestern China needed to be aware of these abilities, such as

computer operation skills, effective independent study, and time management abilities.

The PI concludes that these three principles are skills that online students need to hold.

First, students need to have some essential computer operating ability.  As many

responses claimed, due to the students growing up in an informational and technological

environment, they had more opportunities to explore technological devices, such as

computers, smartphones, and tablets.  In other words, the students are naturally equipped

with some computer operating skills.  However, due to the uneven condition of the

students' social-economic backgrounds, the survey data showed that a high percentage of

students did not own a computer.  The number of Internet users in China significantly

increased along with the use of new Information and Communication Technologies

(ICTs), such as smartphones and tablets (UNESCO, 2013).  Although students can access

the online learning material on their smartphones, several interviewees argued that the

unequal application of an online course to small-screen devices would influence students'

online learning experiences.  Thus, Yunnan's HEIs educators need to provide training

programs to help familiarize students with online platforms and develop their essential computer operation skills.

Secondly, online learners should have self-control, self-motivation, self-discipline, and time management skills. Based on the interviewees' descriptions, those self-management skills are precisely what most of the Chinese students lack. Several responses illustrated that the majority of students who experienced traditional Chinese primary and secondary education might have less self-control ability due to the "cram" style education model. This style of teaching provides students too much information, leading students to passively learning in their studies. College students need to improve their abilities to utilize information technology for active learning instead of only focusing on the learning information given by their instructor. Using the Internet or online tool to study actively would benefit students throughout lifelong information inquiring because they can continue to learn via the Internet after graduation. Lastly, students need the ability to consistently study in online learning and actively look for assistance in higher education.

The survey data indicated that only 60.57% of students used laptops at HEIs in Southwestern China. The personal computer owning rate is low, and the universities' computer facilities remain inadequate. Many interviewees mentioned that the lack of computers affected online education programs in Yunnan's HEIs on campus. Therefore, as online education begins regularly being offered to students, school administrators should consider creating strategies to assist the students in online learning. As the interviewees' responses demonstrated, universities should offer more computer labs and staff members to assist the students. In addition to the administrators' strategies for

assistance, those students who do not have a personal computer but need to participate in

online learning must reach out for help.  Students can ask school personnel for assistance

in using school facilities, such as actively stopping by the library or frequently visiting

the computer lab to finish their online study, rather than missing assignments or quitting

the online study because of a lack of resources.  If students have questions regarding their

online platforms or learning materials, they must also actively seek their guidance.

Additionally, although the Yunnan's online education resources' availability remains

limited, HEIs have the responsibility to ensure adequate learning resources to those

students who are willing to learn.  Although many factors limit Yunnan's college

students' online learning experiences, they must be prepared with computer operation and

self-management skills; students also need to actively reach out to their school for

assistance in order to be successful in online learning.

In addition to the three principle skills, students should also prepare to adjust their

learning habits to the different online instructors' orders.  As the responses illustrated, the

instructors have different teaching styles and request students to complete their course

work differently.  Some instructors emphasize students' individual development, while

others may prefer teamwork.  Therefore, The PI proposes that students must also be able

to modify their learning styles along with the changes in the instructors' teaching styles.

Students need to have the ability to work independently online or in collaboration with

others.  Instructors post their assignments online and indicate the scheduled date to finish;

however, the isolated online learning environment physically separated the instructors

and students that may cause problems like missing out on constructive feedback and

meaningful discussions (Glynn et al., 2012).  Multiple interviewees also expressed that

the traditional, in-class teaching remained the primary educational method of HEIs in Yunnan. The PI recommends that students should actively study to find their answer alone and maintain the hard-working sense to complete assignments by the due dates instructors assign. Even though only a few universities in Yunnan offered systematic online courses where using the Internet was the primary method of online study at that time of this research (2019), students should wisely utilize the Internet to expand learning information from traditional classroom teaching instead of regularly using the Internet for entertainment. Students can study without the restriction of time and location. Thus, they should spend more time developing their own learning styles to access the information and achieve personalized development according to the individual's study specialty. For example, students should inquire about more information after class, search for answers to complete homework, and explore other interests in self-learning activities. Students must be able to adjust their learning styles to meet the instructors' teaching methods and develop their own learning styles to use the Internet wisely for their personalized development.

### Hybrid Courses

Yunnan's HEIs should consider adopting the hybrid-course method to combine the online and the traditional teaching methods in online education, starting from its development and into the future. There are two primary motivations that the PI thinks shows that the hybrid-course (blended) method could be an appropriate approach to assist online education development in the southwestern region. The two primary reasons are insufficient online resources in higher education in Southwestern China and an existing, thriving online education model from the United States.

First, Southwestern China's HEIs had insignificant online learning resources to provide extensive online education for all of their students. According to the many interviewees, Yunnan just started online education, and most of the colleges and universities had inadequate computers and online platform facilities on campus to support students' online learning. Several responses indicated that only a few universities in the southwestern region purchased an online learning platform, but most of them still have not even decided which one to purchase. Additionally, according to interviewees, traditional in-class education exists and will remain the primary education method in Southwestern China in the future. In-class teaching methods have existed for many years and has undergone many improvements. Although traditional in-class teaching continues the primary education way in the region, universities still need online education for teaching students. A high percentage of the 40 interviewees recommended that HEIs should extensively combine the existing online courses and/or Internet learning to in-classroom teaching. Implementing online education is important because the traditional in-class instruction that has remained the primary educational method does not meet students' needs in our increasingly technology-driven society. Online learning and using the Internet to study supports students with a variety of study functions, for instance, these can help students find instructor's assignments after class, searching for answers to complete homework, and explore other study interests. Also, combining the online with traditional could ensure the quality of the early stages of online education. As multiple responses demonstrated, the existing platforms lack communication functions, therefore identifying the need for a third-party application or social media account to support discussion between students and instructors. The responses also stated that the

instructor's feedback was not prompt, which influenced the students' learning.  The

hybrid-course method could ensure communication and discussions in the early stages of

online education in Yunnan's HEIs, which could overcome the negative impact of poor

communication on students' online learning experiences.  The instructor could respond in

a timely manner to students' questions face-to-face and facilitate discussions within

traditional in-class education.  Potter et al. (2016) addressed that students should study

the class material outside of the class and participate in hands-on activities during class

time; the hybrid approach allows for reaching and engaging students in diverse ways,

often through students' already accustomed mediums and integrating online learning.

Using the hybrid-course method could effectively align online education quality with

traditional in-class education because traditional face-to-face teaching could assist in

supervising students' learning progress.  The hybrid-course method enables college

students in Yunnan to have online learning experiences within the restrictive online

resources of the new programs.

Secondly, hybrid courses have proven to be a successful teaching method in the

United States.  According to the findings of the U.S. Department of Education, the use of

the blended method for the traditional and online courses was more effective than solely

in-class teaching or online teaching (2015).  Brunner (2006) stated that hybrid courses

use the Flipping Classroom Theory that encourages students to learn the material on their

own prior to discussing it in class, which changes the traditional way of lecturing and

combines the advantages of online and traditional in-classroom teaching methods.  Fayne

(2009) introduced the advantages of hybrid courses, such as the ability for instructors to

communicate face-to-face with their students and abilities for students to spend more

time on the curriculum due to the variety of ways they can learn through the Internet.

Class time is no longer only focused on teaching the primary curriculum.  Instead,

discussion and answering questions by using face-to-face communication between

instructors and students allows for more effective learning.  The hybrid-course method

should continue to be offered in higher education, even in the future when Southwestern

China HEIs have popularized online education.  Using the hybrid-course method could

develop students into active learners because class time emphasizes discussion rather

than basic information lecturing.  The hybrid-course method could improve both

traditional in-class and online education to ensure more effective learning.  Yunnan's

HEIs should consider adopting a hybrid-course model instead of only teaching online or

in-class, regardless of the insufficiency of online learning resources at the beginning

stages, or their abundance in the future.

**Research Highlights and Recommendations for Future Research**

The PI of this mixed-method online education investigation (2019) systematically

investigated and researched full-time universities' online education practices.  This

investigation of online education is necessary and had not been done in China's

southwest region before.  Most of the past Chinese educational researchers mainly

considered online education regrading students balancing work and education, in addition

to using vocational programs to open up curriculum through the use of the Internet.

Although full-time university online education exists in China, online education in the

southwestern region appears fragmented and not systematically examined.  This mixed-

method study (2019) includes the analysis of students' online surveys and school

personnel interviews.  The researcher organized the two methods to study the

development of online education in full-time universities where ethnic minorities are

prevalent.  The research outcomes will necessitate further online education development

in the interests of institutional leaders by ethnic minority (EM) areas, which will

encourage teaching reform to improve the quality of higher education.

The researcher selected the respective study site for this research, and the

appropriate sample statistics to examine the hypotheses.  This research chose three

regular, four-year universities in the autonomous minority prefectures and one well-

known four-year university which primarily recruits minority students.  The cultural

backgrounds of these four universities and their online education statuses are

representative of the condition of online education in HEIs of the Yunnan province.  The

researcher collected a total of 4,448 survey responses in this study, which exceeded the

required analysis minimum of 384 out of the total population of 610,000 at the four

universities — the minimum sample size was calculated by using the population

proportion formula (Bluman, 2014).  The researcher also included 40 interviews by a

third party to prevent bias.  The results from the four universities were reliable, and the

suggestions for online education in this research are generalizable in Southwestern China

and other frontier areas worldwide that have minorities, lower-income, and insufficient

online resources.

This mixed-method study demonstrates new findings besides identifying the

status of online education in Southwestern China.  For example, although HEIs in EM

areas just began offering online education, the expectations of the educators' teaching

and students' learning using online courses may be higher than those in more developed

regions in China.  Due to participants realizing the precious nature of online learning

opportunities in the region through their higher education institutions, the southwest region college students are possibly more active in studying than students in the eastern developed region.  The demand for online education in the region has created a firm foundation for further development of online education in colleges and universities in this area.

Future studies should focus on more aspects of online education because it is a broad field that involves many components.  The PI's research was limited in both scope and time.  For example, there was an uneven ratio of students' academic years distributed among the survey responses: the seniors' replies were low.  In order to broaden this research to have sufficient responses, online surveys should be sent to students at different points in the school year.  Allowing more opportunities for students to complete the surveys rather than having to ignore the survey because they were busy with school responsibilities when it was sent out.  Additionally, in order to have a better outcome of research in the future, the time chosen to conduct the study should be reconsidered, as the middle of the semester would be a more appropriate time because students have balanced their schoolwork and integrated consistent study habits around the period of midterms.  Therefore, students are more likely to participate in the research.  Also, a longer response window would allow for more responses and be helpful for students who may notice the surveys at a later time.  Overall, in order to have accurate representations of the different school levels in the responses, the researcher needs to extend the survey recruitment period and reconsider the date that the study begins.

Future study improvements also include modifying interview questions.  The researcher needs to design questions more specifically to reduce the chances of

misunderstanding them when answering.  Another way to reduce the misinterpretation of

questions in a third-party interview is for the PI to fully explain to the interviewer the

intended purposes of the study questions to clarify any confusion from the interviewees.

As online education continues to grow, it will likely become the more dominated

approach of teaching in Southwestern China.  Researchers should focus on the technical

teaching and outcome aspects of online education.  For example, researchers should study

the advantages and disadvantages of the software used in a university's online courses.

More specifically, the researcher could divide students into different groups.  Each group

should be assigned different online learning software or methods (MOOC, the hybrid-

course method, and other online teaching platforms) to study which software/methods are

best.  This research, combined with unified final evaluation criteria for testing student

achievement, could give useful insight regarding best practices for the Yunnan region.

The researchers, using the data from students' curriculum software usage along with

faculty instruction procedures, would show the best compatible tools for online education

in the region.  Meanwhile, other researches should carry on and conduct a comparative

study of hybrid learning against only online education or traditional education in the

Yunnan province.  The outcomes will assist the HEIs in the southwest region in

determining the most suitable online teaching model, which would ensure improvement

in online education in the area.

**Conclusion**

The Chinese Ministry of Education (2015) stated that modern higher education

must increase the development of high-quality, digital, educational resources by

exploring the digital hardware and managing information technology to provide equal

educational opportunities for all students.  This statement highlights the principal goals of

higher education development and applies particularly to the development of online

education in Southwestern China.  Yunnan province is one of China's Southwest regions,

located in a frontier area with a relatively low-income population and undeveloped online

education.  A high population of diverse ethnic minority (EM) groups lives in Yunnan

and experience relatively limited educational resources.  The government is actively

building an online education curriculum at universities to support unique educational

opportunities.  With the guidance of government educational policies, online education in

Yunnan's HEIs should continue to develop.

All the stakeholders of online education in Southwest China (faculty, staff

members, administrators, and students) described the current state of online higher

education in Yunnan, which remains in its initial stage of development.  All the

participants of this study (2019) explained that Yunnan's online higher education faced a

shortage of online learning resources.  At the time of this study (2019), university

computers, Internet network facilities, and the online course resources were still in the

process of being established and upgraded.  Some of Yunnan's universities imported

high-quality online educational resources from cities in Eastern China, such as Beijing,

Shanghai, and Guangzhou.  Thus, allowing students to choose online learning for general

education courses.  Meanwhile, some universities purchased online learning platforms,

which were also from Eastern China's most well-known universities and corporations.  In

addition to purchasing the online platforms and courses, HEIs in Yunnan also need to

create online courses that highlight the unique culture of this region in order to increase

the various online resources for Chinese domestic and international use.  The

characteristics of Yunnan's local culture in courses could enhance the diversity of online education subjects in the online environment.  Southwestern China's HEIs need to purchase online resources to increase their online learning quality as well as create local online course content to enrich the online learning subjects.

The ideology of faculty and administrators in Yunnan's HEIs needs to change in regards to the importance of online education development.  They need to participate actively and respond to the challenges of online higher education development. Educators should continuously update their teaching theories and methods to integrate with online education and improve their computer and Internet operating skills.  If they do not, the instructors' teaching careers will experience a crisis because they will be ignorant of new technology.  In addition to online instructor's teaching improvements, administrators need to have a well-developed assessment for online education personnel, which would provide assistance to faculty and staff.  Many educators stated that online education should not be a copy of the traditional classroom; lack of interaction and instant feedback was a critical issue in the existing online higher education environment in Yunnan.  Online instructors, staff, and/or TAs need to develop methods to alleviate these issues, such as using social media or other communication platforms for teaching management.  Interactive social media tools could help with communication by sending out announcements and learning materials, which could effectively help students persist in their online learning.  In sum, to lead students' online learning, Yunnan's universities' educators need to shift their traditional education ideas and methods to meet online educational needs.

Furthermore, due to several responses indicating insufficient financial support in online education development at Yunnan's HEIs, those institutions should explore more diverse ways of profit-making and marketization of online education.  The potential profit model includes credit recognition, vocational training, embedded advertising, and other collaborations between schools and enterprises.  Governments, schools, and enterprises should actively collaborate to discover a way to increase school funding and support online education development now and in the long run.  Meanwhile, the government and universities need to establish a credible certification system to approve students' completion of online education so that society can accept online graduates as employees and candidates.  Thus, relevant departments must establish assessment procedures to accurately recognize learning outcomes and to ensure that the learning results are credible.

Finally, due to a shortage of online learning resources, the implementation of online higher education in the southwest region needs to combine with the traditional education model in order to create more effective learning, both online and in-class. Therefore, university educators need to consider the hybrid-course model.  The blended education model not only benefits online education's quality but also could remedy the lack of online resources in Yunnan's universities.  The development of online education in the Chinese Southwestern region is inevitable.  However, all relevant participants— administrators, faculty, staff, and students—must coordinate and collaborate to make online studies successful.  Through this mixed-method study (2019) of stakeholders in online education topics, the PI examined the status of online education in Southwestern China's universities and the expectations of online learning from different participants'

roles.  With the continuous improvement of HEIs in the region, online education

development will interest more researchers in pursuing the topic.  The ultimate goal of

online education in the southwest region is to provide an outstanding-quality education,

equal to traditional education.  Future research will fill the current gap in this initial stage

of online education, such as the insufficient online resources in hardware and software,

the lack of educators' support in supervision and management, and the need to assist

students in their online learning.  The strategies to overcome those deficiencies will allow

regional universities' online education to grow, mature, and become more effective in

educating students.

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**Appendix A-1 Research Permission**

**SCHOOL PERMISSION TO CONDUCT RESEARCH**

12/07/2016

Name: Yu Gu, Vice President
Institution: Wenshan University
Department: Administration Office
Address: 66 Xuefu Rd,
City/State/Zip: Wenshan, Yunnan Province, China, 663000
Phone: +86-876-8886205

Dear Sir/Madam:

My name is Yu Hao, I am a doctoral student from Lindenwood University writing my dissertation titled *A Mixed-Method Investigation of the Best Practices of Online Education in Southwestern China at Four Public Universities*; under the direction of my dissertation committee chaired by Dr. Jason Lively, who can be reached at email: jlively@lindenwood.edu, Phone: +1-636-949-4696. The Lindenwod University Institutional Review Board (IRB) Committee can be mailed at 209 S. Kingshighway, St. Charles, MO 63301.

I would like your permission to use the attached Students Survey (Appendix B) and Evaluation (Appendix D) to collect research data at your institution. I would like to use the survey under the following conditions:

- · I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- · I will send a copy of my completed research study to your attention upon comple tion.

If these are acceptable terms and conditions, please indicate by your sign ing below.

Sincerely,

Doctoral Candidate,
Yu Hao

**Research Permission Signature:**

_____

**Appendix A-2 Research Permission**

**SCHOOL PERMISSION TO CONDUCT RESEARCH**

12/07/2016

Name: Qiang Peng, Vice President
Institution: Honghe University
Department: Administration Office
Address: Xuefu Rd,
City/State/Zip: Mengzi, Yunnan Province, China, 661100
Phone: +86-13987331416

Dear Sir/Madam:

My name is Yu Hao, I am a doctoral student from Lindenwood University writing my dissertation titled *A Mixed-Method Investigation of the Best Practices of Online Education in Southwestern China at Four Public Universities*; under the direction of my dissertation committee chaired by Dr. Jason Lively, who can be reached at email: jlively@lindenwood.edu, Phone: +1-636-949-4696. The Lindenwod University Institutional Review Board (IRB) Committee can be mailed at 209 S. Kingshighway, St. Charles, MO 63301.

I would like your permission to use the attached Students Survey (Appendix B) and Evaluation (Appendix D) to collect research data at your institution. I would like to use the survey under the following conditions:

· I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
· I will send a copy of my completed research study to your attention upon completion.

If these are acceptable terms and conditions, please indicate by your sign ing below.
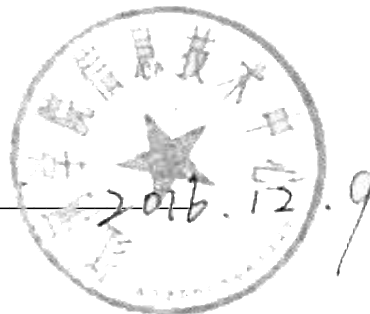
Sincerely,

Doctoral Candidate,
Yu Hao

**Research Permission Signature:**

同意调研开    2016.12.9

**Appendix A-3 Research Permission**

## SCHOOL PERMISSION TO CONDUCT RESEARCH

12/07/2016

Name: Yuanhui Chu, Vice President
Institution: Dali University
Department: Scientific Research
Address: 2 Hongsheng Road,
City/State/Zip: Dali, Yunnan, China, 671000
Phone: +86-872-2219888

Dear Sir/Madam:

My name is Yu Hao, I am a doctoral student from Lindenwood University writing my dissertation titled *A Mixed-Method Investigation of the Best Practices of Online Education in Southwestern China at Four Public Universities*; under the direction of my dissertation committee chaired by Dr. Jason Lively, who can be reached at email: jlively@lindenwood.edu, Phone: +1-636-949-4696. The Lindenwod University Institutional Review Board (IRB) Committee can be mailed at 209 S. Kingshighway, St. Charles, MO 63301.

I would like your permission to use the attached Students Survey (Appendix B) and Evaluation (Appendix D) to collect research data at your institution. I would like to use the survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
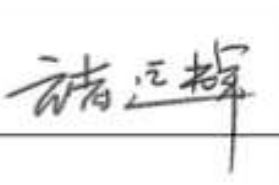- I will send a copy of my completed research study to your attention upon completion.

If these are acceptable terms and conditions, please indicate by your signing below.

Sincerely,

Doctoral Candidate,
Yu Hao

**Research Permission Signature:**

**Appendix A-4 Research Permission**

**SCHOOL PERMISSION TO CONDUCT RESEARCH**

12/07/2016

Name: Fei Gao, Vice President
Institution: Yunnan Nationalities University
Department: Electrical Engineering & Information Technology
Address: 2929 Yuehua Street
City/State/Zip: Chenggong Kunming, Yunnan, 650504 , China
Phone: +86-871-65913973

Dear Sir/Madam:

My name is Yu Hao, I am a doctoral student from Lindenwood University writing my dissertation titled *A Mixed-Method Investigation of the Best Practices of Online Education in Southwestern China at Four Public Universities*; under the direction of my dissertation committee chaired by Dr. Jason Lively, who can be reached at email: jlively@lindenwood.edu, Phone: +1-636-949-4696. The Lindenwod University Institutional Review Board (IRB) Committee can be mailed at 209 S. Kingshighway, St. Charles, MO 63301.

I would like your permission to use the attached Students Survey (Appendix B) and Evaluation (Appendix D) to collect research data at your institution. I would like to use the survey under the following conditions:

·   I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
·   I will send a copy of my completed research study to your attention upon complet ion.

If these are acceptable terms and conditions, please indicate by your sign ing below.

Sincerely,

Doctoral Candidate，
Yu Hao


**Research Permission Signature:**

**Appendix A-5 Research Permission Chinese Translation**

## 学校研究许可

12/07/2016

姓名：
学校名称：
部门：
地址：
邮政编码:

尊敬的先生/女士：

我是中国留学生郝宇，目前是 Lindenwood 大学的博士生，我的论文题目为 *在四所公立大学中调查研究在中国西南地区网络教育的**最佳做法***，由我的毕业论文导师 Jason Lively 博士所指导，Lively 博士的联络方式: jlively@lindenwood.edu（电子邮件），+1-636-949-4696 (办公室电话)。Lindenwod 大学校际研究委员会 (IRB)通信地址是: 209 S.Kingshighway，St.Charles，MO 63301, USA。

我希望您允许使用附加文档学生问卷调查主要了解贵校在网络教育中开展的情况。以下为调查使用条款：

- 问卷调查了解情况仅用于我的研究，不会出售或使用于任何其它课程开发活动。
- 在完成研究后，我将把完成的研究报告的副本发送给贵校。

如果这些都是可接受的条款，请在下方研究许可签名处签名已示明。

此致敬上，

博士候选人，
郝宇

研究许可请签名于英文版

**Appendix B-1 Online Survey**

Hello! Thank you very much for your willingness to take the time to complete the following questionnaire. Please give your most candid and thorough response to the questions below. Rest assured that the information you share here is confidential. The information you provide will be used to help us better design online courses/programs.

Participation in the survey acknowledgment:

1. The following questionnaire will require approximately 15 minutes or less to complete;

2. There is no compensation for responding, nor is there any known risk;

3. Participation is strictly voluntary, and you may refuse to participate at any time;

4. Your identity (name) will not be published in any publications or presentations that may arise from this study, and the information collected will be kept secure.


1. What is your institution's name? ( )

○ A. Yunnan Minzu University

○ B. Wenshan University

○ C. Honghe University

○ D. Dali University


2. What is your gender? ( )

○ A. Male

○ B. Female


3. What is your school year? ( )

○ A. Freshman

○ B. Sophomore

○ C. Junior

○ D. Senior


4. Are you a ethnic minority student? ( )

○ A. Yes

○ B. No

5.  Which word better describes your home's location? ( )

○ A.  Urban

○ B.  Rural


6.  What is your study major? ( )

○ A.  Philosophy

○ B.  Economics

○ C.  Law

○ D.  Education

○ E.  Sports

○ F.  Literature

○ G.  History

○ H.  Linguistics

○ I.  Fine Arts & Communication

○ J.  Business Administration

○ K.  Science

○ L.  Engineering

○ M.  Agronomy

○ N.  Pharmacy

○ O.  Other


7.  Through which platform do you often receive information ( )? [Check all that apply]

□ A.  TV

□ B.  Broadcast

□ C.  Newspaper

□ D.  Magazine

□ E.  Internet

□ F.  Social media

□ G.  Books

□ H.  Other

8.  What equipment do you often use to access the Internet? ( ) [Check all that apply]

□ A.  Desktop computer

□ B.  Tablet

□ C.  Laptop computer

□ D.  Smartphone

□ E.  Other


9.  How much time do you spend on the Internet every day? ( )

○ A.  Less than 2 hours

○ B.  2-3 hours

○ C.  4-5 hours

○ D.  6 hours or more


10.  Does the school network meet your Internet needs on campus? ( )

○ A.  Does meet

○ B.  Somewhat meet

○ C.  Does not meet

○ D.  My school has no network


11.  How do you interact with other people online? ( ) [Check all that apply].

□ A.  WeChat

□ B.  QQ

□ C.  Game group

□ D.  Blog

□ E.  Email

□ F.  BBS

□ G.  Baidu Post Bar

□ H.  Other


12.  Do you know what online education or online courses/programs are? ( ) .

○ A.  Yes, I am very familiar with them.

○ B.  Yes, I know about them.

○ C.  Yes, I know a little about them.

○ D.  No, I don't know about them.


13.  Does your school have online course learning resources? ( )

○ A.  Yes

○ B.  No

○ C.  Not sure


14.  Do you think that online courses are necessary for full-time undergraduate education? ( )

○ A.  Yes, they are necessary.

○ B.  No, they are not necessary.


15.  Have you experienced online course learning? ( )

○ A.  Yes [when this answer was selected, questions 16-21 automatically skipped, and the survey continue at question 22.]

○ B.  No [when this answer was selected, questions 22-32 automatically skipped, and the next question was the 16th.]


16.  Do you agree that you usually use the Internet for entertainment purposes? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree


17.  Although you do not have any systematic online course learning experience, you may still have searched the Internet to meet your learning needs.  How long do you inquire via the Internet to study on average every week? ( ) .

○ A.  I never study

○ B.  1-2 hours

○ C.  2-4 hours

○ D.  4 hours or more

○ E.  Uncertain

18.  Why do you use the Internet to query learning materials? ( ) [Check all that apply] .

□ A.  Instructor's requirements

□ B.  To finish homework

□ C.  To gain new knowledge

□ D.  Interests

□ E.  To search for answers to questions

□ F.  To look for more information on course questions

□ G.  Other

19.  How do you usually find e-learning materials? ( ) [Check all that apply]

□ A.  Baidu search

□ B.  Sogou search

□ C.  360 search

□ D.  China Knowledge Network (CNCK)

□ E.  Wanfang data

□ F.  Forum Blog

□ G.  Other

20.  Do you agree that finding and studying learning materials online can improve your academic performance? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

21.  What factors do you think limit your online course study? (Check all that apply)

□ A.  Teaching in the class already meets your knowledge needs

□ B.  You cannot find satisfactory online course resources

□ C.  The online learning environment is poor, and it is difficult to concentrate

□ D.  You use the Internet for entertainment purposes excessively

□ E.  The curriculum resources take a lot of time

□ F.  Poor curriculum resource compatibility

□ G.  The outcome is not as good as expected

□ H.  You do not know how to study online

□ I.  Your school's courses or instructors have no requirements to use the Internet to study

□ J.  Other

[After completing the 21st question, the next question automatically jumped to the 33rd question]

22.  What is the frequency of your online learning in general? ( )

○ A.  Every day

○ B.  1-3 times a week

○ C.  3-5 times a week

○ D.  Uncertain

23.  Why do you choose the Internet to study? ( ) [Check all that apply]

□ A.  School teaching plan requirements

□ B.  Instructor's request

□ C.  To gain new knowledge

□ D.  Interests

□ E.  Other

24.  What type of educational resources do you usually use for online learning? ( ) [Check all that apply]

□ A.  Plain texts

□ B.  Graphs & Figures

□ C.  Mobile apps

□ D.  Educational games

□ E.  Short videos

□ F.  Online open courses

□ G.  Other

25. How do you access online course resources? ( ) [Check all that apply]

□ A. Subscriptions

□ B. School provided programs

□ C. Means recommended by friends or teachers

□ D. Web search

□ E. Other

26. Do you agree that the online course(s) you have been enrolled in have had excellent online learning interactive functions? ( )

○ A. Strongly agree

○ B. Agree

○ C. Neutral

○ D. Disagree

○ E. Strongly disagree

27. Do you agree that the online course(s) you have studied met your learning expectations? ( )

○ A. Strongly agree

○ B. Agree

○ C. Neutral

○ D. Disagree

○ E. Strongly disagree

28. Do you agree that the instructors established a good online learning group for students to study while you study in the online course(s)? ( )

○ A. Strongly agree

○ B. Agree

○ C. Neutral

○ D. Disagree

○ E. Strongly disagree

29. Do you agree that you frequently communicate with your online classmates? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

30.  How much do you agree with the following statement: "I can easily find the online learning resource that I need."? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

31.  How much do you agree with the following statement: "The learning resources (ppt, video, graphs, figures, text, etc) help me understand the study materials in online courses more easily."? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

32.  What abilities did you gain through online education? ( ) [Check all that apply]

□ A.  Self-learning

□ B.  Knowledge application

□ C.  Interpersonal skills

□ D.  Collaboration

□ E.  Inquiry

□ F.  Other capabilities

□ G.  Nothing at all

33.  Do you agree that students in online courses should be able to simply and quickly achieve information? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

34.  Do you agree that the information provided in an online course should not be geographically restricted? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

35.  Do you agree that the content of online courses needs to be updated under the requirements of the courses' syllabus regularly? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

36.  Do you agree that the online course interface should be easily accessible and easily manipulated? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

37.  Do you agree that a stable online course platform assists students in concentrating on learning? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

38.  Do you agree that the speed of access to online courses should ensure smoothness and convenience of communication between students and teachers? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

39.  Do you agree that the hybrid courses (online and face-to-face in the classroom) can help students to learn more effectively ( ) .

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

40.  Do you agree that students who participate in online courses need time management skills? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

41.  Do you agree that teachers who teach online courses need to make requirements in advance, in order to manage course teaching progress and time limits? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

42.  Do you agree that teachers who teach online courses should quickly respond to students' questions? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

43.  Do you agree that instructors who teach online courses should always contact students to ensure that they are dedicated to the online study? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

44.  Do you agree that teachers should initiate the discussion of online courses? ( )

○ A.  Strongly agree

○ B.  Agree

○ C.  Neutral

○ D.  Disagree

○ E.  Strongly disagree

45. Do you agree that the university needs to ensure that the online course teaching and the traditional classroom teaching have the same level of teacher qualification and professional level? ( )

○ A. Strongly agree

○ B. Agree

○ C. Neutral

○ D. Disagree

○ E. Strongly disagree

46. Do you agree that university IT or staff members need to communicate or help students and teachers to prepare for the online learning so that their online education courses can be more effective? ( )

○ A. Strongly agree

○ B. Agree

○ C. Neutral

○ D. Disagree

○ E. Strongly disagree

47. Do you agree that universities should train their instructors to learn the latest teaching technology when institutional economic conditions permit, to ensure that online courses can produce high-quality students? ( )

○ A. Strongly agree

○ B. Agree

○ C. Neutral

○ D. Disagree

○ E. Strongly disagree

**Appendix B-2 Online Survey Chinese Translation**

## 附录 B 在线问卷调查

您好！非常感谢您愿意抽出富贵的时间来完成本问卷。请给出您最真实全面的答案，我们承诺会对您分享的所有信息保密。您的意见将会帮助我们更好地设计网络课程项目。
参与该问卷调查知情
1. 回答此在线问卷所需的时间约 20—30 分钟；
2. 这项研究没有预期的风险；
3. 所有的参与是完全自愿的；
4. 我们将竭尽全力保护您的隐私。您的身份（名字）不会在本研究可能产生的任何出版物或介绍中被发表，所收集的信息将会安全保留。

**1.** 您的学校名称（）[单选题] [必答题]
○ A.云南民族大学
○ B.文山学院
○ C.红河学院
○ D.大理大学

**2.** 您的性别( ) [单选题] [必答题]
○ A.男
○ B.女

**3.** 您的年级( ) [单选题] [必答题]
○ A.大一
○ B.大二
○ C.大三
○ D.大四

**4.** 您是否为少数民族( ) [单选题] [必答题]
○ A.是
○ B.否

**5.** 您的家庭所在地属于( ) [单选题] [必答题]
○ A.城镇
○ B.农村

**6.** 您的专业类别（） [单选题] [必答题]
○ A.哲学类
○ B.经济类
○ C.法学类

○ D.教育学类
○ E.体育类
○ F.文学类
○ G.历史学类
○ H.语言类
○ I.艺术类
○ J.管理类
○ K.理学类
○ L.工学类
○ M.农学类
○ N.医学类
○ O.其他

**7.** 您经常使用哪种媒体来获得信息( ) [多选题] [必答题]
□ A.电视
□ B.广播
□ C.报纸
□ D.杂志
□ E.互联网
□ F.社交媒体
□ G.书籍
□ H.其他

**8.** 您经常使用什么设备访问互联网( ) [多选题] [必答题]
□ A.台式电脑
□ B.平板电脑
□ C.笔记本电脑
□ D.智能手机
□ E.其他

**9.** 您平均每天花多少时间进行上网娱乐( ) [单选题] [必答题]
○ A.少于 2 小时
○ B.2-3 小时
○ C.4-5 小时
○ D.6 小时以上

**10.** 学校内的网络环境能否满足您的上网需求( ) [单选题] [必答题]
○ A.能满足
○ B.基本满足
○ C.不能满足
○ D.学校无网络

**11.** 您通过哪些方式在网络中与他人进行交流互动( ) [多选题] [必答题]
□ A.微信
□ B.QQ

□ C.游戏群
□ D.博客
□ E.电子邮件
□ F.BBS 讨论区
□ G.百度贴吧
□ H.其他

**１２．** 您知道什么是网络教育或网络课程吗( ) [单选题] [必答题]
○ A.非常了解
○ B.知道
○ C.知道一点
○ D.不知道

**１３．** 您的学校是否有网络课程学习资源( ) [单选题] [必答题]
○ A.有
○ B.没有
○ C.不知道

**１４．** 您认为网络课程在全日制本科教育中有实施的必要吗( ) [单选题] [必答题]
○ A.**有必要**
○ B.没必要

**１５．** 您是否有网络课程学习的经验( ) [单选题] [必答题]
○ A.是（选择此项，系统将自动跳过第 16~21 题，请从 22 题继续做答！）(请跳至第 22 题)
○ B.否（选择此项，系统将自动跳过第 22~32 题，请按提示继续做答！）(请跳至第 16 题)

**１６．** 您通常是为了娱乐而上网( ) [单选题] [必答题]
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**１７．** 虽然无系统的网络课程学习经历，但您会根据学习需要进行网络资料的查阅，每周查阅资料的时间的大约为( ) [单选题] [必答题]
○ A.从不
○ B.1-2 小时
○ C.2-4 小时
○ D.4 小时以上
○ E.不一定

**１８.** 您利用网络查询学习资料的原因是( ) [多选题] [必答题]

□ A.老师要求

□ B.完成作业

□ C.获得新知识

□ D.兴趣爱好

□ E.知识答疑

□ F.加深对课程知识的理解

□ G.其他

**１９.** 您通常会以什么方式查找网络学习资料( ) [多选题] [必答题]

□ A.百度搜索

□ B.搜狗搜**索**

□ C.360 **搜索**

□ D.CNCK 中国知网

□ E.万方数据

□ F.论坛博客

□ G.其他

**２０.** 您认为通过网络查找学习资料能够提高学习成绩( ) [单选题] [必答题]

○ A.很符合

○ B.符合

○ C.基本符合

○ D.不符合

○ E.很不符合

**２１.** 您认为是什么因素限制了您进行网络课程的学习( ) [多选题] [必答题]

□ A.课堂教学能够满足您对知识的需求

□ B.找不到满意的网络课程资源

□ C.网络学习环境差，难以集中注意力

□ D.过多占用休息娱乐时间

□ E.课程资源占用空间大

□ F.课程资源兼容性差

□ G.呈现效果不好

□ H.不知道该怎么进行网络课程学习

□ I.学校和教师无硬性要求

□ J.其他

提示：完成此题，系统将自动跳转到第 33 题，请从第 33 题开始继续做答！

*填写完该题，请跳至第 33 题。

**２２.** 您进行网络学习的频率一般为( ) [单选题] [必答题]

○ A.每天

○ B.每周 1-3 次

○ C.每周 3-5 次

○ D.不一**定**

**２３．** 您进行网络课程学习的原因是( ) [多选题] [**必答**题]
□ A.学校教学计划要求
□ B.老师要求
□ C.获得新知识
□ D.兴趣爱好
□ E.其他

**２４．** 您通常使用何种类型的教育资源进行网络学习( ) [多选题] [必答题]
□ A.文本
□ B.图片
□ C.移动 APP
□ D.教育游戏
□ E.微视频
□ F.在线开放课程
□ G.其他

**２５．** 您获取网络课程资源的途径是( ) [多选题] [必答题]
□ A.自己订阅
□ B.学校提供
□ C.同学或老师推荐
□ D.网络搜索
□ E.其他

**２６．** 您认为网络课程是非常好的网上学习互动媒体( ) [单选题] [必答题]
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**２７．** 您所学习的网络课程能够满足您对学习的预期( ) [单选题] [必答题]
○ A.很符合
○ B.符**合**
○ C.**基本符合**
○ D.不符合
○ E.很不符合

**２８．** 在您学习的网络课程中老师能够建立起一个良好的网上学习群体( )
[单选题] [必答题]
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**２９． 您经常在网络课程中与同学进行交流( ) [单选题] [必答题]**
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**３０． 您认为网络课程的教育资源很丰富能够轻松搜寻到我所需要的内容( )**
**[单选题] [必答题]**
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**３１． 多媒体使您在网络课程学习中能够更好地理解和掌握知识( ) [单选题]**
**[必答题]**
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**３２． 您认为通过使用网络课程学习，提升了您的哪些能力( ) [多选题] [必**
**答题]**
□ A.**自主学**习能力
□ B.知识应用能力
□ C.人际交往能力
□ D.协作能力
□ E.探究能力
□ F.其他能力
□ G.没有提升

**３３． 您认为网络课程要能够实现简单快速的信息资源搜索( ) [单选题] [必**
**答题]**
○ A.很符合
○ B.符合
○ C.基本符合
○ D.不符合
○ E.很不符合

**３４． 您希望网络课程提供的信息不受地域限制( ) [单选题] [必答题]**
○ A.很符合

○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**３５．** 您希望网络课程内容在循序教学大纲的要求下能够实时更新( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**３６．** 您希望网络课程界面简洁、操作简单、易于掌握( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符**合**
○D.**不符合**
○E.很不符合

**３７．** 您认为运行稳定的网络课程平台会让学生更专心学习( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**３８．** 您认为网络课程平台要能够保证学生与教师沟通的流畅性与便利性( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**３９．** 您认为混合课程(网络课程授课和课堂面授)能更有效地帮助学生学习( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**４０．** 您认为参加网络课程的学生需要有掌控和管理时间的能力( ) [单选题] [必答题]

- ○ A.很符合
- ○ B.符合
- ○ C.基本符合
- ○ D.不符合
- ○ E.很不符合

**４１．** 您认为网络课程授课的教师需要提前为课程进度和作业时限做出要求才能较好地控制教学( ) [单选题] [必答题]

- ○ A.很符**合**
- ○ B.**符合**
- ○ C.基本符合
- ○ D.不符合
- ○ E.很不符合

**４２．** 您认为网络课程授课的教师应该对学生的问题迅速回复( ) [单选题] [必答题]

- ○ A.很符合
- ○ B.符合
- ○ C.基本符合
- ○ D.不符合
- ○ E.很不符合

**４３．** 你认为网络课程授课的教师应该经常联系学生以确保他们能够专注于该科目的学习( ) [单选题] [必答题]

- ○ A.很符合
- ○ B.符合
- ○ C.基本符合
- ○ D.不符合
- ○ E.很不符合

**４４．** 您认为网络课程的讨论应该教师发起( ) [单选题] [必答题]

- ○ A.很符合
- ○ B.符合
- ○ C.基本符合
- ○ D.不符合
- ○ E.很不符合

**４５．** 您认为学校需要保证网络课程教学和传统课堂教学有同等的师资配备和专业水平( ) [单选题] [必答题]

- ○ A.很符合
- ○ B.符合
- ○ C.基本符合

○D.不符合
○E.很不符合

**46.** **您**认为学校需要做好使用网络课程学习的学生与教师之间的沟通交流，使网络课程学习会更有效( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**47.** **您**认为在经济条件允许的情况下，教师和学校需要学习并汲取最新的教学科技，保证网络课程能培养出高质量的人才( ) [单选题] [必答题]
○A.很符合
○B.符合
○C.基本符合
○D.不符合
○E.很不符合

**Appendix B-3 A Part of Online Survey Figures**
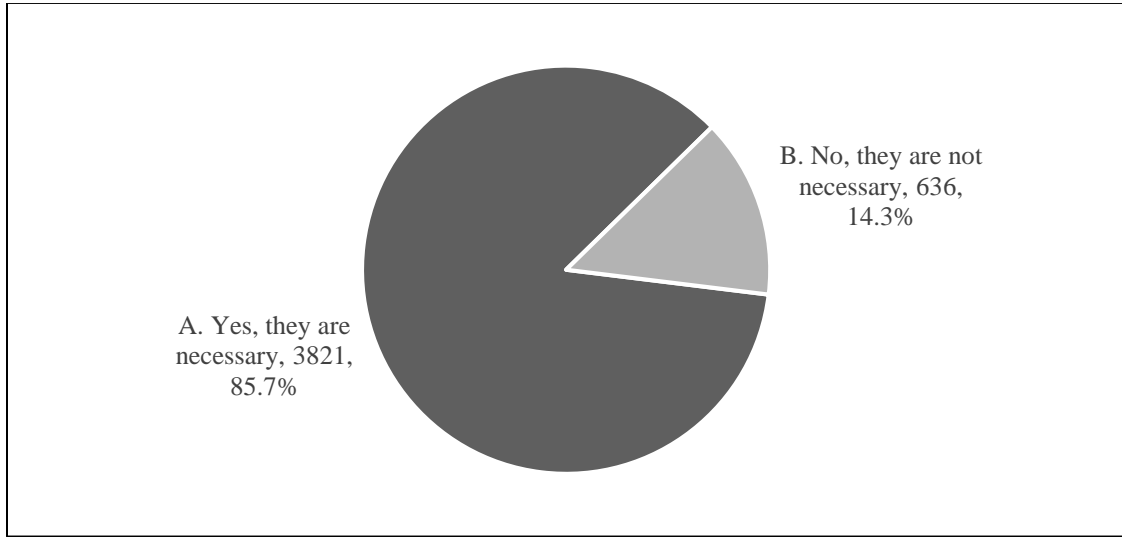


*Figure B9.* Whether or not students think online courses are necessary for full-time undergraduate education.
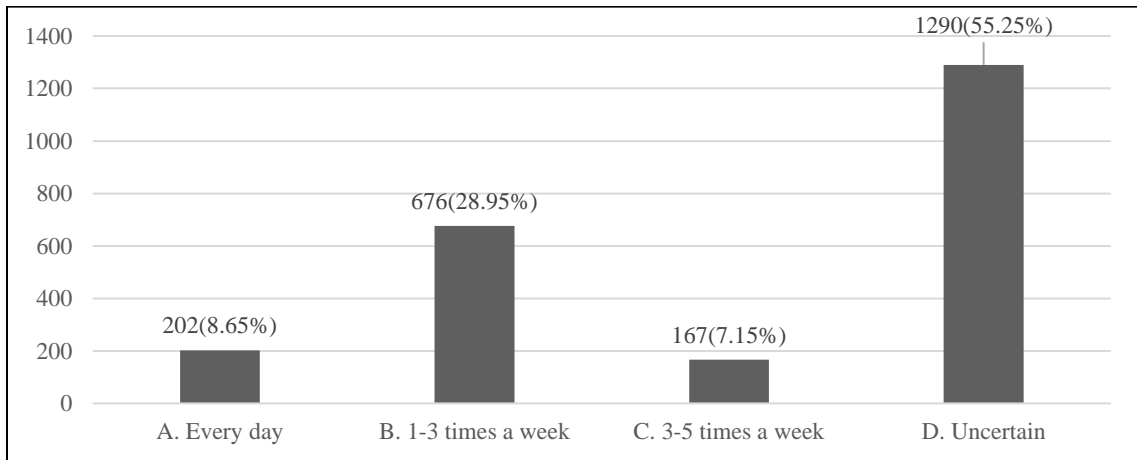


*Figure B10.* The frequency of students who take online courses to conduct online learning on a weekly basis.
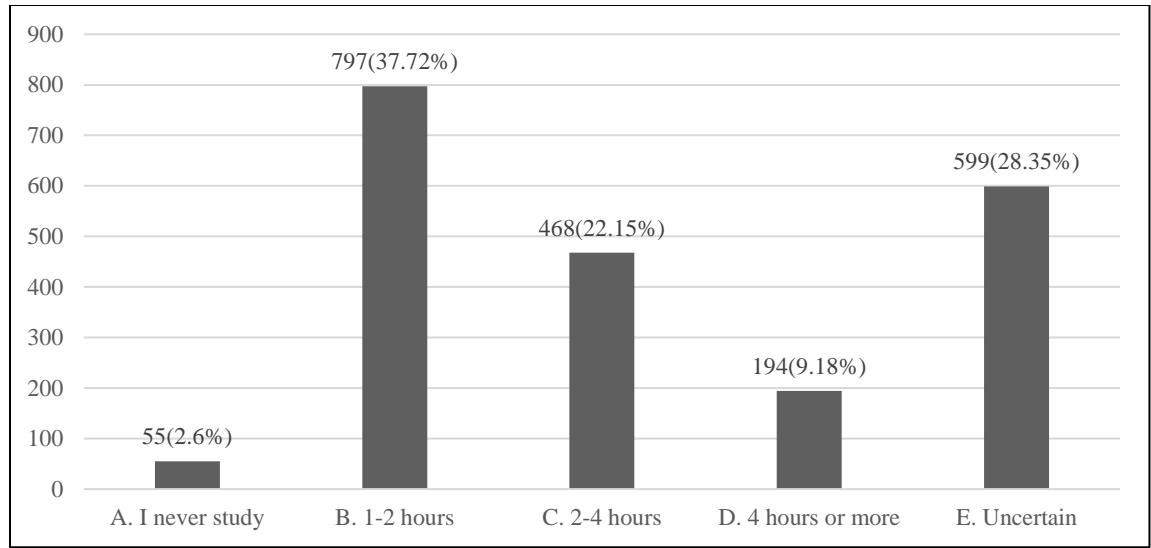
*Figure B11.* The frequency of students who were not in online courses, but searched the Internet to meet their learning needs on a weekly basis.
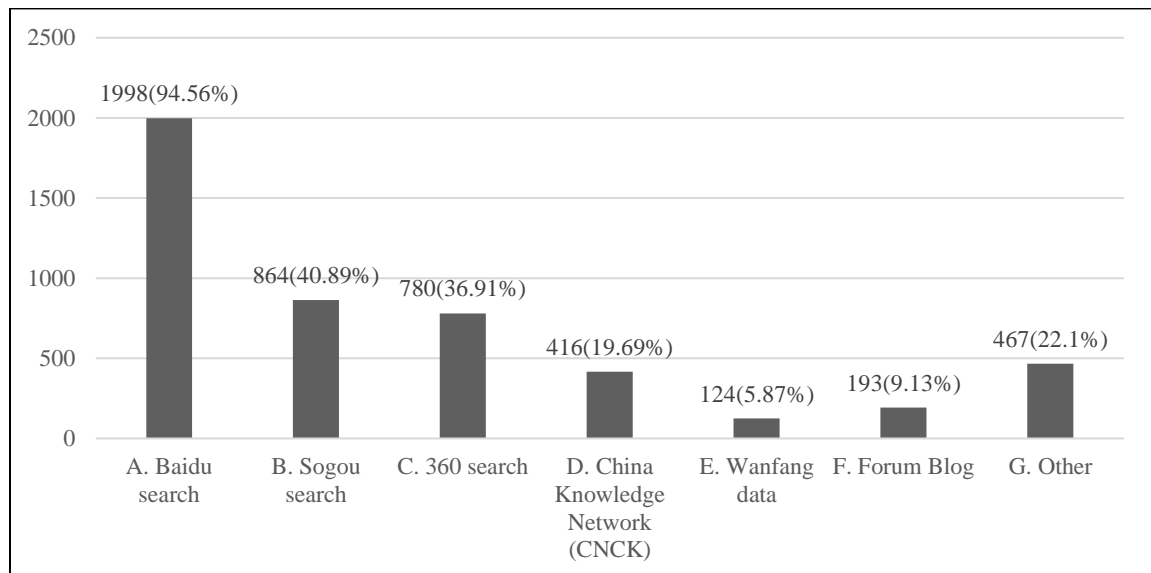


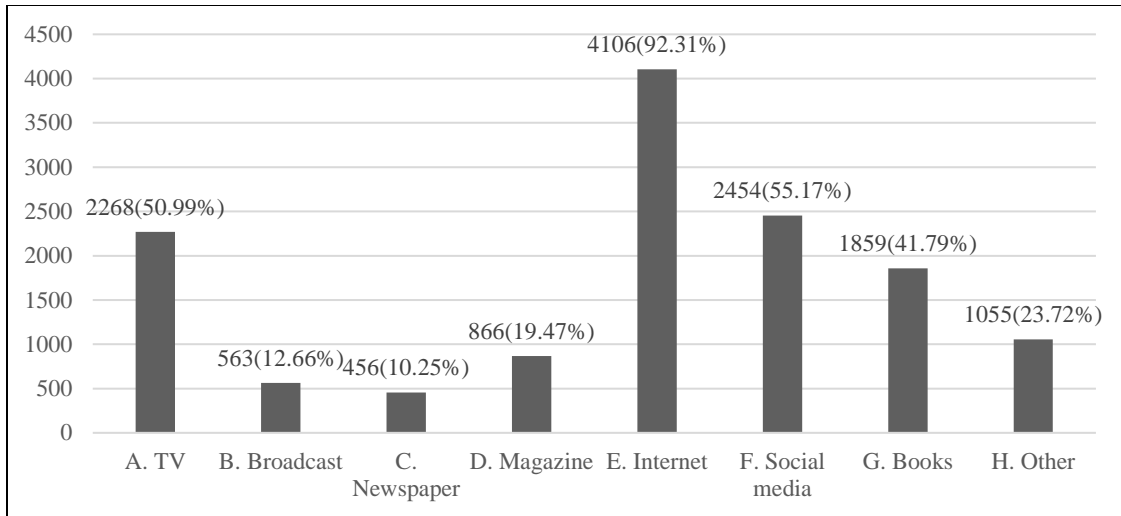*Figure B12.* The most popular search engines that students used.

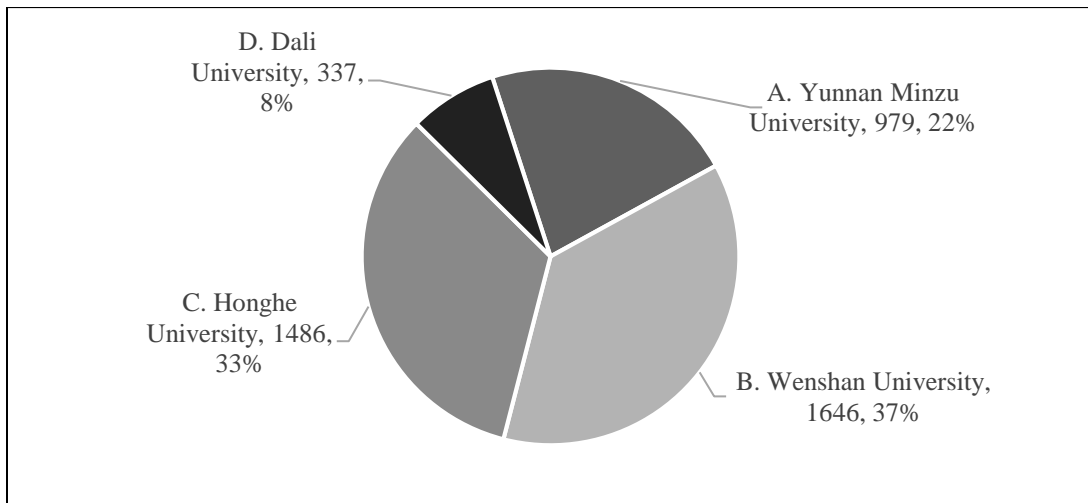*Figure B13.* Platforms that students often acquire information.



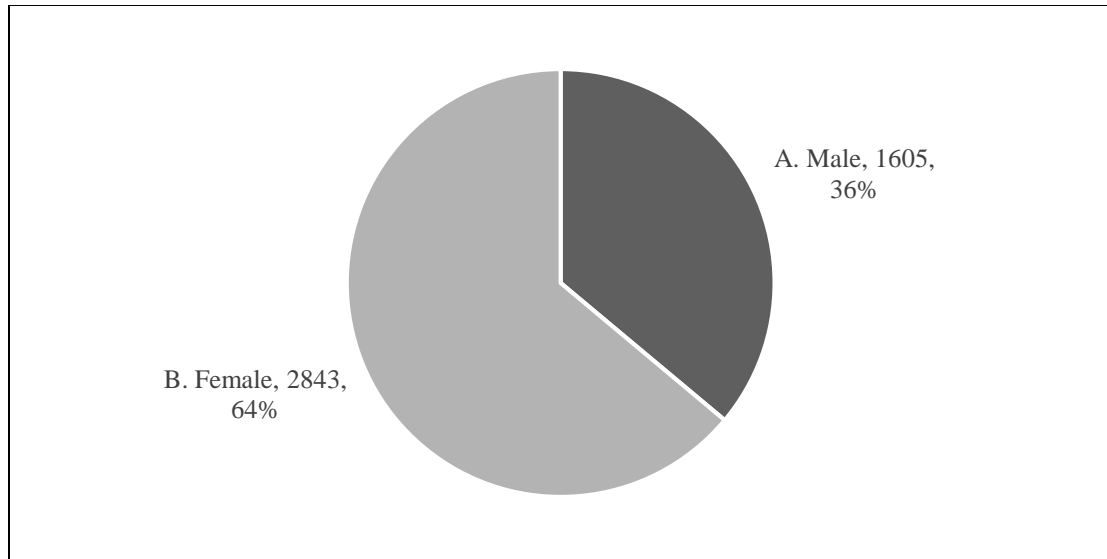*Figure B14.* The online survey participants from the four universities.
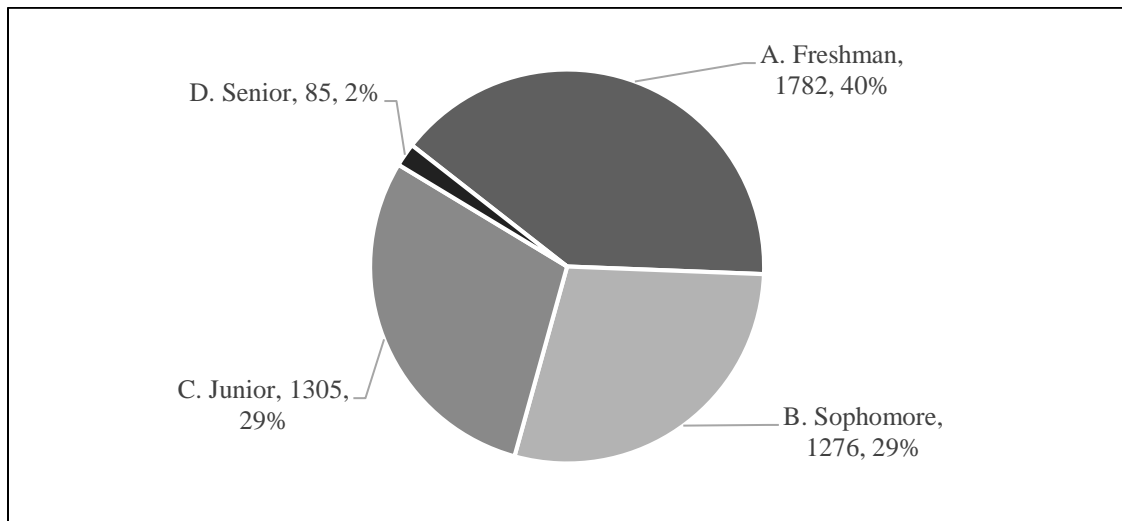
*Figure B15.* Genders of the online survey participants.



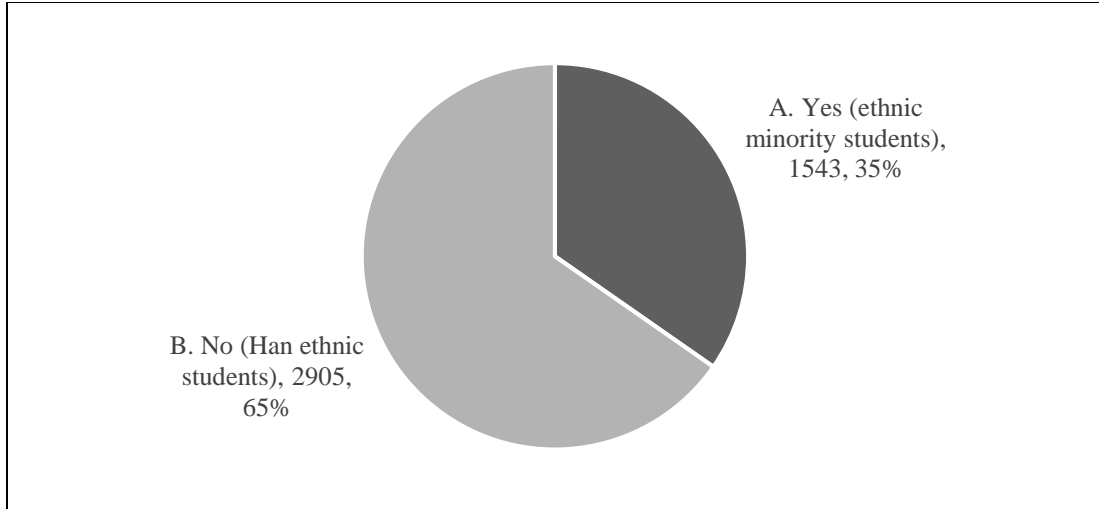*Figure B16.* School-levels of the online survey participants.

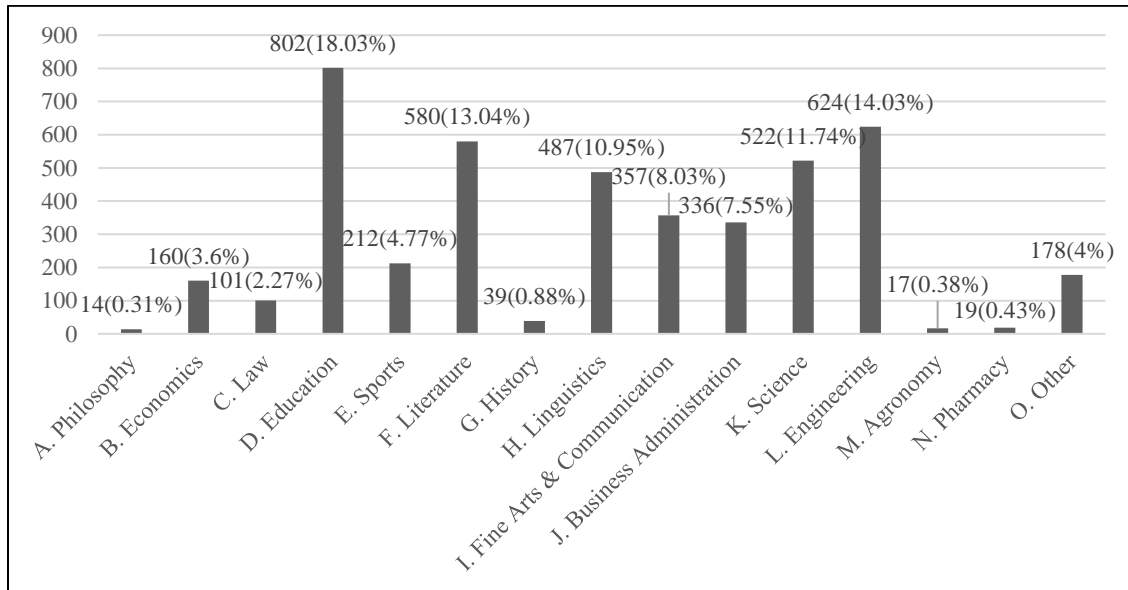*Figure B17.* Ethnic minority and Han ethnic students.



*Figure B18.* Study majors of online survey participants.

**Appendix C-1 Interview Questions**

1    Do you think it is necessary to open an online course in full-time undergraduate

     education in Yunnan? Why?

2    Do you have online teaching or learning management experience? If so, please

     describe it.

3    In what ways could online education programs serve students' educational needs?

4    What are your suggestions for how online education should be implemented?

5    How do you view your online education environment? (hardware aspects: computer,

     networks and digital resources)

6    How helpful do you think technical support provided from the university? (software

     aspects: online communication, platform design, management, and user experience)

7    What could you do to improve the quality of online education so that it aligns with

     traditional in-class education?

8    What are the factors that have shaped students' online education experience?

9    What do you think are the important factors that determine the quality of online

     instruction?

**Appendix C-2 Interview Questions Chinese Translation**

**附录 C 面试问题**

1　您认为在全日制本科教育中开设网络课程有必要吗？并请说明理由。

2　您觉得网络教育与传统教育的质量一样吗？若一样，为什么？若不一样，那
　　要如何使网络教育与传统教育达到同样的教学质量？

3　您有网络教学或管理经验吗？有，请描述。

4　您认为网络教育如何能满足学生的学习需求？

5　您如何看待您的网络教育环境(主指使用氛围，数字化学习资源，电脑等硬件
　　设备)？

6　您觉得学校对网络教育的技术支持怎么样(主指网络通信，管理及应用软件支
　　持等)？

7　影响学生网络学习体验的因素有哪些？

8　您觉得影响网络教育质量的重要因素有哪些？

9　对实施网络教育，您有何建议？

**Appendix D NIH Certificate**

**Certificate of Completion**

The National Institutes of Health (NIH) Office of Extramural Research certifies that
**YU HAO** successfully completed the NIH Web-based training course
"Protecting Human Research Participants".

Date of completion: 02/08/2016.

Certification Number: 1992203.

**Appendix E-1 Cover Letter**

Dear Participant:

My name is Yu Hao, and I am a doctoral student at Lindenwood University. For this research project, I am examining the best practices of online education in Southwestern China. Because you are studying in this area at an institution of higher education, online learning may benefit you in each day of your life. I am inviting you to participate in this research study by completing the attached surveys, evaluation, and/or interview questions.

**THIS RESEARCH STUDY ONLY FOCUSES ON ADULT GROUPS (18 YEARS OLD AND ABOVE). UNDER AGE OF 18 SUBJECTS SHOULD NOT COMPLETE THE SURVEY, EVALUATION AND/OR INTERVIEW IN THIS STUDY.**

If you are 18 years or older and you choose to participate, please give your most candid and thorough response to the questions attached. Rest assured that the information you share here is confidential. The information you provide will be used to help us to design online courses/programs better. There is no compensation for responding nor is there any known risk. If you choose to participate in this project, please answer all questions as honestly as possible and submit the completed questionnaires promptly. Participation is strictly voluntary, and you may refuse to participate at any time.

Thank you for taking the time to assist me in my educational research study. The data collected will provide useful information regarding the best practices of online education in Southwestern China. If you require additional information or have questions, please contact me by email: yh526@lionmail.lindenwood.edu, phone: +1-636-627-9505, or my dissertation committee chair Dr. Jason Lively, who can be reached by email: jlively@lindenwood.edu, phone: +1-636-949-4696. The Lindenwood University Institutional Review Board (IRB) Committee can be mailed at 209 S. Kingshighway, St. Charles, MO 63301.

Sincerely,

Doctoral Student,

Yu Hao

**Appendix E-2 Cover Letter Chinese Translation**

尊敬的参与者：

  我叫郝宇，是 Lindenwood 大学的博士生。此项研究项目是关于寻找中国西南地区网络教育的最佳实践方法。由于您正就读于该地区高等院校，所以在线学习能够使您在每一天的学习生活中受益。因此我诚挚邀请您来参与此项目的研究，您可以通过完成接下来的问卷调查，评估问题评估和/或面试问题来参与这项研究。

  **本研究仅局限于成年人群（18 岁以及以上）。在 18 岁以下的同学将不被列为研究考察的对象。**

  如果您年满 18 岁，并且愿意参与提供宝贵的意见，请对接下来的问题作出最真实的回应。您在这里分享的信息将会保密并将仅用于帮助我们更好地设计在线学习/网络课程。该网上问卷调查和评估将会让参与者以完全自愿的方式来参与，您可以随时拒绝或放弃参加。此次网上调查对参与者不会造成任何伤害的风险，因此此次研究也不会给予任何补偿。如果您选择参与协助本项目研究，请尽可能真实地回答所有问题，并确认您在完成后成功提交。

  感谢您抽出时间协助我进行教育研究。收集的数据将提供关于中国西南地区在线教育最佳实践的有用信息。如果您需要更多信息或有任何问题，请通过电子邮件与我联系：yh526@lionmail.lindenwood.edu，电话：+ 1-636-627-9505 或者请联络此次论文委员会主席 Jason Lively 博士，电子邮件：jlively@lindenwood.edu，电话：+ 1-636-949-4696。或是 Lindenwood 大学论文审查委员会（IRB）：209 S. Kingshighway，St. Charles，MO 63301 。

此致敬上，

博士生，

郝宇

**Appendix F-1 Informed Consent Form**

# LINDENWOOD

## INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

A Mixed-Method Investigation of the Best Practices of Online Education in Southwestern China at Four Public Universities

Principal Investigator: Yu Hao
          Telephone:  636-627-9505   E-mail: yh526@lionmail.lindenwood.edu

Participant          _____          Contact          info
_____

1.  You are invited to participate in a research study conducted by Yu Hao under the guidance of Dr. Jason Lively.   The purpose of this research is to explore the best practices pertaining to online education in Southwestern China by evaluating the perceptions of students, staff members, and university and local government educational ministry administrators.

2.  a) Your participation will involve completion of voluntary online survey, interview, and/or online evaluation during the Spring Semester 2017.  Participants in the study will complete the survey, interview, and/or evaluation only once during the time in which the study is conducted.  All the participants are from Southwestern China attending one of four universities (Wenshan University, Honghe University, Dali University and Yunnan Minzu University).

    Online Survey:
    The entire student population at the four universities will be asked to answer a voluntary online survey (see Appendix B).  From all the replied surveys, approximate 400 - 600 students' replies will be randomly selected to complete the study.

    Interview:
    Between 40-60 current students, faculty, staff, and/or administrators at the four universities will be interviewed using the interview template created for the study (see Appendix C) either in person, via phone, Skype, or by email.

    Online Evaluation:
    Approximate 61,000 students will be asked to take a voluntary online evaluation (see Appendix D).  The secondary data will be collected from the online evaluation, which will be conducted by the university administrator who signed the research permission form at each university (see Appendix A1-4).

b) The amount of time required to participate is:
Approximately twenty minutes to answer all the nineteen questions in the Online Survey, approximately forty-five minutes to answer all the eight questions in the Interview, and approximately twenty minutes to answer all the eighteen questions in the Online Evaluation.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about online learning experiences and may help society. The interview participants will receive a thank you cash card valued CHN $35 (approximately US $5) as a compensation for your time and participation.

5. You must be 18 years old and above to complete the survey, evaluation and/or interview in this study. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a secure location.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Yu Hao at 636-627-9505 or the Supervising Faculty, Dr. Jason Lively at 636-949-4696. You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Marilyn Abbott, Provost at mabbott@lindenwood.edu or 636-949-4912.

**I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. consent to my participation in the research described above.**

_____       _____
Participant's Signature             Date                Participant's Printed Name


_____       _____
Signature of Principal Investigator   Date            Investigator Printed Name


Revised 8-8-2012

**Appendix F-2 Informed Consent Form Chinese Translation**

## <u>参与研究活动同意书</u>

中国西南边疆少数民族地区大学网络教育发展探索与研究---以中国云南省四所大学为例

主要研究员：郝宇
        电话：+1-636-627-9505　电子邮件: yh526@lionmail.lindenwood.edu

参与者_____联系方式_____

_____

1. 邀请您参与博士生郝宇在 Jason Lively 博士的指导下进行的一项研究。本研究的目的是通过评估学生，工作人员，大学和地方政府教育部管理人员的看法，探讨西南地区在线教育的最佳做法。

2. a) 此次研究将会在2017年春季学期期间让参与者以自愿的方式进行在线调查，面试和/或在线评估。所有参加者均来自中国西南部四所大学（文山大学，红河大学，大理大学，云南民族大学）。

    在线调查：
    四所大学中所有学生将会邀请回答自愿在线调查（见附录B-2）。从所有回复的问卷调查中，大约400-600名学生的答复将随机选择进行研究。

    采访：
    将为任第三人亲自，通过电话，Skype或以电子邮件的方式，采访自愿参与的参与者（见附录C-2），总共将访问四所大学的40-60名现任的学生，教师，工作人员和/或管理人员。

    在线评估：
    大约61,000名学生将被要求进行自愿在线评估（见附录D-2）。辅助数据将从在线评估中收集，由各大学签署研究许可表的大学管理人员进行（见附录A1-4）。

    b) 参加所需的时间：
    回答在线调查中的所有 19 个问题大约需要 20 分钟，
    回答采访中的所有 8 个问题大约 45 分钟，
    回答在线评估中的所有 18 个问题大约 20 分钟。

3. 这项研究没有预期的风险。

4. 您参加这项研究没有直接的利益。但是，您的参与将透过您的有关在线学习经验的知识，帮助该地区的网络学习更好的设立。面试参与者将收到一张价值人民币 35 元（约合 5 美元）的感谢现金卡作为时间和参与的补偿。

5. 您必须年满 18 岁才能参与本此调查研究包括在线问卷，在线评估和/或面试。所有的参与将会是自愿的，您可以选择不参加或随时撤回您所提交的答复。您可以选择不回答任何您不想回答的问题。关于您不参与该研究，您将不会受到任何的惩罚。

6. 我们将竭尽全力保护您的隐私。您的身份不会在本研究可能产生的任何出版物或介绍中被揭露，所收集的信息将由调查员在一个安全的位置保留。

7. 如果您对本研究有任何疑问或疑虑，或出现任何问题，请致电调查员郝宇: +1-636-627-9505，或学院学术监督 Jason Lively 博士: +1-636-949-4696。您如果对 Lindenwood 大学学术论文委员会（IRB）有任何疑虑，也可以联系教务长 Marilyn Abbott at 博士，电子邮件: mabbott@lindenwood.edu 或电话: +1-636-949-4912。


**我已经阅读了这份同意书，并了解有机会提出问题。我也将获得该同意书副本。我同意上述并参与该项研究。**


_____          _____
参与者签名          日期          参与者的姓名


_____          _____
主要研究人员签名          日期          研究人员的姓名


Revised 8-8-2012