THE "CLOUD STUDY ABROAD" PERCEPTION OF CHINESE OVERSEAS STUDENTS AT THAI UNIVERSITIES DURING THE COVID-19 PANDEMIC

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ABSTRACT

COVID-19 blocked the way to study abroad, and many universities adopted an online learning model. “Cloud study abroad” was undoubtedly the safest form of study for overseas students without leaving the country. However, it lacked a real learning experience. Chinese overseas students' learning situation and perception of this "Cloud study abroad" form were unknown. This research aimed to understand the perception, experience, and expectation of Chinese overseas students in Thai universities about "Cloud study abroad" and to explore the differences in background characteristics and the relationships between the variables. An online questionnaire was administered to 302 Chinese overseas students from 4 Thai universities participating in online learning during the epidemic. The data were statistically analyzed through mean and stand deviation of descriptive analysis and t-test, ANOVA, and multiple regression of hypothesis analysis. The results showed that the student's perception, experience, and expectation of "Cloud study abroad" were good, but there were difficulties accessing the external network (Mean=3.31, SD=1.30), technical support (Mean=3.92, SD=1.04), and language communication (Mean=3.46, SD=1.22). The t-test showed that there was no difference in the “Cloud study abroad” by gender($p>0.05$). The ANOVA showed a significant difference in most perceptions and positive experiences among students of varying education levels. Students with different IT skill levels significantly differed in their "Cloud study abroad." ($p<0.05$) Students with different motivation levels had significant differences in most perception aspects. The perception was partially positively correlated with both experience and expectation. According to the multiple regression analysis. It was worth noting that students' attitudes and participation were negatively correlated with experience and expectation ($p=-0.15$ & $p=-0.16$), and the experience was positively correlated with expectation. The conclusions showed that most students' "Cloud study abroad" was good, but we should focus on students' difficulties accessing resources on the Internet, IT support and assistance, and language communication. Students were hopeful about the future of “Cloud study abroad,” which motivated universities to

optimize their operations. Feedback from students can help Thai universities improve and further optimize the “Cloud study abroad” format.

Keywords: COVID-19, overseas students, online learning, perception

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CHAPTER 1

INTRODUCTION

This chapter presented the background of the research, the research objectives and questions, the research scope and conceptual framework, and specific definitions of the research.

1.1 Research Background and Problems

At the end of 2019, the COVID-19 epidemic swept the world, and there were various work stoppages in different countries, including all school levels. According to a UNESCO report, more than 1.5 billion learners in 165 countries were affected by COVID-19 school closures by March 2020, a figure equivalent to 87% of the world's total student population (Education International, 2020).

The closure of universities made offline learning impossible for all students. Among these students, there was a particular group that was overseas students. Influenced by the COVID-19 situation in their destination countries studying abroad, the restrictive measures for entry and exit, the actual closure of schools, the health and safety considerations of students and parents, et al. The epidemic era had shaken the overseas student groups. However, according to the data and content of the "Report on the Development of Chinese Students Studying Adequate (2020-2021) Blue Book" released by the Center for China and Globalization (CCG), the number of Chinese students studying abroad continued to maintain growth. The COVID-19 epidemic has not significantly affected the actual demand for studying abroad (CCG, 2021). The COVID-19 outbreak situation continues to spread worldwide. At the same time, while students' choice to study overseas in China had brought specific negative influences, the Chinese student demand for an internationalization of higher education quality was not a fundamental change. Going abroad to study was still an important development direction, and it will be a delay during the spread of the global outbreak (Hu, 2021).

The decline in the overseas student population was not significant. However, around the objective epidemic situation, the exit and entry controls and the school closed still exist, making these student groups unable to start their overseas study trip. They could live only within the territory of China to finish their study and even their graduation thesis. Based on online learning, the main form of "cloud study abroad" and "cloud thesis defense" arose at a historic moment. And it has become the most familiar word for Chinese overseas students in the last two years (Wang,2021).

Finishing overseas courses without going abroad can ensure themselves from the threat of epidemic and save the economic and time cost, especially for those on the job and studying overseas education promotion programs, which was a rare opportunity. But it also brought many problems, such as not being able to go to the university campus, feeling the campus culture and learning atmosphere, and face to

face communication with teachers and classmates. Rui Li, the Chinese overseas master's student, was mentioned in the interview with Jiang (2021), who had his flight and discussion canceled due to the epidemic. Like many overseas students, he spent his days studying in the "cloud," turning his days and nights upside down. Although the "cloud study abroad" did not delay his learning, he did not know what his university's gate looked like and what location after studying for a while, and it was difficult for him to know the local customs, so he did not have any sense of the experience of studying abroad.

The doubts about "cloud study abroad" and "cloud thesis defense" were also reflected in recognition of students' qualifications. Because online classes here were no longer a perfect integration with information technology and an emerging form of learning that transcended time and space limitations and self-paced but instead became a scar on the gold value of e academic degree, it seemed that no matter how highly ranked a student was in the application process, online classes were a significant detriment to their academic degree's gold content. Some students had even reported being questioned during internship interviews. Based on the traditional perception of studying abroad, going to a foreign country and experiencing new customs and living and learning environments were often among the most important reasons for studying abroad (Wang,2021). Because the value of a university education was not only the delivery of educational content but also the networking and social opportunities (Schleicher,2020). However, the online delivery and graduation method has significantly dissolved this layer of the reality of the experience.

In addition, the group of students with no experience studying abroad can only adapt to the overseas curriculum and the different educational philosophies and models of the East and West independently without any overseas study experience or help from others. In his article, Zhu (2020) referred to Eric, an overseas Chinese student from New York University. He cited three sins of online courses. One of them was that the interaction between teachers and students in online learning was not good. Sometimes, a professor posed a question online. If everyone did not want to answer, it often would silence them. This was a very awkward question. And this was the result of China's traditional concept, "a day for the teacher, lifelong for the father." The purpose was to embed the ethical relationship between father and son into the ethical relationship between teachers and students. It meant that there was a level between teachers and students, and they were unequal (Cheng, 2018). Therefore, the students would not dare to communicate with the teacher, which means that online learning was not only separated by a location and a screen but also by psychological barriers from the students' cultural backgrounds. This made it difficult for teachers to understand how overseas students feel when studying online during their "Cloud study abroad" period.

Now, the situation of the global epidemic remains bleak. Some countries and regions have seen a rebound or even multiple rounds of repetition. The online learning of overseas students has gradually developed from short-term emergency to normalization. Although online courses had some problems, they had become the only

means to resolve the challenging outbreak. Therefore, the research on the "cloud study abroad" model will not disappear in the short term. In addition, even without the epidemic's impact, online education will become the mainstream and future trend of international education. Therefore, in the "Cloud study abroad" process, it was urgent and essential to focus on online learning, especially for overseas students. We should deeply understand the online learning perception and expectations of overseas students.

1.2 Research Objectives

The objective of this research was

1.2.1 To understand the perception, experience, and expectation of cloud study abroad of Chinese overseas students enrolled in Thai universities.

1.2.2 To find the differences in perception, experience, and expectation of Chinese overseas students enrolled in Thai universities on "Cloud study abroad" under the background of different gender, education levels, IT skills, and motivation levels.

1.2.3 To explore the relationship between perception, experience, and expectation of "cloud study abroad" to help Thai universities better understand the online learning of Chinese overseas students during the pandemic.

1.3 Research Questions

In this context, the following research questions were posed.:

RQ1. What are the "Cloud study abroad" perception, experience, and expectation of Chinese overseas students during the COVID-19 pandemic?

RQ2. What are the differences in "Cloud study abroad" perception, experience, and expectation among genders, education levels, IT skills, and motivation levels?

RQ3. What are the Influence relationships between "Cloud study abroad" perception, experience, and expectation?

1.4 Research Scope

1.4.1 Populations and samples

The population of overseas students at King Mongkut's Institute of Technology Ladkrabang was 307 (Top universities, 2022). Stamford international university had more than 4,000 students (Wiki Pedia, 2022), 40% international (STIU official website, 2022). The population of overseas students at Southeast Asia

University was 189 (SAU official website, 2022). The population of overseas students in Rajamangala University of Technology Phra Nakhon was145 (RMUTP official website, 2022)

The sample was 302 Chinese overseas students with "Cloud study abroad" experience from the above 4 Thai universities in Bangkok.

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The sample was 302 Chinese overseas students with "Cloud study abroad" experience from the above 4 Thai universities in Bangkok.

1.4.2 Duration

This research was conducted from August 2021 to April 2022.

1.4.3 Variables

1) Independent variables: Gender, Education levels, IT skills, and motivation levels.

2) Dependent variables: “Cloud study abroad” perception, “Cloud study abroad” experience, “Cloud study abroad” expectation.

1.4.4 Conceptual framework

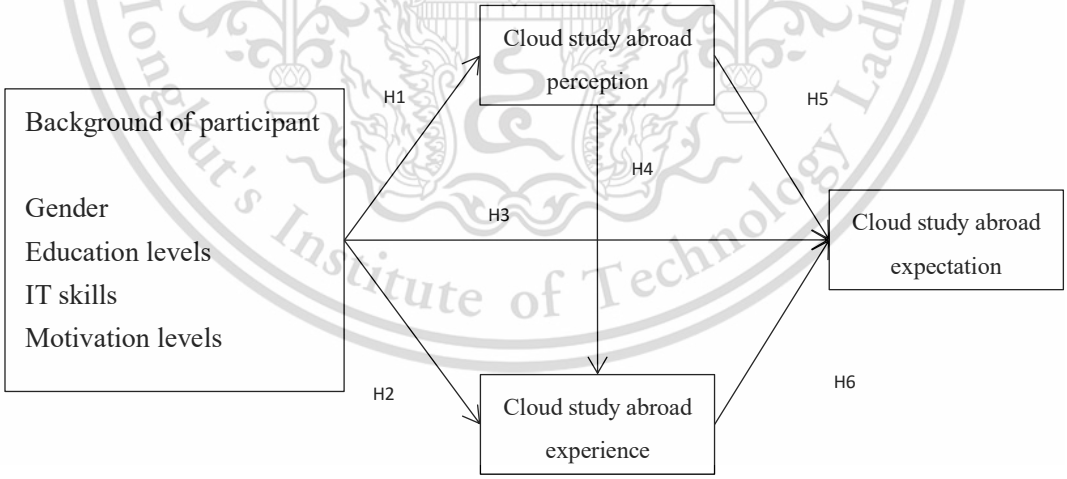

Fig 1.1 Conceptual framework

Source of concept：

1) “Cloud study abroad”

According to the detailed Interpretation of Hu (2021:36-37, "Cloud study abroad" means that overseas students can receive foreign education on any mobile

device with Internet access except face-to-face classrooms on campus in the face of the particular context of COVID-19.

2) Perception: Perception was the organization, recognition, and interpretation of sensory information to represent and understand the information or environment presented (Schacter& Daniel, 2011). Moreover, Jonathan (nd) pointed out that each person perceives and processes the world differently. Perception is important because it creates our experience of the world around us and allows us to act in the environment. We usually use perception or personal understanding when we look at a thing.

3) Experience

Erlich (2003) mentioned that our discussion of a person's experience usually refers to the experience of an event happening to them and living over time. The Chinese dictionary recorded that experience is a kind of personal experience. The reality we experience leaves a deep impression in our memory that we can recall and therefore have a premonition of the future. ("Experience," nd). The Cambridge English Dictionary summarizes that experience in terms of how things happen and how the process makes you feel ("Experience," nd).

4) Expectation

Hitchcock (1903) mentioned that expectation is a mental process or attitude with strong emotions, a state of waiting that relies on past experiences to anticipate an event's occurrence.

1.5 Definition of terms

1.5.1 IT skills

Also known as information technology skills, were a broad skill set of computer knowledge that an individual possesses to operate a computer, including the use of hardware and software.

1.5.2 Motivation

Motivation was the drive that inspires and sustains an individual's action and moves them toward a goal. In short, it was the force and idea that triggered an individual to engage in certain behavior.

1.5.3 “Cloud study abroad”

The essence of “cloud study abroad” was online learning. It was unique because it was a hot concept that arose in a unique era. It consists of “cloud” and “study abroad.”

“Cloud” was a computer network term. It was a metaphorical and abstract expression of the Internet. It was a platform that broke through time and space and enabled sharing by storing resources on the Internet. “Study abroad” refers to a person going to a country other than his home country for education.

The unique context of the times was the spread of the COVID-19 epidemic. As a result of the COVID-19 outbreak, face-to-face teaching and learning were converted to a safer form of online learning. Furthermore, overseas students were likewise

confined to their own countries and homes. They take online classes through computers and other devices and some video conferencing software, interact, and communicate with their teachers online in real-time, and complete their overseas study assignments or even defend their thesis in an online format.

1.5.4 Online learning

Online learning referred to Internet platforms and information network technology to realize synchronous or asynchronous teaching between teachers and students in different places. This research refers to the school's regular education, mainly synchronous teaching. By selecting the appropriate online teaching and learning support platform or software, teachers use the network, software, and terminal to connect teachers, students, and teaching content, and then implement the teaching activities when there was a physical distance between teachers and students.

1.5.5 "Cloud study abroad" perception：

It was a combination of phrases that includes two parts, "Cloud study abroad" and perception.

"Cloud study abroad" refers to a particular form of online learning for overseas students in COVID-19 outbreak prevention and control. So, the essence of "Cloud study abroad" was online learning.

Perception was the cognition of something. "Cloud study abroad" perception was the representation and understanding of overseas students about the online study abroad model and their environment under the epidemic.

1.5.6 "Cloud study abroad" experience:

It was a combination of phrases that included two parts, "Cloud study abroad" and experience. "Cloud study abroad" was the same as above.

Experience was the feeling you get when something happens to you. "Cloud study abroad" experience was the overseas students' feeling about online learning during the COVID-19 pandemic.

1.5.7 "Cloud study abroad" expectation:

It was a combination of phrases that included two parts, "Cloud study abroad" and expectation. "Cloud study abroad" was the same as above.

The Expectation was to wait and hope for the future of someone or something. "Cloud study abroad" expectation was the overseas students' will to the future of study abroad online.

CHAPTER 2

LITERATURE REVIEW

In this chapter, the researcher **first** provided an overview of the historical evolution of Chinese overseas students and the background and current situation of Chinese overseas students coming to Thailand based on theories and studies of the past. **Then**, the emergence of Cloud study abroad and recent reviews were reviewed. **Next,** an overview of online learning was provided, focusing on the researcher's perspective on online learning in the context of the COVID-19 epidemic. **Fourth,** the researcher reviewed previous studies' exploration of perception, experience, and expectation, explored the relationship between variables, and proposed my research hypothesis **at the final**. The conceptual framework and questionnaire content also emerged from the literature review process.

2.1 Chinese overseas students in Thailand

The definition of "overseas students" in the dictionary of education was "students in educational and research institutions of other countries" (Gu,1995). Yang (2020) summarized the development history of Chinese students studying abroad. She pointed out that the word "studying abroad" first appeared accompanied by diplomatic activities in the Chinese Tang Dynasty. There was a large-scale and planned study abroad in the late Qing Dynasty. Since modern times, studying abroad education has promoted China's development so that for a long time, the meaning of studying abroad has been tacitly defined as "going abroad to study." Shen and Chen (2017) pointed out that the number of people studying abroad has increased since China's reform and opening. The intention of studying abroad was no longer around the western countries but had more choices.

With the holding of "The belt and road" International Cooperation Summit Forum, China has gradually increased the support strength of studying abroad countries along "The belt and road." Among them, Thailand has been popular with Chinese students. Its unique location, unique scenery, calm atmosphere, low cost of studying abroad, and gradually becoming a new country for studying abroad (Meng, 2017).

According to the data, the number of Chinese students studying in Thailand in 2010 increased 10ten times compared with 2001(Shen & Chen, 2017). The Thailand Higher Education Commission office pointed out that 9329 Chinese students studied at Thailand Higher Education Institute (HEI) in 2010, accounting for nearly half of international students. Ngamkamollert and Ruangkanjanases (2015:170) mentioned that international students had increased by 0.74% in 2012. The top 1 importing country was China, with 8444 students. Li (2016, para.2) pointed out that more than 40000 Chinese students were studying in Thailand, and China has become the most crucial source country for Thai students. According to the Asia Research Center for

migration of Chulalongkorn University, 8455 Chinese students studied at Thai universities in 2017 (Panu Wongcha-um,2019, para.14). Some statistics showed that they were 32000 Chinese students surveyed in Thailand in 2018 (The Xinhua Agency, 2019, November 5, para.10). The Education Office of the Chinese Embassy in Thailand saw this significant increase in Chinese mobility and estimated there would be 50000 students by 2020.

It was clear from the above research and data that “The Belt and Road Initiative” have played an essential role in driving more and more Chinese students to study in Thailand. Even the epidemic prevention and control has not affected the demand for Chinese students studying abroad. However, due to their health and safety, repeated epidemic situations in Thailand, national immigration restrictions, school closures, and other factors. Chinese overseas students have to choose to study in the Cloud in China or other off-campus locations and start online courses.

2.2 “Cloud study abroad”

"Cloud Study Abroad" was a synthetic term that can also be understood as study abroad on the Cloud. It was a unique concept that arose in the particular context of the COVID-19 epidemic. Moreover, it was an exceptional value for the overseas student community that can only study online because face-to-face classes cannot be conducted due to the closed management of the study destination country and university due to the epidemic. A search of China Knowledge Network Infrastructure revealed that the first appearance of the term "Cloud study abroad" was in July 2020, culminating in the number of occurrences in 2021 with the general development of the global epidemic.

Many researchers have summarized the emergence and background of "Cloud study abroad," definition, development, impact and significance, student views and attitudes, and outlook. Zhu (2020) and Wang (2021) extended the term from "cloud office" for office workers to "cloud reading,” “cloud study abroad," and "cloud graduation" for overseas students. He also cited a Chinese student's online experience of "cloud Ph.D. study" at the University of Cambridge.

Hu (2021) provided the first analysis of the concept of "Cloud study abroad." He pointed out that the "cloud" comes from a form of technology in computing, which allows a program or resource to be stored and shared in a local area network. For the students' life, it can also understand that the student can accept a foreign education without going abroad. He summarized the development of "Cloud study abroad." The term "cloud" gradually emerged among overseas students in 2020. In response to the unknown nature of the epidemic, a new form of study abroad was created called "Cloud study abroad." Students can complete their study abroad courses from their dormitories, homes, or any computer device. By 2021, "Cloud study abroad" had become more mature. From the beginning of live online classes to the establishment of cloud study abroad service centers in some universities, "Cloud study abroad" has become stable.

Ding (2021) listed the components of "Cloud study abroad," such as "Cloud Socialization," "Cloud Study Room," and the creation of a WeChat group for cloud students to exchange and share study experiences.

The influence and significance of "Cloud study abroad" were noted in the interview with Ru (2021). "Cloud study abroad" may significantly impact master's students with shorter study periods. Still, returning offline was just around the corner for undergraduates and high school students. The significance of "Cloud study abroad" was changing the thinking and focusing on the essence. The essence of studying abroad was to improve your abilities, broaden your horizons, practice your language, experience different cultures, etc. Getting any of these was valuable.

These researchers (Zhu, 2020; Hu, 2021; Wang, 2021) also captured students' attitudes toward "Cloud study abroad." The supportive students believed that studying online was not the first time and that online learning was prevalent in master and doctoral education in the United States. Furthermore, this format was safe and low-cost in the epidemic context. The online course platform also allows students to record courses for easy review. Opposing attitudes indicated that the cloud-based learning experience was limited, with poor interaction, informality, online constraints, and issues with recognition of the learning experience.

Regarding the outlook of "Cloud study abroad," Zhu (2020) pointed out that online cloud study may be in line with the general trend of "Internet+," and the epidemic only accelerated the trend of online education becoming the mainstream of international education, which can realize the global sharing of educational resources. They hope to return to campus and reality as soon as possible in the future.

This research showed that cloud study abroad was unique in nature. It begins with the particular context of the global epidemic. And it targets a specific group of international students. Their plan to go to foreign schools for formal teaching was interrupted, and they began long-term online learning. In the actual situation of the epidemic outbreak, compared with the attention paid to the education of domestic students, international students obviously cannot be reached.

2.3 Overview of online learning

2.3.1 Definition of online learning

As for online learning, many different terms were used in this concept, such as e-learning, Internet learning, distributed learning, e-learning, distance learning, virtual learning, computer-aided learning, etc. Therefore, it was difficult for us to form a general definition. But they all had a common characteristic: the physical separation of educators and learners. The connection between them depended on some technology, such as computers. (Anderson, 2011)

Ally (2008) defined online learning as using the Internet to obtain learning materials, interact with content, communicate with lecturers and learners, obtain support and knowledge in the learning process, construct personal meaning and grow from it. (Gu, 2019) mentioned online learning takes the network as the carrier and

multimedia as the form to present the learning content.

Moore, Dickson-Deane, and Galyen (2011) referred to online learning as the newest distance learning version. They state that online learning was a subset of distance education that focuses more on the web and web-based tools. Siemens, Gašević, and Dawson (2015) also believed that online learning was a form of distance education. This form regulates learning through technology, and teaching was on the Internet. But it was not only the traditional form of distance education, such as correspondence education, video conference, videotape, etc.

Carliner (2004) pointed out that education was an organizational activity aimed at the sustainable development of knowledge and skills. The difference between online and offline was the place of occurrence. The former was online, and the latter was in the classroom. Meanwhile, he summarized two forms of online learning, synchronous and asynchronous. Synchronous online learning means teachers and students work simultaneously in different geographical locations. This was like a virtual classroom. Richer materials were organized into courses, and teachers and students could communicate online. They may be formal. For example, teachers give lectures first, make presentations, ask and answer and talk. Students' oral and written answers can be heard and seen in real-time. Asynchronous online learning means that teachers and learners do not need to be online simultaneously. According to their rhythm, learners can interact directly with computers to complete the learning process.

Singh and Thurman (2019) provided a detailed review and analysis of the definition of online learning and gave a deeper understanding. They stated that online learning was the most frequently used term, that technology was a vital part of online learning, and that it was the medium through which education and interaction were implemented. Time was another crucial factor that distinguished the two modes of online learning, synchronous and asynchronous. Interactivity was also an essential element of online learning. Implementation paths included asynchronous discussion boards and synchronous chat rooms. Both were achieved through digital technology. They also mentioned three types of interaction: teacher-student, student-student, and student-technology interaction.

2.3.2 Development of online learning

Previous researchers (Perry& Pilati, 2011; Allen& Seaman, 2010) summarized the development of online education. It began as a correspondence course in the 19th century, developed into educational television in the 20th century, and developed into e-learning in the mid-1990s. In 2002, more than 1.6 million higher education students enrolled in the online course, nearly 5 million six years later. In 2008, more than 25% of higher education students participated in at least one online course, and the number of online registrations increased at an annual rate of 17%. Online learning has become an important part of higher education. Therefore, higher education institutions have also been the incubator for the continued growth of online education.

In 1960, the Internet had not yet been invented, but students at the University of Illinois were already learning through computer terminals interconnected to form

networks. In 1984, the University of Toronto offered the first-ever fully online course. Two years later, an electronic university network was created for DOS and Commodore 64 computers. And in 1989, the University of Phoenix launched the world's first fully online university institution that could produce bachelor's and master's degree education. In the early 1990s, the Open University in the UK was one of the first universities to start online distance learning. Currently, the Indira Gandhi National Open University in India was the largest open university in the world, with the majority of its over 4 million registered students practicing online learning (Soumik, 2020)

In the definitions given by the researchers above, although the concept of online learning has multiple terms, the core was the Internet and technology. Online learning has permanently moved forward, but the epidemic's arrival has undoubtedly accelerated this process of mass popularity. In the epidemic context, online learning has been implemented to a greater or lesser extent in the home country and overseas student education. The exploration of online learning was urgent and essential, even without the epidemic. Based on this, "Cloud study abroad" was defined as a form that was essentially online learning in this research. The particularity of "Cloud study abroad" lies in specific objects and specific places. As the name suggests, the particular object was international students. The specific place was a certain physical distance, even a national boundary, between the school location and the student's location. This was produced under the unique background of COVID-19.

2.4 Online learning during the COVID-19 pandemic

2.4.1 Benefits of online learning

Anderson (2011) summarized some benefits for learners and teachers. For learners, time and place were not a problem. Students in asynchronous teaching can access online materials anytime, while synchronous learning can realize real-time interaction between teachers and students. It was easy for teachers to update teaching materials in real-time and check students' learning progress at any time. Under the particular background of the epidemic situation, the advantages of online learning were more prominent.

Kannankara (2020) thought the first benefit was to society. It was an adequate safety preventive measure that could block the spread of the virus. The second was for students. (1) Easy to access. A computer or mobile phone can attend class and record. (2) Convenient to fit into daily life. It can arrange learning activities according to the student's rhythm. (3) Flexible time and place. Comfortable focusing environment, such as students wearing headphones to shield them from external interference. The third was for teachers. They do not have the pressure of checking students' Irregular behavior in the traditional face-to-face classroom. They have more time to pay more attention to their students' other performances.

Hu (2021) mentioned the "cloud classroom," taking ZOOM as an example. He analyzed ZOOM teaching advantages, such as teachers can silence all students and

create an efficient classroom. ZOOM can also provide a screen that allows students to share their homework, projects, and work. ZOOM can also record the screen for students to playback and review. ZOOM can create some exciting actions, such as students can change their virtual background.

Zhu (2021) also pointed out that the most secure choice was opening online courses during the epidemic, which was the primary advantage. The second was economic cost savings, which was the most significant advantage. Many universities know they have reduced tuition fees because "Cloud study abroad" cannot create a natural environment for students to study abroad. Third, time was flexible and freely accessible. Forth, online classes can be recorded and saved. Therefore, we can see playback, fast forward, pause, and so on, which helps students learn according to their progress.

In the interview survey by Wang (2021), some students hold a more optimistic attitude toward online learning. They believed that video-conferencing software was widely used and technically mature, and even proficiency in this software benefits their future work. It was an excellent opportunity to exercise themselves for the new era of the office model. Some students affirmed the recording function of the online classes because watching back allowed them to keep up with the progress and was also an opportunity to familiarize themselves with and practice English.

2.4.2 Barriers to online learning

Cui et al. (2020) pointed out through her large-scale online survey data analysis in some areas of China that many teachers were concerned about the two major issues of online education: teacher-student interaction and students' autonomous learning.

Wang (2006) analyzed the differences between Chinese and western education and pointed out that Chinese students were influenced by traditional cultural concepts and traditional education modes, which leads to common problems in online learning. First, they were silent. They fear speaking, saying wrong, and losing their face in public. Even if they know the correct answer, the students will not answer without naming from the teacher. Second, we were too obedient to teachers and did not like to express different opinions. The third was the lack of self-control and strong motivation in online learning.

Mohan et al. (2021) mentioned that online learning might bring health problems like eye health. Especially for kids. Because of the need to stare at the computer screen for a long time during the epidemic of online learning.

Dhawan (2020) also mentioned teacher-student interaction and students' autonomous learning. Online learning hinders direct contact and communication between teachers and students. In addition, although the flexibility of time and place was the advantage of online learning, it will also cause some problems because not all students can have strong self-management abilities with this flexibility. At the same time, different students have different skills and confidence. Some students feel bad during online teaching and learning, which increases their frustration.

Kannankara (2020) also stressed that online learning requires high

self-discipline, and students need good time management ability. At the same time, he also mentioned that online learning blocks students' social communication and may affect students' personality development.

Muflih et al. (2020) summarized that the main obstacles to network education were students' lack of experience in using network tools, slow communication network speed, lack of application software, and lack of interest in online learning implementation. Furthermore, students also believe that there were insufficient educational and technical resources. They also mentioned problems in online learning communication, data security, and data leakage.Hamid, Sentryo, and Hasan (2020) also mentioned the carrying capacity of the network, especially the instability of the web on the teacher side and student sides.

In Simamora (2020) research, students pointed out that online learning can maximize the use of technical means to obtain learning materials and learn freely according to students' wishes and methods. However, online learning sometimes makes it difficult for students to access and understand more in-depth materials and content, increasing our after-school homework burden. There were also problems with signals and the Internet, reducing classroom efficiency. They also mentioned the anxiety of online learning during COVID-19. Many students noted that online learning caused them stress and a lack of concentration. They said online learning activities could not attract as much attention as face-to-face lectures.

Fatonia et al. (2020) attributed the online learning problem to 3 aspects: (1) The network was unstable. For example, delays often occur, and teachers' voices were not synchronized with teaching materials. (2) The quality of the educational environment was poor, the content transmission was not accurate, and the direct interaction was not good. (3) Concentrating on class for a long time was difficult.

Africa (2021) summarized online learning problems during the epidemic from the perspectives of students and teachers. The first was the student aspect. (1) Some students lacked learning equipment or facilities, lacked Internet quotas, or increased network costs. Some students live in remote and rural areas with no network coverage or poor signal strength, which affects the implementation effect of online learning. (2) Students' understanding of the teaching content delivered by online learning may not be comprehensive because online learning was more presented in electronic forms, such as slides and videos. (3) Students were not enthusiastic about online learning. The activity of students in online classrooms showed the characteristics of polarization. Some students were very active. Some students were not engaged and even left to do other things. The second was the teacher aspect. (1) Teachers were not fully prepared for online learning. The epidemic outbreak has led to the sudden transformation of face-to-face teaching into online teaching. Teachers were unprepared, and some teachers did not have information technology skills. (2) The teacher's supervision and management of students were limited, and occasionally students left the video screen.

Elhaty et al. (2020) mentioned that not all majors were suitable for online teaching and learning, and majors focusing on practical knowledge and experiential

learning may be limited and affected.

In addition to the common barriers to online learning, overseas students also have some unique points.

Ding (2021) combined with his feelings and experiences, extended the barriers of overseas students to the cloud of social contact. She said that students' passive personalities, networks, and language would make communication between teachers and students difficult. The online classroom interaction experience was poor, and students' learning may not keep up. Ma (2021) also mentioned that the teacher's accent affects the students' understanding. The different teaching habits of teachers at home and abroad will also impact students. The emphasis was on the students' language anxiety. Students will be nervous when speaking foreign languages, so they were afraid of saying wrong.

(Hu,2021; Zhu,2021) also mentioned many specific opinions, such as many students think that studying abroad was not only to listen to teachers but also to explore and sharpen. Face-to-face communication with teachers and making new friends were part of their study life. There was also the problem of adaptability to online classes, such as time difference, especially in countries with large time differences in Europe and America, which interferes with domestic work and rest and affects their state and family life. Network constraint was also a specific problem. Because in the domestic class, the distance from the storage location of the cloud service was far away, which easily caused network delays. The picture was stuck, which affected the classroom experience. The last one was the informal nature of video teaching, which distracts some students. No one outside the screen knew, and the quality of learning was difficult to guarantee.

Ma and Miller (2020) also mentioned the anxiety of China's students during the COVID-19 period. They said that Chinese overseas students were worried about COVID-19, academic status, academic research, and future employment studying abroad during the epidemic. Aboagye et al. (2021) showed that students were not ready to implement online learning in this pandemic era. Students were attached to traditional methods and were afraid of many challenges in the online learning process.

Wang (2021) identified several problems in his interview survey. The recognition of overseas students' learning experience was discounted by online classes, affecting their job search and employment. It was because studying abroad without having been abroad clearly does not conform to the traditional perception of studying abroad. He also mentioned that online courses were more stressful and demanding for Chinese students to learn. It was because the learning process of listening, speaking, reading, and writing creates new challenges due to online teaching. For example, the language barrier makes it difficult for Chinese students to interact and communicate with local and international students from other English-speaking countries to the same degree as teacher-student interaction online. It was compounded by the fact that Chinese students were more passive and shier. When it comes to writing, Chinese students type slowly but may also have to check grammar and use translation software after paper, which can take more time than other populations.

2.4.3 Online learning in Thailand

During the COVID-19 pandemic, Thailand had the fifth-highest number of confirmed cases in Southeast Asia after Singapore, Malaysia, the Philippines, and Indonesia (Monorom& Piantankulcha, 2020). Almost all countries during the pandemic encouraged teachers and schools to use some applications to support communication with students, such as MOOC-style online courses. Thailand had also actively adopted learning content delivery through television and other media formats, using existing applications to maintain teacher-student communication. (Chang & Yano, 2020)

Eacott et al. (2020) found that Thailand, Malaysia, Indonesia, and Singapore all turned to online learning during the initial phase of the epidemic embargo. However, considerations of effectiveness and inequality persisted in online learning. They summarized several coping strategies that were implemented in Thailand during the epidemic. One was a distance learning television (DLTV) model to reach more poor students. Two was to emphasize parental support and encourage teachers to use various online platforms to interact with students. The third was to improve teachers' ICT skills. The first one was to build an assessment system to record student learning data and collect data on teachers' work. Fifth, adjusting resource allocation and shifting budget allocations to online teaching and ICT devices.

Chansanam et al. (2021) developed a "Humanities and Social Sciences Online Platform for Students" (HUSO-OPS) at Khon Kaen University, Thailand. They believed that the learning process could not stop in implementing segregation measures. The fastest, easiest, and most effective alternative is online learning. A good online learning cycle should be achieved by providing a secure network of contacts, appropriate online learning facilities, a comfortable learning platform, efficient learning strategies, support from educational institutions, an efficient support system for teachers and learners, and strong cooperation between parents, teachers, and students (P-L-S cooperation).

In the research by Reimers et al. (2020), they summarized various online learning platforms and tools in Thailand. The first was the MOOC developed by the Office of Higher Education Commission, Ministry of Education, which can provide a wide variety of online courses for lifelong learning. The second was the Digital Learning Center. An online learning platform that was developed by the Office of the Private Education Commission (OPEC). During the COVID-19 outbreak, online education was made available nationwide to the public and all elementary and secondary school students. There was also Khan Academy Thailand, which provides digital video courses for primary and secondary school students as well as the LearnBig Digital Library, initiated and developed by UNESCO Bangkok, which focuses on helping the literacy and reading habits of out-of-school and marginalized children. In terms of online learning tools, they also mentioned ZOOM, google classroom, and Nearpod, a teaching and learning platform that allows teachers to create interactive online courses for teaching and learning in synchronous or asynchronous spaces. It enables LMS integration, including Canvas, Google

Classroom, EdPuzzle, and Seesaw. In addition, it had a ready-made course library with a variety of courses created by other teachers.

Vanpetch & Sattayathamrongthian (2020) recognized that most of the teaching sessions had been shifted to virtual classrooms and lectures. Moreover, that online education that relied on other freely available software or programs such as ZOOM meetings and Google Classroom has shown efficacy.

The Thai government took a self-imposed quarantine to slow the outbreak's spread, and courses for both domestic and international students need to be online. Even without the mass online classes brought about by the epidemic, overseas students face many dilemmas. Kang et al. (2019) noted that studying in a different country for international students was exciting but also challenging. They must go through many adjustment issues, and many Asian students have to struggle to adapt to the academic life of the university they are studying at. Many difficulties were experienced due to a lack of knowledge of academic norms and practices. Inadequate learning support, unfamiliar teaching methods, and cultural differences in the classroom. (Li & Campbell, 2006). Chen, You & Chen (2018) also highlighted the stress of international students facing the challenges of a different culture, which to some extent may go beyond the stress of life and academics. They summarized three kinds of loneliness faced by overseas students, one is the loneliness of losing contact with family, the second is the hindrance of social network building because of language barriers, and the third includes race and academic expectations falling short. Chinese overseas students were considered to be the least well-adjusted group of overseas students. Monorom & Piantankulchai (2020) concluded that overseas students spend more time on their studies indeed corroborates their plight.

The above research demonstrated that implementing online learning during an epidemic was undoubtedly the safest and most feasible option and approach. However, due to the suddenness of the epidemic, large-scale online learning also posed many problems. Teachers and students, as the subjects of education, were undoubtedly the most problematic, and online as a medium of schooling also faced network and equipment barriers. It reminded me to think critically about online learning during the epidemic and focus on and explore learners' attitudes and perspectives on online education.

Thailand, like other countries, used quarantine measures to control the spread of the epidemic in the early stages of the epidemic, but the lack of preparation in the face of nationwide mass online teaching was an unavoidable problem. The sudden introduction of online courses undoubtedly added new pressure and difficulties to the already challenging life of studying abroad, not to mention the "cloud study abroad" model where students and teachers are geographically located in different countries.

2.5 Students' perception of online learning

Agung, Surtikanti, and Quinones (2020) implemented a focused case study of

66 students in the English Language Education Research Program at Pamantalino University of Education. They pointed out that cognition was the experience of an object, an event, acquired through the recovery of information and interpretation. Students' perceptions were described as opinions formed after an experience that required adjustment in their studies. And they categorized student perceptions into student engagement, accessibility, delivery of materials and assignments, and compliance with the necessary online learning platform or tool. The study identified three significant barriers to online learning: the availability and sustainability of internet connections.

Secondly, the accessibility of instructional media, and finally, the compatibility of the tools used to access the media. Accessibility remains the most significant barrier, especially in rural and marginal areas with poor Internet coverage. Fedynich, Bradley, and Bradley (2015) collected the perceptions of 249 graduate students on their online course experiences. They described the students' perception of online learning from instructional design and delivery, assessment and feedback/instructor role, student roles and responsibilities, and management and support systems. Ultimately, recommendations were made, such as designing courses that promote effective teaching and learning. Prioritize professional development for teachers and provide an active learning environment online. Merge synchronous and asynchronous teaching and learning activities. Integrate with multimedia. Focus on student ideas. Encourage student dialogue. Collect student data for reflection and improvement, etc.

In the survey of Song et al. (2004), 76 graduate students' perceptions were determined to be learners' perceptions of online education, primarily including strengths and weaknesses. Findings indicated influences on course design, learner motivation, time management, comfort with online technology good online learning experience. Technology issues, lack of community awareness, time constraints, and difficulties in understanding the objectives of online courses are challenges. At the same time, they offer some insights. We must develop effective instructional designs that focus on the learner's goals and expectations. Secondly, we should focus on learners' time management and help them manage their time well. Thirdly we should promote collaborative communication between learners and build emotional communication.

In the research of Armstrong (2011), undergraduate students' perceptions of online courses were described in terms of motivation and learner characteristics of online courses, students' positive and negative evaluations of online courses, faculty improvement strategies, students' perceptions of the online learning environment and the tools used and the impact on their choice of learning methods. Through the research, they ultimately found that communication played a role in shaping students' perceptions and approaches to learning. The negative attributes of technology were inherent in the technology itself. The quality of communication was more important than the tools. Course organization was critical. Students' approaches to learning were determined by the learning environment and online teaching and learning assessments.

Academically, students perceive online learning as less severe and rigorous than face-to-face education. Students use non-academic resources to retrieve resources rather than the university library.

Unger and Meiran (2020) implemented a survey of 82 undergraduate students who conducted perceptions of online teaching and learning were considered student perceptions and attitudes. i.e., Students' perceptions of COVID-19-related topics, their level of anxiety about the outbreak, their level of emergency preparedness, and how the attack affected their learning and after-school space. The results showed that many students were anxious about online teaching and learning away from school due to the COVID-19 epidemic. They did not believe online learning would provide a similar experience to face-to-face teaching and even thought online learning would negatively affect their learning and performance. Few had a positive attitude towards online learning and leaving school. Many regretted that those graduation ceremonies were affected. Some said they did not like online teaching and learning, complained about the lack of a quiet learning environment, worried about their studies' effectiveness, and felt lost about not being able to communicate directly with their tutors, among other things. However, some students held positive attitudes, saying they felt that adaptation took a process and that everyone struggled. But schools maintain an online learning environment, develop more courses, train teachers and psychological assessments, and provide free technological means for teachers and students, such as video-conferencing lectures, email communication, et al.

Dost et al. (2021) surveyed over 2700 medical undergraduate and postgraduate students on their perceptions of online teaching and learning. They mainly investigated the use of online platforms, experiences, advantages, and barriers perceived by students.

Akuratiya and Meddage (2020) surveyed 130 IT students on their perceptions, including whether they had early experience, online learning devices used, internet connectivity patterns, and overall perceptions. The results indicated that students' perceptions of online learning were high and open to this alternative format.

Kumar et al. (2021) surveyed the perceptions of 269 international students in clinical medicine at a university in China. They captured information in seven areas. (1) Conformity of individual learning requirements. (2) Effective communication was like in a real classroom. (3) Improvement of teacher-student communication skills. (4) Development of student participation and interaction. (5) Effective management of class time and pace by the teacher. (6) Course organization and preparation. (7) Following the syllabus. Ultimately the researcher found that online learning facilitated learning while increasing peer interaction and collaboration and improving the teacher's teaching organization. In the case of the epidemic, students were supportive of online teaching. The format met their individual needs and was more conducive to student engagement and interaction.

Demuyakor (2020) investigated the perceptions of 315 Ghanaian international students in a higher education institution in China. They spoke of perceptions defined as students' perceptions of the effectiveness of online course content, students'

knowledge of the COVID-19 epidemic, satisfaction with online learning resources, and challenges students may encounter in the future. The research showed that students agreed that online education was effective, that students' level of knowledge about the COVID-19 epidemic was related to students' awareness of the COVID-19 epidemic, that students were satisfied with the online educational resources, and that teachers could provide and recommend new forms of material to help meet learning expectations. Challenges for students in terms of future expectations were the lack of a sense of learning, community collaboration, and issues arising from differences in location, such as students studying outside of China, time zone differences, slow internet connections, and the financial cost of purchasing internet.

The above researchers investigated students' perceptions of online learning during the epidemic based on their different research backgrounds. Most of their students had an open and approving attitude toward online learning. Technology and devices were high-frequency terms in their research. Their research mainly focused on students from a specific region, type, and significant with similar background profiles. However, there was not much research on online learning for overseas students. And according to the previous research and the essence and connotation of "Cloud study abroad," I put forward the "Cloud study abroad" perception. In this research, the "Cloud study abroad" perception was understood and categorized as overseas students' attitude and participation, internet and device accessibility, online technology application, classroom performance, assignment delivery, and teaching organization and implementation.

2.6 Students' experience of online learning

Rahrouh and Ghanem (2020) defined experience as students' satisfaction with online courses in statistics, such as flexibility in time, virtual attendance, ease of understanding of course content, effective communication between faculty and students, and effective communication between students.

Henaku (2020) described the online learning experience of university students in their descriptive phenomenological study. They categorized online learning experiences into the nature of online learning as perceived by students, internet connectivity issues, financial bundles from the internet, device challenges, and home environment. The findings suggest that what students perceive as online learning is learning using social media and online learning platforms. Students also experience internet connectivity issues, some financial cost burdens, device difficulties, and distractions from home activities. The study results on the overall view of online learning among university students indicate that students want online learning to be suspended.

Maqableh and Alia's (2021) investigation of online teaching and learning experiences centered on students' satisfaction and positive and negative ratings of online learning. The results showed that more than one-third of students were dissatisfied with their online learning experience. Subsequently, they explored and

studied the factors behind student dissatisfaction. The results showed that student dissatisfaction stemmed from distraction, reduced focus, psychological issues, technology issues, and time management issues.

Hussein et al. (2020) finished a qualitative study of undergraduate students' experiences with online education during the COVID-19 pandemic. They defined the experience as students' perspectives of the positive and negative aspects of online education. Positive aspects were effectiveness, safety, and convenience. Negative items were distraction and reduced focus, high workload, technical issues, Internet connectivity, and support between the instructor and fellow students. The results showed that the students highly endorsed positive options were low cost, time effective, safety and convenience, and increased student engagement. On the other hand, the negative options were distraction and reduced focus, heavy workload, technical and network issues, and insufficient mutual support from the instructor and students.

Shawaqfeh et al. (2020) conducted a cross-sectional survey of pharmacy students' experiences with online learning. They categorized online learning experiences into readiness for online learning, attitudes toward online learning, and barriers encountered during online education. The results showed that most students were prepared for this unexpected situation and were able to achieve a smooth transition. Their attitudes towards online learning were positive, and some students encountered obstacles during their studies.

Almomani et al. (2021) investigated the beliefs about the online learning behavior of Jordanian university students during the COVID-19 epidemic. Their experiences with online learning consisted of the following components: the quality of online teaching and learning during the COVID-19 compared to school teaching quantity and quality, the response of their schools and institutions, the input of assignment submission and quizzes, the comparison of online exams with on-campus exams, the assessment process of online education during the epidemic, and whether they would participate in future online courses. The results indicated that students were satisfied with improved information skills despite some online and technical problems but were dissatisfied with the quality and quantity of instructional materials, online exams, and assessment processes.

Almusharraf and Khahro (2020) correlated the experience of online learning among students in Saudi Arabian universities by surveying 283 students about their satisfaction with the online learning environment, satisfaction with school support, and students' perceptions of the most effective online learning methods and platforms. For the student experience, students were satisfied with the teaching and follow-up by the school staff, the facilities, and the learning platforms provided by the school.

The above research discussed students' experience, evaluation, and satisfaction with online learning during the epidemic. Most of the research indicated that students were generally satisfied despite the obstacles they encountered, but some studies found that students would like to call off the format. According to their previous research on the experience of online learning during the epidemic, more researchers

attributed the experience to the student's feelings or satisfaction, such as positive and negative feelings that online learning brings. In this research, the "Cloud study abroad" experience was proposed and categorized a cloud study experience as a positive and negative online learning experience for students.

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2.7 Students' expectation of online learning

In the research of Almomani et al. (2021), the expectations of online learning were more focused on the future expectations of the development of the epidemic. Still, only a few of them had positive attitudes.

Wang, Lin, and Su (2021) argued that COVID-19 dramatically changed traditional teaching and learning. Online learning created unique opportunities for teachers and students in this particular context. They explore the direction of post-epidemic universities toward online learning models, using the continued willingness of university students to teach online during the epidemic as a critical point of expectation.

In the research of Blizak et al. (2020) about chemistry students at a university in Algeria, they defined the future expectations of online learning as the view of the type of learning after the end of the epidemic, such as online, blended or face-to-face learning. The results showed that almost 64% of the students preferred the online form.

Atubi and Obro (2020) used one area of social studies education to examine the expectations of online education, i.e., whether online education is appropriate for the course, whether it can be part of social studies, whether it encourages student learning, promotes student collaboration, helps students understand icons, etc. Their results suggested that online learning during the COVID-19 epidemic was appropriate for social studies education and could enhance teaching in this area.

These studies provided different perspectives on the future of student's perspectives on online learning during the epidemic. They affirmed the outlook for online learning as a critical point for discussing online learning with the student. The unknown nature of the epidemic in the current context, the emergent and contingent nature of online learning implemented in the higher education system, and the actual expectations of students for the future remain topics for discussion. Relying on the above research, "Cloud study abroad" expectation in this research was understood and summarized as students' outlook on the cloud study abroad model and their willingness to continue this cloud-based learning journey in the future, and their intention to choose a mainstream teaching model after the epidemic was over.

2.8 Student motivation

Brophy (2004) defined motivation as a theoretical concept used to explain the initiation, direction, strength, and persistence of goal-directed behaviors. Gopalan et al. (2017) stated that motivation is a concept used to describe human behavior. Motivation can also be defined as the process of starting, directing, and maintaining goal-directed behavior. It can also be understood as directing individuals to take action to satisfy specific needs, fulfill certain expectations and achieve certain goals. According to the understanding of Cook & Artino (2016), motivation is the individual's path to their behavior. Harlen& Deakin (2003) stated that motivation for learning is a complex overarching concept that incorporates both internal factors within the learner himself and external environmental factors.

Many researchers have emphasized the importance of studying motivation. Gopalan et al. (2017) emphasized that motivation is closely related to the learning process. The complexity of future life requires students to have the ability and quality of lifelong learning, which means that the process of learning will never end and accompany the learner throughout his or her life, and unknown difficulties and challenges require motivation to encourage individuals to face and overcome them. This has led to the increased importance of the study of motivation for learning. According to the fourteen learner-centered principles of the American Psychological Association (1997), three were related to motivation. The first was that motivation is related to the learner's emotions, interests, goals, and habits. The second was that the learner's curiosity and creativity facilitate the generation of intrinsic motivation for learning. Third, motivation plays an important role in facilitating and guiding learners to continue their efforts and practices.

Because if it is a forced state, learners' willingness to put in effort may be low.

(Harlen& Deakin, 2003). Promoting motivation to learn is one of the main principles of effective education (Kim & Frick, 2011). Motivation can reveal the extent to which students expect to participate in learning activities, and it can also influence the direction, intensity, and persistence of learning. (Garavan et al., 2010) Harandi (2015) stated that learning motivation is an attitudinal variable. Students' motivation was usually divided into intrinsic and extrinsic motivation. When a student was motivated by intrinsic motivation, the student was strongly engaged in learning out of curiosity about something unique, personal interest, personal satisfaction, or personal goals.

Students' motivation levels reflected whether they were well engaged and contributed to the learning environment. Motivated students were spontaneously engaged in activities rather than expecting external rewards. (Harlen& Deakin, 2003). It was important to understand the motivation levels in online learning environments and processes, which were determined by the definition and role of motivation. The study of learner motivation is one of the realities of computer-based constructed learning environments. ChanLin (2009) emphasized the importance of understanding the level of student motivation in online learning environments. The motivation was a crucial factor in the educational process and directly affected the success and effectiveness of the student's learning process.

There were many effects of verifying learner motivation in traditional classrooms but few in online teaching environments (Lim & Kim, 2003). Kim and Frick (2011) emphasized that lack of motivation is one of the main reasons for online learning attrition. They developed a framework of factors influencing learner motivation for online learning and categorized them as internal factors, i.e., the course itself features can influence learning motivation. External factors are incredibly influential on learner motivation in the learning environment. Personal factors are the motivational influences caused by the learners themselves.

Hartnett (2016) mentioned the presence of individual isolation, and frustration with technology et al. in the online learning environment compared to face-to-face courses. Therefore, student motivation is considered a key factor for success in an online learning environment (Artino,2008). Wighting et al. (2008) showed that online students are more intrinsically motivated than on-campus students.

2.9 Related works

2.9.1 Related works in foreign

Muilenburg and Berge (2005) suggested that different learners' backgrounds and demographic characteristics may affect online learning outcomes. For example, there were significant differences in gender, education level, technical ability, and motivation. Their exploratory factor analysis study identified eight factors that hinder students' online learning: management, social interaction, and academic skills. They included gender, age, ethnicity, and motivation to learn.

Ashong and Commander (2012) conducted a quantitative study investigating the effects of race and gender on perceptions of online learning. The results showed

that women had more positive perceptions than men during online education. Both gender and race were found to influence students' perception of online learning independently.

Nadal and Jora (2021) investigated students' perceptions of online learning during the epidemic. They showed that students' gender was not significantly associated with online course completion and problems faced during online learning. This was different from the results of the above researchers.

Rodriguez et al. (2005)' results of a survey of 700 students showed that the level of student motivation was significantly associated with student satisfaction with online learning and was positively correlated with perceptions of online learning. The research by Albelbisi and Yusop (2019) showed that students who lack motivation in online learning might result in students will cause delays and even late submission of assignments, and quality is difficult to ensure.

The motivation was the student's acceptance of learning online due to COVID-19, which correlates with the influence and perception of student behavior. Due to the impact of the COVID-19 epidemic, many students were forced to switch from face-to-face to online education, and this contingency may affect students' online learning with limited IT capabilities (Aguilera-Hermida, 2020)

Almusharraf and Khahro (2020) found a significant relationship between student satisfaction and online learning. This association supports that if adequate facilities and methods were provided, students' adoption of 100% online education would improve and achieve course learning.

The positive influence of students' online learning experience on the perception of online learning was noted and supported by validation. And the perceptions include the usefulness and ease of use of the distance learning process for students. And their's results showed that students' perceived effectiveness and ease of using distance learning positively affect their willingness to use distance learning tools. (Cicha et al.,2021)

2.9.2 Related works in China

Yu (2021) analyzed the effect of students' gender, education level, and personality on online learning outcomes during COVID - 19, and the study found that education level and personality were influential.

Wang et al. (2020) practiced a study of Chinese medical students showing that gender was associated with students' online learning experiences during an epidemic.

Wang, Lin, and Su (2021) also pointed out that the higher the perceived usefulness of students using online learning during the pandemic, the more they will recognize it. In their's research, they also proposed that students' perceived usefulness of online learning platforms was associated with and supported by their intention to continue online learning. If one technology does not match the user's perception and does not meet the user's needs, the user will not keep adopting it. At the same time, they emphasized that from a technology and task perspective, students' intention to use online learning was higher when they had a good experience. Moreover, the sustained meaning was determined by the sense of the experience of actual use, i.e.,

whether it was satisfactory. So, the satisfaction generated by students after experiencing online instruction significantly impacts continued intention.

Based on previous related work, it can be obtained that previous research has primarily focused on the relevance of characteristics such as gender to online learning. Online learning in the epidemic context requires stronger, more vital management skills due to the lack of a formal campus teaching environment. The use of online devices requires students to have specific IT skills. Therefore, motivation and technical levels were added in this research to explore the relationship between more elements than gender and education on "Cloud study abroad" and formulated the following hypotheses.

H1: There was a significant difference between gender, education levels, IT skills, and motivation levels in the "Cloud study abroad" perception

H2: There was a significant difference between gender, education levels, IT skills, and motivation levels in the "Cloud study abroad" experience

H3: There was a significant difference between gender, education levels, IT skills, and motivation levels in the "Cloud study abroad" expectation

Given the definition of the "Cloud study abroad" experience in this research as a positive and negative experience for students, which also has some evaluative components, the researcher proposed: H4: "Cloud study abroad" perception and "Cloud study abroad" experience were positively related.

The "Cloud study abroad" expectation included the students' ongoing willingness to use online learning mode in the future, and the researcher proposed: H5: "Cloud study abroad" perception and "Cloud study abroad" expectation were positively related.

The "Cloud study abroad" expectation was the students' ongoing willingness to use online learning mode in the future, and the researcher proposed: H6: "Cloud study abroad" experience and "Cloud study abroad" expectation were positively related.

2.10 Significance of the research

Since 2006, Chinese overseas students have become a major group of international students in Thailand (Luo, 2016). Like many international students studying abroad, this particular group has encountered many problems (Nghiem et al., 2021). International students face various barriers when studying in a different cultural environment (Kang et al., 2019), with or without an epidemic. Furthermore, the occurrence of an epidemic has undoubtedly added new barriers.

Most research has focused on the online learning situation of students in the researcher's home country during the epidemic. Still, few have focused on a particular group of overseas students, especially in Thailand, where the specific circumstances of the repeated epidemics have led to the long-term local study of Chinese overseas students.

Nowadays, many universities are trying to help students return to school. For

example, many universities in the United Kingdom cooperate with airlines to provide student charter services. Still, not all students were willing to risk returning to school with the infection risk of the COVID-19 pandemic. For this reason, many schools maybe still need to provide multi-mode and distance online learning to ensure that students can have high-quality learning tasks.

Therefore, this research examined the perceptions, experiences, and expectations of “Cloud study abroad” among Chinese overseas students enrolled in Thai universities in the context of the epidemic across gender, educational levels, IT skill levels, and motivation levels and explored the relationships between these variables, which will help teachers in Thai universities gain a deeper understanding of online learning among Chinese overseas students during the pandemic.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter involved the research methodology, sample selection, questionnaire composition, data collection, and analysis method.

3.1 Research Design

This research used survey methods to collect data to examine Chinese overseas students studying abroad in the cloud during the epidemic. The research used sampling methods to determine the research sample and then distributed questionnaires, and respondents were asked to complete survey questionnaires to collect information and data from the respondents. The research used quantitative methods to explain the phenomenon by analyzing the numerical data collected through mathematical methods.

3.2 Population and Sample

3.2.1 Population in research

The target population was 14,423 Chinese overseas students accepted at Thai universities (2020 data) in this research. (Siriphon& Fanzura, 2022)

According to the web data on the number of international students published by the four universities. King Mongkut's Institute of Technology Ladkrabang had 307 overseas students (Top universities, 2022). Stamford international university had more than 1600 international students (Wiki Pedia, 2022; STIU official website, 2022). Southeast Asia University had 189 overseas students (SAU official website, 2022). Rajamangala University of Technology Phra Nakhon had 145 overseas students (RMUTP official website, 2022)

3.2.2 Sample selection

The sample for the research was selected through multi-stage sampling. First, four universities were determined using the cluster random sampling method. Second, different numbers of Chinese overseas students were selected by King Mongkut's Institute of Technology Ladkrabang, Stamford International University, Southeast Asia University, Rajamangala University of Technology Phra Nakhon using convenience sampling.

3.2.3 Sample size

A priori calculation was conducted regarding the research sample size using the G. Power program (3.1.9.4 version) (Buchner,2010, para.1). Based on the statistical test power ($1-\beta=0.95$), the significance level ($\alpha=0.05$), and the required effect size (Medium effect size=0.1), the result showed that the sample size should exceed 191, and I finally collected 302 samples.

3.3 Research instrument

3.3.1 Operation definition

1) Gender: Gender was associated with the participants' general agreement with the gender scale. Participants chose one of the two male and female options according to their situation.

2) Education levels: Education level was the level of education the participant was currently enrolled in. The participant chooses one of the Bachelor, Master, or Doctor degrees depending on their actual gender.

3) IT skills: IT skills' full name was information technology skills. Since online teaching and learning require permanent Internet access to computers or other mobile devices, students need to have a basic knowledge of computer operation, software applications, and Internet use. Participants self-rate themselves according to their actual situation and choose one of 3 levels: poor, medium, or advanced.

4) Motivation levels: Motivation to learn can drive students' behavioral performance. It was important to understand students' motivation levels in an independent online learning environment with long periods of teacher-student separation and student-student separation. Participants self-evaluate based on their actual situation and choose one of 4 levels: high, upper-medium, medium, or low.

5) "Cloud study abroad" perception in this research was the student's attitude towards participation, network and device accessibility in CSA, online technology application, classroom performance and assignment delivery, student-teacher interaction, teaching organization and implementation.

6) "Cloud study abroad" experience in this research was the student's positive and negative experiences of online teaching and learning while studying in the cloud.

7) "Cloud study abroad" expectation in this research was students' willingness to continue online courses, their intention to choose future teaching modes, etc.

PS： "Cloud study abroad " perception, "Cloud study abroad" experience, and "Cloud study abroad" expectation all have no components and were viewed as an integrated variable when measured.

3.3.2 Questionnaire formation

The questionnaire for this research (see additional file: Appendix A) contains four sections with 80 questions. Forty-nine items were adopted from previous research on online learning, and the researcher carefully selected these items. Some question items were modified and adjusted to fit the situation of this research better. I also added some items for more comprehensive data collection and better served the research context.

The first part contains demographic items and some basic information about participants' "Cloud study abroad," totaling 15 questions, of which 7 question items were adapted from (Demuyakor,2020; Gaytan&McEwen,2007; Abou-Khalil,2021; Wargadinata et al.,2020; Pal et al,2020; Heerwegh et.al.,2016; Agung et al.,2020; Brehm& Self,1989; Kew et.al,2018; Garn & Jolly, 2014).

The second was 36 questions on the perception of "Cloud study abroad." 26 of

the question items were adapted from (Akuratiya& Meddage, 2020; Aguilera, 2020; Miltiadou& Yu,2000; Hung et al., 2010; Dost et al., 2020; Demuyakor, 2020; Albelbisi&Yusop,2019).

The third part was the experience of "Cloud study abroad," with a total of 24 questions, 15 of which were adapted from the question items (Aguilera,2020; Dost et al.,2020; Cantrell et al.,2008; Baczek et al.,2021).

The fourth part was the expectation of "Cloud study aboard," with a total of 5 questions, 1 of which was adapted from (Blizak et al.,2020).

The instruments for each section were detailed in the following table 3.1

Table 3.1 Question types of questionnaire

No.	Items	Question types	Notes
1	Background of Participant	Close-ended questions	Single& Multiple choice
2	Cloud study aboard perception	5-point Likert scale	1 point (strongly disagree) to 5 points (strongly agree)
3	Cloud study aboard experience		
4	Cloud study aboard expectation		

3.3.3 Questionnaire measurement

1) Validity test

The questionnaire determined the content validity using the index of Item objective congruence (IOC). Five experts checked the questionnaire, two were from Thailand, and three were from China. All of them were university lecturers with teaching experience in educational research. They all have Ph.D. degrees, four of them were associate professors and above, and one was an online education director at his university (See Appendix B for the name list)

Expert judgment was a practical method to assess the validity of the content. The researcher invited the above five experts via official letters (See Appendix C), accompanied by my research title, operational definitions, evaluation scoring sheets, and a complete questionnaire document.

The experts were asked to evaluate the scale items to determine whether each item met the operation definition based on the Index of Objective Consistency (IOC) criteria, with scores ranging from -1 to +1.

+1 = The question is consistent with the operation definition

0 = Not sure that the question is consistent with the operation definition

-1 = The question is not consistent with the operation definition

The index of item-objective congruence (IOC) value for each item was the average score calculated by dividing the sum of each expert's scores by the number of experts.

The researcher conducted two IOC scoring. The first time with 62 items, 61 items had an average score of 1,1 items had an average score of 0.8, both over 0.5, which was acceptable. However, some experts suggested some optimizations, and

based on the experts' optimizations, I revised the wording of some items and added three new items. Therefore, I again sent the complete optimized questionnaire to five experts for evaluation, and they all agreed with the modified wording and rated the newly added items as 1. Finally, out of 65 items, 64 had an average score of 1, and 1 had an average score of 0.8, all of which were more than 0.5 and were acceptable. Therefore, 65 items can be applied to reality.

2) Reliability test

The reliability of the questionnaire was tested by Cronbach alpha (Cronbach,1951). George and Mallery (2003) summarized and indicated that Cronbach's Alpha Coefficient has five levels: ≥ 0.9 = Excellent, ≥ 0.8 = Good, ≥ 0.7 = Acceptable, ≥0.6 = Questionable, ≥0.5 = Poor, and ≤0.5 = Unacceptable. Therefore, to make the research questionnaire reliable, its Cronbach's Alpha Coefficient should be over 0.7.

Therefore, the researcher conducted a pilot study of the instrument in 30 samples to determine its reliability. According to the pilot test with the SPSSAU website (http://spssau.com/index.html), the reliability for these variables ranged from 0.77 to 0.97, as listed in Table 3.2. According to George and Mallery's (2010) grading of Cronbach's alpha coefficient, the first two variables over 0.9 imply excellently, and the third variable over 0.7 indicates acceptable, all of which were reliable.

Table 3.2 The Cronbach' α of variables in the pilot study(n=30)

No.	Items	No. of items	Cronbach'α
1	CSA perception	36	0.97
2	CSA experience	24	0.92
3	CSA expectation	5	0.77

3.4 Data Collection

Since the target population of this research was Chinese overseas students, The questionnaire was administered through China's Questionnaire Star website (https://www.wjx.cn/), which was a professional online questionnaire platform where users can share the questionnaire's exclusive QR code or link to social software named WeChat, and participants can scan the QR code or click on the link from their cell phones, or click on the link from their computers to access the questionnaire and answer the questions.

The questionnaires were officially distributed and collected between February and April 2022. And in these three months, the researcher mainly invited and reminded the participants by sending the link to the questionnaire in the WeChat group during these three months. The Chinese overseas students from these four universities voluntarily answered the questions by clicking the questionnaire link. The data collected from the website was then analyzed in the next step.

3.5 Statistical Analysis

Statistical analysis was performed using the SPSSAU platform (http://spssau.com/index.html), a web-based data science algorithm platform that enables the analysis and visualization of the data collected by the questionnaire. For details on the statistical analysis method of the questionnaire, see Table 3.3

Table 3.3 Analysis method of the Research

No.	Research questions	Statistical Analysis		
RQ1	What are the "Cloud study abroad" perception, experience and expectation of Chinese overseas students during the COVID-19 pandemic?	Descriptive analysis	Frequency Percentage Mean Standard Deviation	
		Hypothesis test	T-test	H1: Significant difference between gender on the CSA perception H2: Significant difference between gender on the CSA experience H3: Significant difference between gender on the CSA expectation
RQ2	What are the differences in "Cloud study abroad" perception, experience and expectation among 4 variables?		ANOVA	H1: Significant difference between education levels, IT skills, motivation levels on the CSA perception H2: Significant difference between education levels, IT skills, motivation levels on the CSA experience H3: Significant difference between education levels, IT skills, motivation levels on the CSA expectation
RQ3	What are the Influence relationships between "Cloud study abroad" perception, experience and expectation?		Multiple regression analysis	H4: CSA perception and CSA experience are positively related H5: CSA experience and CSA expectation are positively related H6: CSA perception and CSA expectation are positively related

CHAPTER 4

RESEARCH RESULTS

The purpose of this chapter was to provide an objective source of information for this research through a limited interpretation of the results of the data analysis. The chapter was divided into two main sections: the respondents' background and the analysis results of the three research questions (descriptive analysis results and hypothesis test results).

4.1 Background of respondents

Statistics on the respondents' backgrounds were presented using frequencies and percentages in descriptive analysis.

4.1.1 Demographic characteristics

Regarding gender, there were relatively more women among the respondents, with 58.28%. Nearly 90% of the students were between 20-40 years old in age composition. The provinces to which the Chinese overseas students belonged were relatively scattered, except for Hainan Province, Tibet Autonomous Region, and Hong Kong, Macao & Taiwan. All other provinces had Chinese overseas students, especially the five eastern provinces of China (Shandong Province, Jiangsu Province, Zhejiang Province, Anhui Province, and Shanghai) had the most students, with a total of 93 students. This was followed by Beijing, Tianjin, Hebei Province, Shanxi Province, and Inner Mongolia Autonomous Region in North China, with 58 students. Guangxi Province and Guangdong Province in South China totaled 49 people.

Respondents came from four universities in Bangkok, Thailand, with King Mongkut's Institute of Technology Ladkrabang accounting for 44.04%. There were 202 people from public universities and 100 from private universities. The composition of the education level has the highest percentage of master's students at 43.04%. Regarding the respondent's discipline, the main concentration was management and education.

Gender and education level were chosen as demographic variables.

Table 4.1 Demographic characteristics of respondents (n=302)

Characteristics		Number of respondents	Percentage (%)
Gender	Male	126	41.72
	Female	176	58.28
Age	Under 20 years old	13	4.30
	20-30 years old	157	51.99
	31-40 years old	108	35.76
	Over 40 years old	24	7.95

Table 4.1 (Continued)

Characteristics		Number of respondents	Percentage (%)
	Anhui	9	2.98
	Beijing	23	7.61
	Chongqing	2	0.66
	Fujian	4	1.33
	Gansu	4	1.33
	Guangdong	13	4.30
	Guangxi	36	11.92
	Guizhou	8	2.65
	Hebei	9	2.98
	Heilongjiang	11	3.64
	Henan	17	5.63
	Hubei	4	1.33
	Hunan	6	1.99
	Inner Mongolia	5	1.66
Province in China	Jiangsu	21	6.95
	Jiangxi	9	2.98
	Jilin	2	0.66
	Liaoning	2	0.66
	Ningxia	2	0.66
	Qinghai.	2	0.66
	Shaanxi	4	1.33
	Shandong	33	10.93
	Shanghai	8	2.65
	Shanxi	19	6.29
	Sichuan	11	3.64
	Tianjin	2	0.66
	Xinjiang	9	2.98
	Yunnan	9	2.98
	Zhejiang	18	5.96

Table 4.1 (Continued)

Characteristics		Number of respondents	Percentage (%)
University	King Mongkut's Institute of Technology Ladkrabang	133	44.04
	Rajamangala University of Technology Phra Nakhon	69	22.85
	Southeast Asia University	44	14.57
	Stamford International University	56	18.54
School types	Public	202	66.89
	Private	100	33.11
Education levels	Bachelor's degree	104	34.44
	Master's degree	130	43.04
	Doctor degree	68	22.52
	Philosophy	7	2.32
Professional discipline	Economics	50	16.56
	Education	97	32.12
	Science	10	3.31
	Engineering	3	0.99
	Medicine	1	0.33
	Management	123	40.73
	Art	1	0.33
	Others	10	3.31

4.1.2 Online learning situation

Regarding course learning, 78.81% of students took more than three courses for credit, as it has been nearly three years since the end of 2019. More than 60% of the students need to spend more than 10 hours in their weekly online course learning.

Table 4.2 Course learning situation(n=302)

Items	Options	Frequency	Percentage (%)
Number of Online Courses for University credit during the "Cloud study abroad" period	Less 1	9	2.98
	1-3	55	18.21
	Over 3	238	78.81
Number of hours you spend per week online with your online learning course	1-5	38	12.58
	6-10	80	26.49
	Over 10	184	60.93

As for devices and the internet, nearly half of the students use home computers, and no more than 5% of students use office computers, tablets, or smartphones, but close to 40% use all. Students' primary internet connection method during online learning was Wi-Fi, accounting for 65.23%.

Table 4.3 Device and internet usage(n=302)

Items	Options	Frequency	Percentage (%)
Access device to online courses	Home computer	144	47.68
	Office computer	14	4.64
	Tablet	14	4.64
	Smartphone	11	3.64
	All of them	119	39.40
Main type of internet connection	Wi-Fi	197	65.23
	4G or 5G	12	3.97
	Both of them	93	30.80

The most used online learning support software by Chinese overseas students while studying in the cloud was ZOOM at nearly 80%, and the second-highest usage was Microsoft Teams at 52.65%.

Table 4.4 Support software usage(n=302)

Items		Options	Frequency	Percentage (%)
Online learning support software	Cisco Webex meeting	Unchecked	248	82.12
		Checked	54	17.88
	Zoom	Unchecked	62	20.53
		Checked	240	79.47
	Google meet	Unchecked	271	89.74
		Checked	31	10.26
	Microsoft Teams	Unchecked	143	47.35
		Checked	159	52.65
	GoTo Meetings	Unchecked	301	99.67
		Checked	1	0.33
	Others	Unchecked	285	94.37
		Checked	17	5.63

Since the essence of studying in the cloud was online learning based on the Internet platform and information network technology, all teaching activities need to be completed through specific IT skills. Therefore, the researcher surveyed students' relevant IT skills before studying in the cloud. Through the survey, over 60% of students have mastered the following seven skills before "Cloud study abroad," and 30.79% of students have acquired other skills.

Table 4.5 IT Skills Mastery(n=302)

Items	Options	Options	Frequency	Percentage (%)
Information technology knowledge and skills	Computer operation and maintenance skills	Unchecked	105	34.77
		Checked	197	65.23
	Word processing skills	Unchecked	69	22.85
		Checked	233	77.15
	Spreadsheet skills	Unchecked	71	23.51
		Checked	231	76.49
	Database skills	Unchecked	227	75.17
		Checked	75	24.83
	Presentation software skills	Unchecked	80	26.49
		Checked	222	73.51
	Web browsing skills	Unchecked	87	28.81
		Checked	215	71.19
	Electronic communication skills	Unchecked	108	35.76
		Checked	194	64.24
	Other skills	Unchecked	209	69.21
		Checked	93	30.79

In this research, IT skills and motivation levels were explored as variables respondents self-described and assessed their level of IT skills and motivation to learn, using their peers as a reference.

IT skills were defined as operating a computer or other mobile device and software programs or applications. Poor indicated that beginners could perform basic computer operations such as keyboarding and mouse, Internet browsing, creating Offices, software downloads, et al. The percentage was 25.83%. Moderate indicated mastery of some keyboard shortcuts, advanced applications, processing of Office, independent operation of software or applications, et al. The percentage was over 70%. Advanced meant obtaining a vocational or professional level certificate or mastering Access language programming, database design, and above. The percentage was only

3.97%. See Figure 4.1 for details.

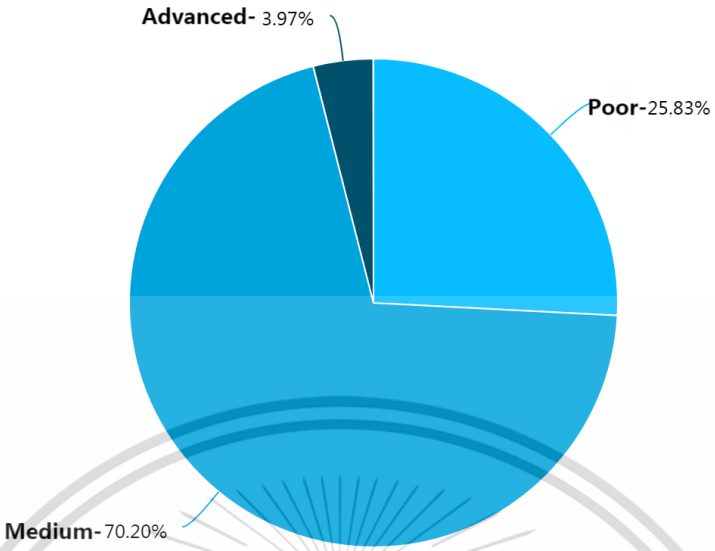


Fig 4.1 The Distribution of IT skills(n=302*)*

The motivation was the psychological state that motivates an individual to engage in learning activities, thus improving academic performance. The highest percentage of students with a high level of motivation (I feel happy learning) was 38.08%. The rates of students at the upper-medium level (I study because I am or want to be a good student) and medium level (I study because I need to go to college and graduate) were close to each other at 29.14% and 26.16%. For a total of 55.3%, or more than half. Low level (I study because I am under pressure, e.g., from mainstream society, career requirements, parents' demands, etc.) The percentage of those with the lowest level was only 6.62%.

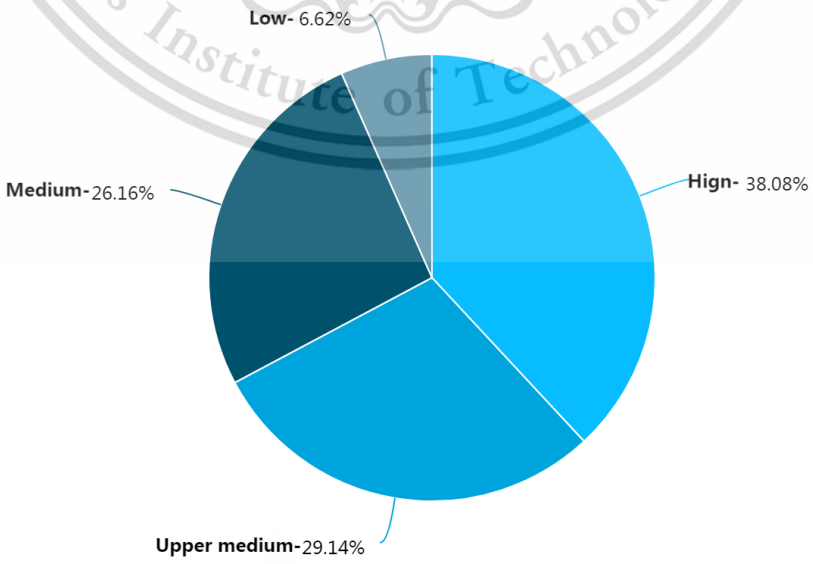


Fig 4.2 The Distribution of motivation level(n=302)

4.2 Descriptive analysis for Research question 1

Since the 5-Likert scale was used for "Cloud study abroad" perception, experience, and expectation, the Mean and Standard deviation of the descriptive analysis were used to answer the first question of this research.

RQ1. What is the "Cloud study abroad" perception, experience, and expectation of Chinese overseas students during the COVID-19 pandemic?

4.2.1 "Cloud study abroad" perception

The means of all four scales of "Student attitudes& participation" exceeded 4, with standard deviations ranging from 0.86 to 0.96, indicating that students' attitudes were enjoyable, and participation was positive.

Of the five items for "Internet& assignment delivery," the means for the two items, accessible foreign networks and technical support from a teacher or university, were below 4, and the standard deviation was more significant than 1.

Of the five items on "Internet& device delivery," the two items, accessible foreign networks and technical support from teachers or universities, had means of 3.311 and 3.921, with standard deviations greater than 1. However, the remaining items had means above 4.2 and standard deviations between 0.78 and 0.87.

Regarding "Online technology application," all scales had means above four and standard deviations above 0.86, indicating that students agreed with their descriptions of online technology application.

For "classroom performance& assignment delivery," the means for all five items exceeded 4.1, with standard deviations ranging from 0.78 to 0.92.

For "Communication and Interaction," the item means for using appropriate English for communication was 3.46, significantly lower than the other three items, with a standard deviation of 1.22, indicating that students had some difficulty with language use, and that language use varies considerably among students.

Regarding "teaching organization and implementation," all 11 items had a mean value above 4, with a standard deviation between 0.79 and 0.89, indicating that students approved of the teaching during the "Cloud Study Abroad" period. See Table 4.6 below for more details.

Table 4.6 Descriptive analysis of "Cloud study abroad" perception(n=302)

	Items	Mean	Standard deviation
Student attitude& participation	I am interested in the "Cloud study abroad" mode	4.10	0.94
	I enjoy the "Cloud study abroad" mode	4.11	0.96
	I can actively participate in the activities of "Cloud study abroad"	4.25	0.86
	I can work hard to complete the activities in "Cloud study abroad"	4.32	0.88
Internet& Device accessibility	I have a reliable digital device (e.g., Computer, tablet, mobile device etc.)	4.49	0.79
	I have a reliable internet service (e.g., Wired and wireless networks)	4.35	0.85
	I have an easy access to foreign internet	3.31	1.30
	I have a software/tool for online lectures (e.g., Zoom, Ciscowebex, Teams etc.) and I can apply it well	4.24	0.87
	I have a support for solving technical issues from teachers or universities	3.92	1.04
Online technology application	I have keyboarding skills to learning online	4.18	0.91
	I can easily open a browser and visit a specific link	4.04	0.99
	I can easily use keywords for web searches	4.12	0.92
	I can easily enter and exit the online meeting system	4.28	0.87
	I can easily post and read information from the online meeting system	4.19	0.90
	I can easily download or save web resources to disk	4.17	0.92
	I can easily upload or send files to a specific location (e.g., cloud drive, email, etc.)	4.25	0.89

Table 4.6 (Continued)

	Items	Mean	Standard deviation
Class performance& assignment delivery	I usually get to class on time	4.49	0.79
	I can stay focused when I study online	4.14	0.90
	I can manage time well during my "Cloud study abroad" period	4.26	0.83
	I can finish my assignment independently	4.37	0.84
	I can hand in my assignment on time	4.47	0.81
Communication& Interaction	I have a teacher-student contact group with my teachers and classmates where I can always exchange feelings, course-learning and academic content at anytime	4.27	0.86
	I can communicate with teachers and classmates in English properly	3.46	1.22
	I can use online tools (e.g., E-mail, Discussion boards in online meeting tools, WeChat etc.) to communicate with teachers and classmates	4.17	0.91
	I like to share my opinions and ideas in online discussions between teachers and classmates	4.01	0.98

Table 4.6 (Continued)

	Items	Mean	Standard deviation
Teaching organization& Implementation	My teachers' lecture is often stimulating and attracting	4.08	0.87
	My teachers are well prepared for each online teaching sessions	4.40	0.80
	My teachers are very friendly and patient with me	4.44	0.82
	My teachers are following the official curriculum and according to the official schedule	4.33	0.84
	My teachers actively give guidance (e.g., participation in lessons, assessment models, completion of assignments, or writing seminar) and all of them are tailored to the specific circumstances of "Cloud study abroad"	4.41	0.83
	My teacher uses easy-to-understand English language to help me understanding teaching content	4.26	0.86
	My teachers are making an effort to enable me to follow online learning more easily. For example, by highlighting the key elements of the lecture or highlighting the transition to new content	4.29	0.83
	My teachers verifies whether we have understood the teaching contents by seeking feedback or encouraging us to ask questions	4.28	0.82
	The activities and task that teachers organize and provide in online class or on assignments usually help me to better understand the teaching content	4.33	0.85
	I can receive timely feedback from my teachers	4.25	0.89
	My teachers are easy to reach through E-mail or other social ways during "Cloud study abroad" period	4.25	0.88

4.2.2 “Cloud study abroad” experience

Of the 11 items regarding negative experiences with “Cloud study abroad,” the mean values for “Being distracted during online classes,” “unfamiliar online technology,” and “unstable equipment and network, resulting in audio and video lag” were below 3. It indicated that students did not endorse these three descriptions. The remaining eight items had a mean value of 3 or higher. The standard deviation of “sudden plan and life changes” and “Stress balancing learning and life” was 0.97 and 0.96, while the standard deviation of the remaining items was over 1.2.

Among the 11 items of positive experiences, only the item “Fosters greater teacher-student interaction and communication” had a mean below 4. The standard deviations of all items ranged from 0.84 to 0.98. It indicated that students strongly endorsed these positive experiences. See Table 4.7 for details.

4.2.3 “Cloud study abroad” expectation

Regarding students' expectations of "Cloud Study Abroad," the mean of all four items exceeded 3.25. Students were optimistic about whether "Cloud Study Abroad" was worth promoting after COVID-19, with a mean of 4.19. The standard deviation of each item ranged from 1.01 to 1.32, which showed that students' views on the "Cloud study abroad (CSA" expectation vary relatively widely. See Table 4.8 for details.

Table 4.7 Descriptive analysis of "Cloud study abroad" experience(n=302)

	Items	Mean	Standard deviation
Negative experience	Sudden plan and life changes	3.52	0.97
	Stress balancing learning and life	3.75	0.96
	Concentration difficulties living at home	3.00	1.24
	Lack of Social Interaction with teachers and classmates	3.14	1.25
	Lack of Supporting academic Resources	3.12	1.28
	Being distracted during online Class	2.80	1.21
	Unfamiliar online technology	2.55	1.18
	VPN limits the transmission of teaching content	3.29	1.37
	Second Language skills barrier	3.33	1.21
	Some teaching content is not suitable for online display or cannot be fully displayed	3.08	1.21
	Unstable equipment and network, resulting in audio and video lag	2.97	1.26
	Long-term use of electronic devices for Internet classes causes physical and eye discomfort	3.16	1.28

Table 4.7 (Continued)

	Items	Mean	Standard deviation
Positive experience	Keeping lives and health safe	4.14	0.98
	Cost savings	4.26	0.93
	Increasing opportunities for special students (e.g., full time workers, family caregivers, disabled students and others who cannot easily leave the country for long periods of time.)	4.36	0.84
	Fresh and interesting format	4.13	0.92
	More individualized learning experiences	4.15	0.90
	Can access courses from any location (home, office, traveling, etc.)	4.23	0.86
	Cultivates greater student interaction and collaboration	4.02	0.94
	Fosters greater teacher-student communication	3.96	0.93
	Exercise and enhance application skills of network information technology	4.14	0.87
	Ability to record a online classroom meeting is convenient and helpful for students to review and recap	4.20	0.89
	Online classroom access to more multimedia resources	4.18	0.88
	Exercise and improve self-management and self-control	4.14	0.86

Table 4.8 Descriptive analysis of "Cloud study abroad" expectation(n=302)

Items	Mean	Standard deviation
If I continue to "Cloud study abroad", I think my learning effect would be better	3.96	1.01
After the epidemic is over, I hope to finish "Cloud study abroad" and return to campus as soon as possible	3.26	1.32
After the epidemic is over, I hope that when I return to campus, my teachers will use the extra time to make up for some content of "Cloud study abroad" period	3.27	1.20
I think the learning type post-COVID-19 is face-to-face	3.39	1.22
After the epidemic is over, I think "Cloud study abroad" is worth promoting	4.19	1.01

4.3 Hypothesis analysis for Research questions 2-3

In this research, six research hypotheses were developed by researcher. Research question 2 was answered by hypotheses 1-3, and research question 3 was answered by hypotheses 4-6.

4.3.1 Results of Research Question 2

RQ2. What are the differences in "Cloud study abroad" perception, experience, and expectation among genders, education levels, IT skills, and motivational levels?

H1-H3: There was a significant difference between gender, education level, IT skills, and motivation level in the "Cloud study abroad" perception, "Cloud study abroad" experience and "Cloud study abroad" expectation.

1) Gender on "Cloud study abroad" 3 variables

Regarding the correlation between gender and the "Cloud study abroad" perception, "Cloud study abroad" experience, and "Cloud study abroad" expectation, I used the independent samples t-test.

In Table 4.9, the six items of "Cloud study abroad" perception, negative and positive aspects of "Cloud study abroad" experience, and "Cloud study abroad" expectation did not show significant differences between the gender samples as $p>0.05$. Therefore, the gender variables did not differ in terms of perception, experience, and expectation of learning in the cloud, and the gender variable of hypotheses 1-3 was not valid.

Table 4.9 T-test results of gender on "Cloud study abroad" 3 variables

Items	Sub-Items	Gender (Mean ± SD)		*t*	*p*
		Male (*n*=126)	Female (*n*=176)		
CSA perception	Student attitude& participation	4.17±0.81	4.21±0.86	-0.36	0.72
	Internet& Devices accessibility	4.04±0.77	4.08±0.81	-0.47	0.64
	Online technology application	4.19±0.82	4.16±0.82	0.31	0.76
	Class performance& assignment delivery	4.37±0.71	4.32±0.79	0.55	0.58
	Communication& Interaction	3.98±0.82	3.98±0.85	-0.01	0.99
	Teaching organization& Implementation	4.34±0.68	4.28±0.78	0.71	0.48
CSA experience	Negative experience	3.09±0.96	3.18±0.92	-0.86	0.39
	Positive experience	4.16±0.76	4.16±0.79	0.05	0.96
CSA expectation		3.62±0.73	3.61±0.72	0.09	0.93

* $p<0.05$ ** $p<0.01$

2) Education level on "Cloud study abroad" 3 variables

ANOVA was used to explore the differences between the education level of respondents who were currently enrolled and the "Cloud study abroad" perception, "Cloud study abroad" experience, and "Cloud study abroad" abroad" expectation.

(1) In the "Cloud study abroad" perception, there were significant differences in "student attitudes& participation" by education level at the 0.01 level (F=4.68, p=0.01). Moreover, the different education levels showed significant differences in "online technology application" at the 0.01 level (F=9.76, p=0.00). Significant differences at the 0.01 level (F=5.59, p=0.00) were also presented for "Teaching organization& Implementation." Different education levels on "Internet& Devices accessibility" showed a 0.05 level of significance (F=4.51, p=0.01).

The group means score results for all four items above were more significant for master than Bachelor's degree and Doctorate than Bachelor's. The remaining two items did not differ significantly (p>0.05).

(2) In the "Cloud study abroad" experience. Education level showed a 0.05 level of significance (F=3.50, p=0.03) for CSA experience-positive experience.

(3) Education level did not significantly differ in "Cloud study abroad" expectation.

Table 4.10 ANOVA results of education level on "Cloud study abroad" 3 variables

Items	Sub-Items	Education level (Mean ± SD)			*F*	*p*
		Bachelor's degree (*n*=104)	Master's degree (*n*=130)	Doctor degree (*n*=68)		
CSA perception	Student attitude& participation	4.00±0.99	4.26±0.77	4.37±0.65	4.68	0.01**
	Internet& Devices accessibility	3.87±0.94	4.16±0.71	4.16±0.63	4.51	0.01*
	Online technology application	3.90±0.94	4.29±0.71	4.38±0.68	9.76	0.00**
	Class performance& assignment delivery	4.22±0.97	4.38±0.65	4.46±0.50	2.48	0.09
	Communication& Interaction	3.83±0.97	4.04±0.78	4.07±0.68	2.43	0.09
	Teaching organization& Implementation	4.11±0.89	4.41±0.63	4.39±0.62	5.59	0.00**
CSA experience	Negative experience	3.21±0.94	3.08±0.96	3.17±0.89	0.60	0.55
	Positive experience	4.00±0.91	4.22±0.72	4.29±0.61	3.50	0.03*
CSA expectation		3.59±0.85	3.56±0.66	3.76±0.59	1.86	0.16

* $p<0.05$ ** $p<0.01$

If a significant result was given, ANOVA can only indicate that at least one group was different from the other groups. A post-doc test was usually performed after the ANOVA to analyze the difference between means. the least significant difference (LSD) test developed by Fisher was usually used when the ANOVA result was significant to calculate the least significant difference between two means. (Williams& Abdi,2010)

According to the ANOVA in Table 4.10, it was found that the samples with different education levels showed significant differences in Student attitude& participation, Internet& Devices accessibility, Online technology application, Teaching organization& Implementation in “Cloud study abroad” perception, and Positive experience in “Cloud study abroad” experience all showed significant differences and using the LSD method, I can conclude that education level for “Student attitude& participation” in “Cloud study abroad” perception showed a 0.01 level of significance (F=4.68, p=0.01), with a more significant difference between the group means. The education level for “Internet& Devices accessibility” showed a 0.05 level of significance (F=4.51, p=0.01). Education level showed a 0.01 value for “Online technology application” (F=9.76, p=0.00). The education level for “Teaching organization& Implementation” showed a 0.01 level of significance (F=5.59, p=0.00). The comparison results of group mean scores with significant differences in the above four items were Master>Bachelor and Doctor>Bachelor.

Education level for Positive experience in “Cloud study abroad” experience showed a 0.05 level of significance (F=3.50, p=0.03), and the comparison results of group mean scores with significant differences were Master>Bachelor and Doctor>Bachelor. See figure 3 and table 4.11

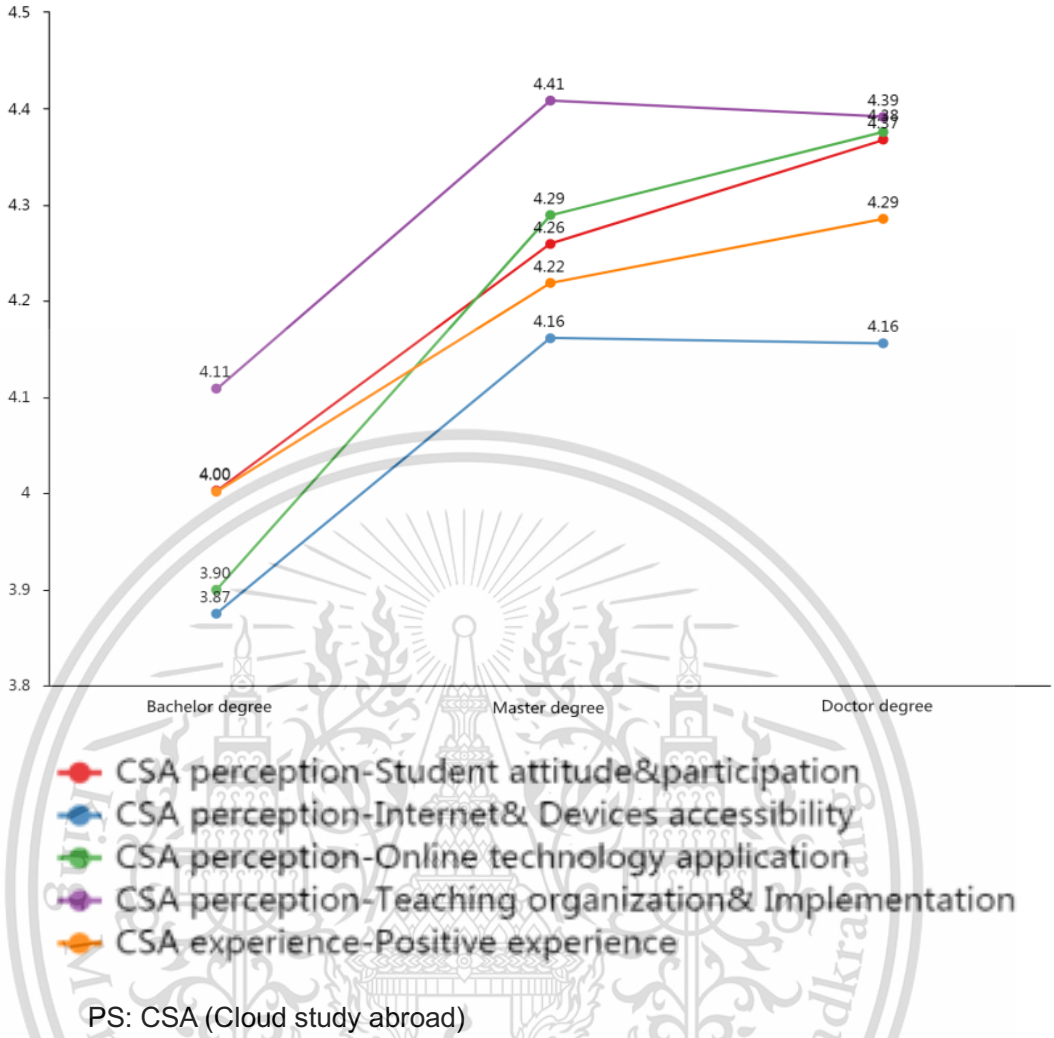


Fig 4.3 Post-hoc multiple comparison line chart of education level

Table 4.11 Post hoc multiple comparison results of education level

Items	Sub-Items	Name (I)	Name (J)	Mean (I)	Mean (J)	Difference value (I-J)	*p*
CSA perception	Student attitude& participation	Bachelor	Master	4.00	4.26	-0.26	0.02*
		Bachelor	Doctor	4.00	4.37	-0.37	0.01**
		Master	Doctor	4.26	4.37	-0.11	0.39
	Internet& Devices accessibility	Bachelor	Master	3.88	4.16	-0.29	0.01**
		Bachelor	Doctor	3.88	4.16	-0.28	0.021*
		Master	Doctor	4.16	4.16	0.01	0.96

Table 4.11 (Continued)

Items	Sub-Items	Name (I)	Name (J)	Mean (I)	Mean (J)	Difference value (I-J)	*p*
CSA experience	Online technology application	Bachelor	Master	3.90	4.29	-0.39	0.00**
		Bachelor	Doctor	3.90	4.38	-0.48	0.00**
		Master	Doctor	4.29	4.38	-0.09	0.47
	Teaching organization& Implementation	Bachelor	Master	4.11	4.41	-0.30	0.00**
		Bachelor	Doctor	4.11	4.39	-0.28	0.01*
		Master	Doctor	4.41	4.39	0.02	0.88
	Positive experience	Bachelor	Master	4.00	4.22	-0.22	0.03*
		Bachelor	Doctor	4.00	4.29	-0.28	0.02*
		Master	Doctor	4.22	4.29	-0.07	0.56

* $p<0.05$ ** $p<0.01$

3) IT skills on "Cloud study abroad" 3 variables

ANOVA was continued to use for the variability between respondents' different levels of IT skill and "Cloud study abroad" perception, "Cloud study abroad" experience, and "Cloud study abroad" expectation.

(1) Respondents' different levels of IT skill showed significant differences ($p<0.01$) for all six items of "Cloud study abroad" perception.

(2) In the "Cloud study abroad" experience. IT skills showed a 0.05 level of significance ($F=3.85$, $p=0.02$) for the negative experience and a 0.01 level of significance ($F=8.17$, $p=0.00$) for the positive experience.

(3) IT skills showed a 0.05 level of significance ($F=3.15$, $p=0.04$) for the "Cloud study abroad" expectation.

Therefore, hypothesis 3 was supported.

Table 4.12 ANOVA results of IT skills on "Cloud study abroad" 3 variables

Items	Sub-Items	IT skills (Mean ± SD)			*F*	*p*
		Poor (*n*=78)	Medium (*n*=212)	Advanced (*n*=12)		
CSA perception	Student attitude& participation	3.91±0.99	4.28±0.76	4.54±0.65	6.74	0.00**
	Internet& Devices accessibility	3.69±0.89	4.18±0.71	4.38±0.61	13.09	0.00**
	Online technology application	3.77±0.92	4.29±0.74	4.76±0.41	16.07	0.00**

Table 4.12 (Continued)

Items	Sub-Items	IT skills (Mean ± SD)			*F*	*p*
		Poor (*n*=78)	Medium (*n*=212)	Advanced (*n*=12)		
	Class performance& assignment delivery	3.97±0.91	4.47±0.66	4.62±0.39	14.54	0.00**
	Communication& Interaction	3.50±0.94	4.14±0.73	4.15±0.72	19.12	0.00**
	Teaching organization& Implementation	3.94±0.90	4.43±0.63	4.43±0.54	13.90	0.00**
CSA experience	Negative experience	3.39±0.87	3.07±0.92	2.89±1.31	3.85	0.02*
	Positive experience	3.89±0.93	4.23±0.70	4.60±0.36	8.17	0.00**
CSA expectation		3.54±0.76	3.61±0.69	4.10±0.83	3.15	0.04*

* $p<0.05$ ** $p<0.01$

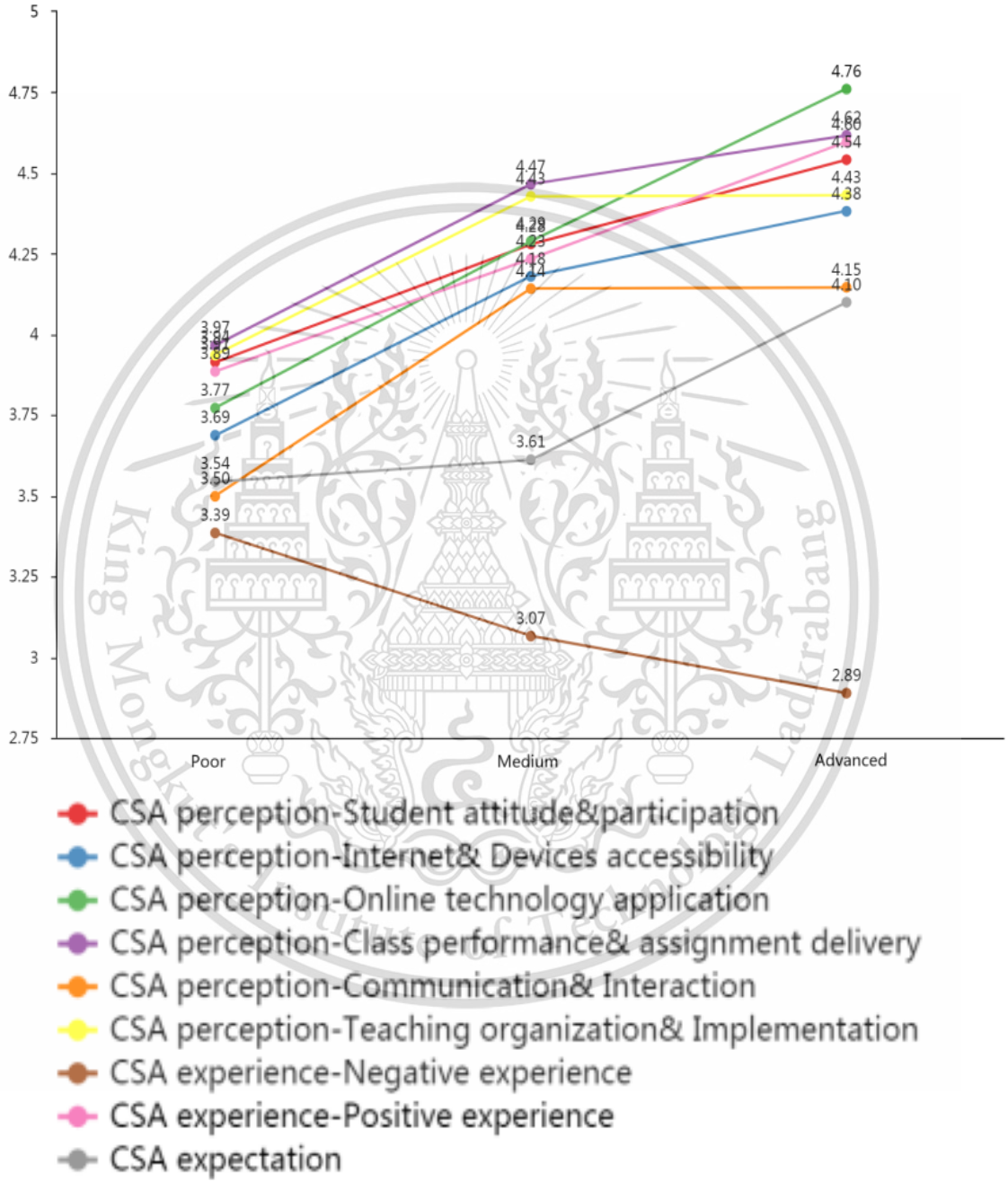
The above ANOVA found that the samples with different IT skills showed significant differences in the perception, experience, and expectation of "Cloud study abroad." And the same LSD method was used to obtain that IT skills showed a 0.01 level of significance (F=6.74, p=0.00) for "Student attitude& participation," and the mean scores of the groups with more significant differences were "Medium>Poor, Advanced>Poor."

For "Internet& Devices accessibility," a 0.01 level of significance was observed (F=13.09, p=0.00), and the mean scores of the groups with more significant differences were "Medium>Poor, Advanced>Poor." For "Online technology application" showed a 0.01 level of significance (F=16.07, p=0.00,0), and the comparison of group mean scores with more significant differences was "Medium>Poor, Advanced>Poor, Advanced>Medium." For "Class performance& assignment delivery" showed a 0.01 level of significance (F=14.54, p=0.00), the comparison of group mean scores with more significant differences were "Medium>Poor, Advanced>Poor." For "Communication& Interaction" showed a 0.01 level of significance (F=19.12, p=0.00), and the comparison results of group mean scores with more significant differences were "Medium>Poor, Advanced>Poor." For "Teaching organization& Implementation" showed a 0.01 level of significance (F=13.90, p=0.000), the comparison of group mean scores with more significant differences were "Medium>Poor, Advanced>Poor."

IT skills for "Cloud study abroad" experience-Negative experience showed a 0.05 level of significance (F=3.85, p=0.02), and the comparison of group mean scores with more significant differences was "Poor>Medium." Positive experience showed a

0.01 level of significance (F=8.17, p=0.00), and the comparison of group mean scores with more significant differences was “Medium>Poor, Advanced>Poor.”

IT skills showed a 0.05 level of significance for the “Cloud study abroad” expectation (F=3.15, p=0.04), and the comparison of group mean scores with more significant differences were “Advanced>Poor, Advanced>Medium.”



PS: CSA (Cloud study abroad)

Fig 4.4 Post-hoc multiple comparison line chart of IT skills

Table 4.13 Post-hoc multiple comparison results of IT skil*ls*

Items	Sub-Items	Name (I)	Name (J)	Mean (I)	Mean (J)	Difference value (I-J)	*p*
CSA perception	Student attitude& participation	Poor	Medium	3.91	4.28	-0.37	0.00**
		Poor	Advance	3.91	4.54	-0.63	0.01*
		Medium	Advance	4.28	4.54	-0.26	0.28
	Internet& Devices accessibility	Poor	Medium	3.69	4.18	-0.49	0.00**
		Poor	Advance	3.69	4.38	-0.70	0.00**
		Medium	Advance	4.18	4.38	-0.20	0.37
	Online technology application	Poor	Medium	3.77	4.29	-0.52	0.00**
		Poor	Advance	3.77	4.76	-0.99	0.00**
		Medium	Advance	4.29	4.76	-0.47	0.04*
	Class performance& assignment	Poor	Medium	3.97	4.47	-0.50	0.00**
		Poor	Advance	3.97	4.62	-0.65	0.00**
		Medium	Advance	4.47	4.62	-0.15	0.48
	Communication& Interaction	Poor	Medium	3.50	4.14	-0.64	0.00**
		Poor	Advance	3.50	4.15	-0.65	0.01**
		Medium	Advance	4.14	4.15	0.00	0.99
	Teaching organization& Implementation	Poor	Medium	3.94	4.43	-0.49	0.00**
		Poor	Advance	3.94	4.43	-0.50	0.025*
		Medium	Advance	4.43	4.43	0.00	0.99
CSA experience	Negative experience	Poor	Medium	3.39	3.07	0.32	0.01**
		Poor	Advance	3.39	2.89	0.50	0.09
		Medium	Advance	3.07	2.89	0.18	0.52
	Positive experience	Poor	Medium	3.89	4.24	-0.35	0.00**
		Poor	Advance	3.89	4.60	-0.71	0.00**
		Medium	Advance	4.24	4.60	-0.36	0.11
CSA expectation		Poor	Medium	3.54	3.61	-0.07	0.48
		Poor	Advance	3.54	4.10	-0.56	0.01*
		Medium	Advance	3.61	4.10	-0.49	0.02*

* $p<0.05$ ** $p<0.01$

4) Motivation level on "Cloud study abroad" 3 variables

The ANOVA verified that there was no significant difference in the experience and expectation of "Cloud study abroad" among students with different motivation levels, and there was also no significant difference in "student attitudes& participation" of "Cloud study abroad" perception (p>0.05).

However, there were differences shown in 5 items of "Internet& device accessibility, online technology application, classroom performance& assignment delivery, communication and interaction, and teaching organization and delivery" in the "Cloud study abroad" perception (P<0.05). Among them, "Internet and device accessibility" showed significant differences at the 0.01 level (F=6.53, p=0.00).

Table 4.14 ANOVA results of motivation level on "Cloud study abroad" 3 variables

Items	Sub-Items	Motivation level (Mean ± SD)				*F*	*p*
		High (*n*=115)	Upper medium (*n*=88)	Medium (*n*=79)	Low (*n*=20)		
CSA perception	Student attitude& participation	4.33±0.95	4.19±0.76	4.05±0.75	4.06±0.79	1.94	0.12
	Internet& Devices accessibility	4.26±0.90	4.09±0.56	3.79±0.74	3.85±0.88	6.53	0.00**
	Online technology application	4.31±0.94	4.28±0.59	3.88±0.77	4.06±0.80	5.43	0.00**
	Class performance& assignment delivery	4.42±0.91	4.43±0.60	4.13±0.67	4.37±0.53	2.97	0.03*
	Communication& Interaction	4.25±0.90	4.07±0.73	3.54±0.63	3.73±0.90	13.82	0.00**
	Teaching organization& Implementation	4.41±0.91	4.47±0.53	4.00±0.56	4.15±0.68	7.60	0.00**
CSA experience	Negative experience	3.06±1.07	3.24±0.93	3.14±0.72	3.22±0.88	0.68	0.57
	Positive experience	4.23±0.93	4.24±0.65	4.01±0.66	3.95±0.64	2.10	0.10
CSA expectation		3.66±0.86	3.65±0.72	3.50±0.45	3.66±0.71	0.95	0.42

* $p<0.05$ ** $p<0.01$

The above ANOVA found that different levels of learning motivation showed significant differences in "Cloud study abroad" perception of "Internet& Devices accessibility, Online technology application, Class performance& assignment delivery, Communication& Interaction, Teaching organization& Implementation. And using the LSD method, I could obtain that the learning motivation level for Internet& Devices accessibility showed a 0.01 level of significance (F=6.53, p=0.000), and the mean

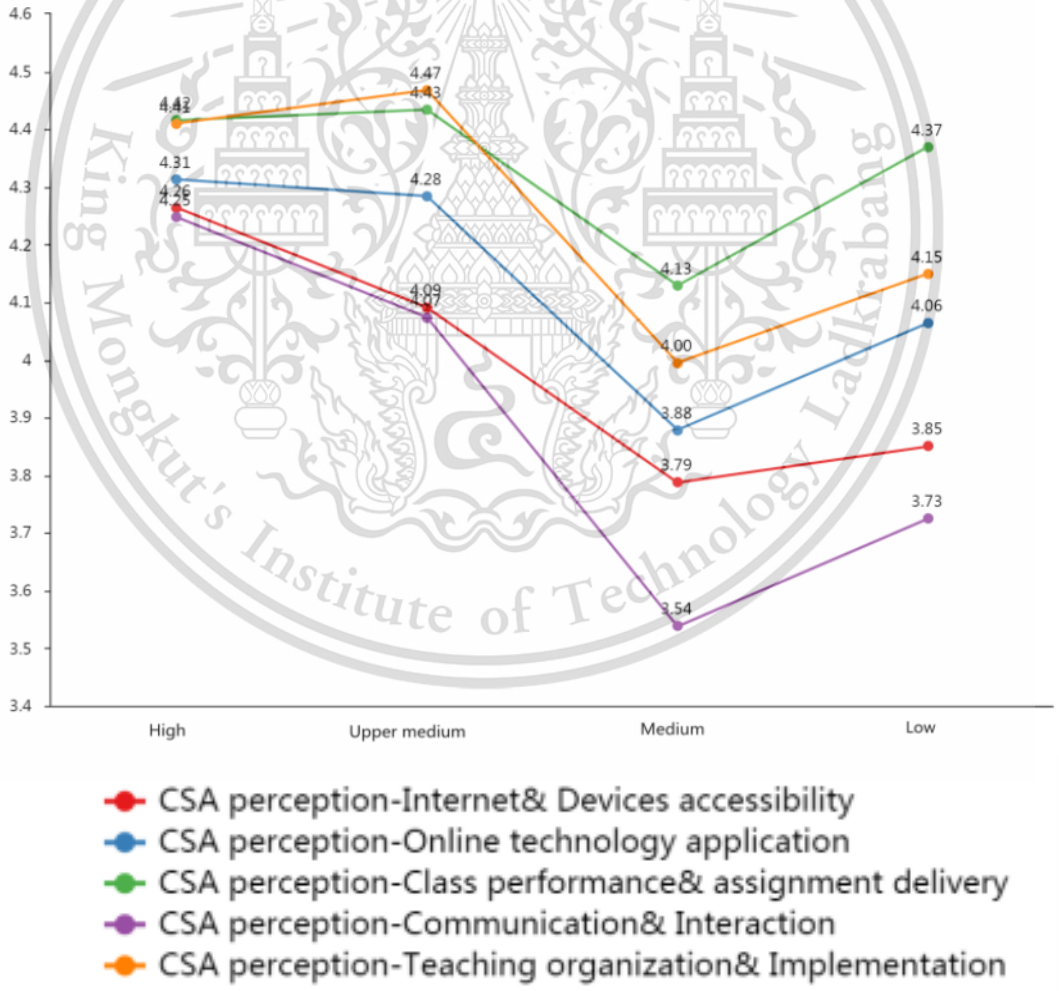
scores of the groups with more significant differences were “High>Medium; High>Low; Upper medium>Medium.”

For “Online technology application,” a 0.01 level of significance (F=5.43, p=0.00) was observed, and the mean scores of the groups with more significant differences were “High>Medium; Upper medium>Medium.”

For “Class performance& assignment delivery,” a 0.05 level of significance was observed (F=2.97, p=0.03), and the mean scores of the groups with more significant differences were “High>Medium; Upper medium>Medium.”

For “Communication& Interaction,” there was a 0.01 level of significance (F=13.82, p=0.00), and the mean scores of the groups with more significant differences were “High>Medium; High>Low; Upper medium>Medium.”

For “Teaching organization & Implementation,” a 0.01 level of significance (F=7.60, p=0.00) was observed, and the comparison of group means with more significant differences was “High>Medium; Upper medium>Medium.” See figure 4.5 and table 4.15



PS: CSA (Cloud study abroad)

Fig 4.5 Post-hoc multiple comparison line chart of motivation level

Table 4.15 Post-hoc multiple comparison results of motivation level

Items	Sub-Items	Name (I)	Name (J)	Mean (I)	Mean (J)	Difference value (I-J)	*p*
CSA perception	Internet& Devices accessibility	High	Upper	4.26	4.09	0.17	0.11
		High	Medium	4.26	3.79	0.48	0.00**
		High	Low	4.26	3.85	0.41	0.027*
		Upper	Medium	4.09	3.79	0.30	0.012*
		Upper	Low	4.09	3.85	0.24	0.21
		Medium	Low	3.79	3.85	-0.06	0.75
	Online technology application	High	Upper	4.31	4.28	0.03	0.80
		High	Medium	4.31	3.88	0.43	0.00**
		High	Low	4.31	4.06	0.25	0.20
		Upper	Medium	4.28	3.88	0.41	0.00**
		Upper	Low	4.28	4.06	0.22	0.27
		Medium	Low	3.88	4.06	-0.19	0.36
	Class performance& assignment delivery	High	Upper	4.42	4.43	-0.02	0.86
		High	Medium	4.42	4.13	0.29	0.01**
		High	Low	4.42	4.37	0.05	0.80
		Upper	Medium	4.43	4.13	0.31	0.01**
		Upper	Low	4.43	4.37	0.06	0.73
		Medium	Low	4.13	4.37	-0.24	0.20
	Communication& Interaction	High	Upper	4.25	4.07	0.17	0.12
		High	Medium	4.25	3.54	0.71	0.00**
		High	Low	4.25	3.73	0.52	0.01**
		Upper	Medium	4.07	3.54	0.54	0.00**
		Upper	Low	4.07	3.73	0.35	0.08
		Medium	Low	3.54	3.73	-0.19	0.34
	Teaching organization& Implementation	High	Upper	4.41	4.47	-0.06	0.57
		High	Medium	4.41	4.00	0.42	0.00**
		High	Low	4.41	4.15	0.26	0.13
		Upper	Medium	4.47	4.00	0.47	0.00**
		Upper	Low	4.47	4.15	0.32	0.07
		Medium	Low	4.00	4.15	-0.16	0.39

* $p<0.05$ ** $p<0.01$

5) Summary of hypothesis 1-3

The summary results of hypotheses 1 to 3 based on the t-test and ANOVA methods were detailed in Table 4.16.

Table 4.16 Summary of hypothesis 1-3

Hypothesis	IV		DV	Result	Supported?
H1: There is a significant correlation between gender, education level, IT skills, and motivation level on the "Cloud study abroad" perception	Gender	CSA perception	Student attitude& participation	No significant difference	No
			Internet& Devices accessibility		
			Online technology application		
			Class performance& assignment delivery		
			Communication& Interaction		
			Teaching organization& Implementation		
		CSA experience	Negative experience	No significant difference	No
H2: There is a significant correlation between gender, education level, IT skills, and motivation level on the "Cloud study abroad" experience			Positive experience		
		CSA expectation		No significant difference	No
H3: There is a significant correlation between gender, education level, IT skills, and motivation level on the "Cloud study abroad" expectation	Educational level	CSA perception	Student attitude& participation	Significant difference	Yes
			Internet& Devices accessibility	Significant difference	Yes
			Online technology application	Significant difference	Yes
			Class performance& assignment delivery	No significant difference	No
			Communication& Interaction	No significant difference	No
			Teaching organization& Implementation	Significant difference	Yes
		CSA experience	Negative experience	No significant difference	No
			Positive experience	Significant difference	Yes
		CSA expectation		No significant difference	No

Table 4.16 (Continued)

Hypothesis	IV		DV	Result	Supported?
	IT skill	CSA perception	Student attitude& participation	Significant difference	Yes
			Internet& Devices accessibility		Yes
			Online technology application		Yes
			Class performance& assignment delivery		Yes
			Communication& Interaction		Yes
			Teaching organization& Implementation		Yes
		CSA experience	Negative experience Positive experience	Significant difference	Yes
		CSA expectation		Significant difference	Yes
	Motivation level	CSA perception	Student attitude& participation	No significant difference	No
			Internet& Devices accessibility	Significant difference	Yes
			Online technology application	Significant difference	Yes
			Class performance& assignment delivery	Significant difference	Yes
			Communication& Interaction	Significant difference	Yes
			Teaching organization& Implementation	Significant difference	Yes
		CSA experience	Negative experience Positive experience	No significant difference	No
		CSA expectation		No significant difference	No

4.3.2 Results of Research Question 3

RQ3. What is the Influence relationship between “Cloud study abroad” perception, experience, and expectation?

This research has multiple independent variables, so the researcher used multiple regression analysis to explore the Influence relationship between the “Cloud study abroad” perception, “Cloud study abroad” experience, and “Cloud study abroad” expectation.

Before the multiple regression analysis, I conducted a correlation analysis for the “Cloud study abroad” perception, “Cloud study abroad” experience, and “Cloud study abroad” expectation, using Pearson’s coefficient to indicate the strength of the correlation. The correlation coefficient took values in the range of [-1, 1]. The sign of the correlation coefficient indicates the direction of the relationship, with “-1” indicating a completely negative linear relationship, “0” indicating no relationship, and “+1” indicating an entirely positive linear relationship. The strength of the correlation can then be observed by how close it was to “-1” or “+1”. According to the general criterion (Cohen, 2013), $|r| > 0.1$ indicated small correlation, $|r| > 0.3$ indicated medium correlation, $|r| > 0.5$ indicated a large correlation, but this criterion usually varies by different subjects.

As the results of the correlation analysis in Table 4.17, the correlation coefficient values between the six items of “Cloud study abroad” perception and “Cloud study abroad” experience were 0.34-0.49. All of them showed significance at the 0.01 level. Thus, there was a significant positive correlation between the “Cloud study abroad” perception and “Cloud study abroad” experience.

The correlation coefficients between the six items of “Cloud study abroad” perception and “Cloud study abroad” expectation was 0.27-0.41. All of them showed a 0.01 level of significance, thus indicating that there was also a significant positive correlation between “Cloud study abroad” perception and “Cloud study abroad” expectation.

The correlation coefficients of negative experience and positive experience of “Cloud study abroad” experience and “Cloud study abroad” expectation were 0.57 and 0.37. Both showed a 0.01 level of significance, thus indicating that there was also a significant positive correlation between the “Cloud study abroad” experience and “Cloud study abroad” expectation.

Table 4.17 Results of correlation analysis of the three variables (Pearson coefficient)

Variables		Mean	SD	CSA perception						CSA experience			CSA expectation
				Student attitude& participation	Internet& Devices accessibility	Online technology application	Class performance& assignment delivery	Communication & Interaction	Teaching organization& Implementation		Negative experience	Positive experience	
CSA perception	Student attitude & participation	4.20	0.84	1									
	Internet& Devices accessibility	4.06	0.79	0.78**	1								
	Online technology application	4.18	0.82	0.74**	0.89**	1							
	Class performance& assignment delivery	4.34	0.75	0.74**	0.68**	0.71**	1						
	Communication& Interaction	3.98	0.84	0.65**	0.75**	0.71**	0.79**	1					
	Teaching organization & Implementation	4.30	0.74	0.67**	0.72**	0.71**	0.76**	0.79**	1				
CSA experience		3.65	0.63	**0.34****	**0.42****	**0.49****	**0.48****	**0.44****	**0.39****	1			
	Negative experience	3.14	0.94	-0.12*	-0.05	0.06	0.03	-0.01	-0.02	0.79**	1		
	Positive experience	4.16	0.77	0.71**	0.74**	0.73**	0.74**	0.72**	0.67**	0.67**	0.08	1	
CSA expectation		3.61	0.72	**0.27****	**0.34****	**0.38****	**0.39****	**0.36****	**0.41****	0.65**	**0.57****	**0.37****	1

** $p<0.05$ ** $p<0.01$*

1) H4: "Cloud study abroad" perception and "Cloud study abroad" experience is positively related.

Summarizing the analysis, in "Cloud study abroad" perception, "online technology application" (B=0.36, t=4.07, p=0.00<0.01), "Class performance& assignment delivery" (B=0.28, t= 3.46, p=0.00<0.01) had a significant positive effect relationship on "Cloud study abroad" experience. Because their p-values were less than 0.01 and their B-values were greater than 0.

"Student attitude& participation" had a significant negative effect relationship on "Cloud study abroad" (B=-0.15, t=-2.16, p=0.03< 0.05).

However, "Internet& Devices accessibility" (B=-0.07, t=-0.72, p=0.47>0.05), Communication& Interaction (B=0.06, t=0.88, p=0.38>0.05), Teaching organization& Implementation (B=-0.06, t=-0.73, p=0.47>0.05) did not have an influential relationship on CSA experience. See table 4.18 and figure 4.6 for details.

Table 4.18 Results of multiple regression analysis for H4 (n=302)

Items	Sub-items	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*
		B	Std. Error	*Beta*		
CSA perception	(Constant)	1.82	0.20	-	9.25	0.00**
	Student attitude& participation	-0.15	0.07	-0.19	-2.16	0.03*
	Internet& Devices accessibility	-0.07	0.10	-0.09	-0.72	0.47
	Online technology application	0.36	0.09	0.47	4.07	0.00**
	Class performance& assignment delivery	0.28	0.08	0.34	3.46	0.00**
	Communication& Interaction	0.06	0.07	0.09	0.88	0.38
	Teaching organization& Implementation	-0.06	0.08	-0.07	-0.73	0.47

DV: CSA experience
D-W value: 1.79
* p<0.05 ** p<0.01

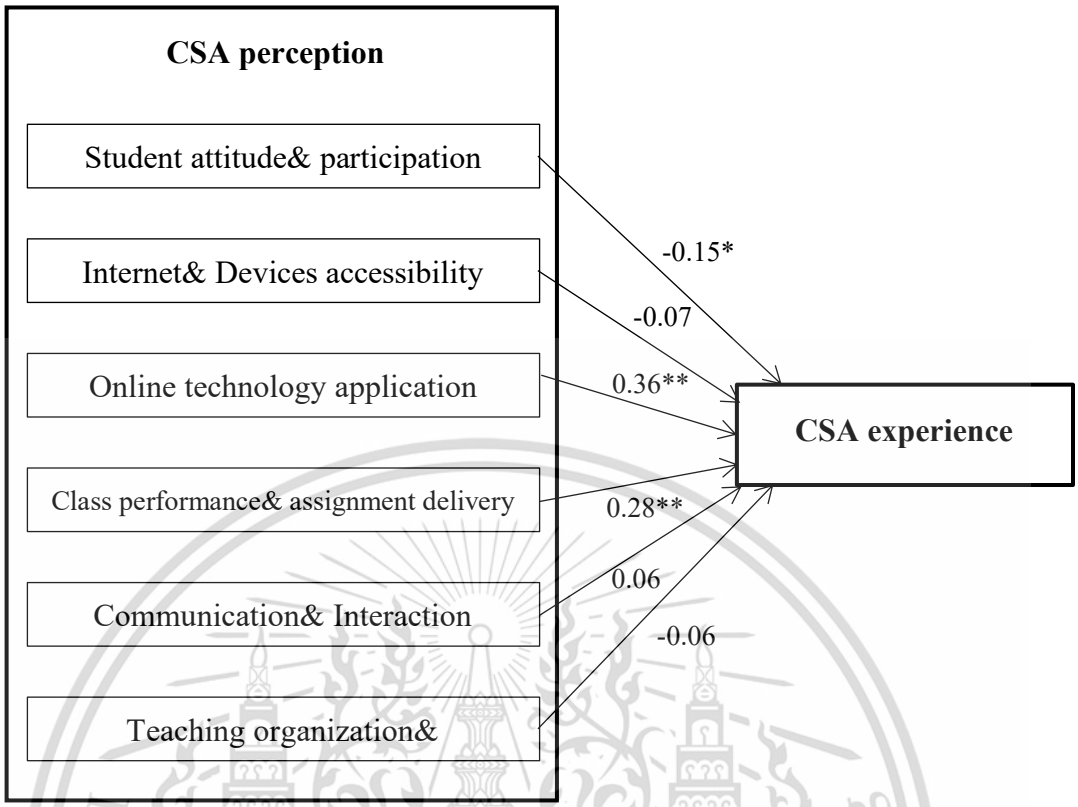


Fig 4.6 Model results of multiple regression analysis for H4

2) H5: "Cloud study abroad" perception and "Cloud study abroad" expectation is positively related.

In the results of the multiple regression analysis in Table 4.19, it can be concluded that only "Student Attitude& participation" (B=-0.16, t=-2.00, p=0.047<0.05) had a negative and significant effect on "Cloud study abroad" expectation.

"Online technology application" (B=0.25, t=2.34, p=0.02<0.05), "Classroom performance& assignment delivery" (B=0.20, t=1.97, p=0.050<0.05), and "Teaching organization& Implementation" (B=0.23, t=2.53, p=0.01<0.05) all had significant positive correlations on "Cloud study abroad" expectation.

However, "Internet& device accessibility" (B=-0.07, t=-0.56, p=0.57>0.05), "Communication& interaction" (B=-0.01, t=-0.06, p=0.95>0.05) had no effect relationship on "Cloud study abroad" expectation.

Table 4.19 Results of multiple regression analysis for H5 (n=302)

Items	Sub-items	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*
		B	Std. Error	*Beta*		
CSA perception	(Constant)	1.71	0.24	-	7.14	0.00**
	Student attitude& participation	-0.16	0.08	-0.19	-2.00	0.05*
	Internet& Devices accessibility	-0.07	0.12	-0.08	-0.56	0.57
	Online technology application	0.25	0.11	0.29	2.34	0.02*
	Class performance& assignment delivery	0.20	0.10	0.21	1.97	0.05*
	Communication& Interaction	-0.01	0.09	-0.01	-0.06	0.95
	Teaching organization& Implementation	0.23	0.09	0.24	2.53	0.01*

DV: CSA expectation
D-W value: 1.87
* $p<0.05$ ** $p<0.01$

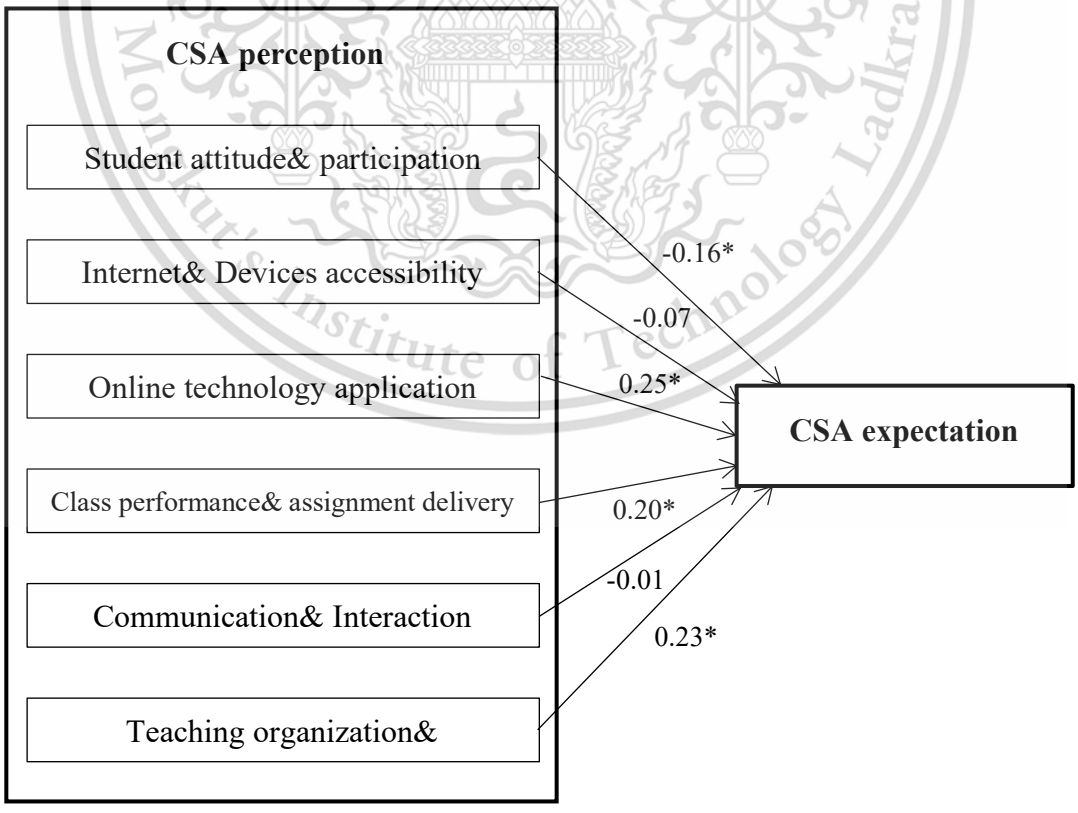


Fig 4.7 Model results of multiple regression analysis for H5

3) H6: "Cloud study abroad" experience and "Cloud study abroad" expectation is positively related.

Both "Negative experience" (B=0.42, t=12.32, p=0.00<0.01) and "Positive experience" (B=0.31, t=7.54, p=0.00<0.01) of "Cloud study abroad" experience all had a significant positive influence relationship on "Cloud study abroad " expectation.

Table 4.20 Results of multiple regression analysis for H6 (n=302)

Items	Sub-items	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*
		B	Std. Error	*Beta*		
CSA experience	(Constant)	1.03	0.20	-	5.23	0.00**
	Negative experience	0.42	0.03	0.54	12.32	0.00**
	Positive experience	0.31	0.04	0.33	7.54	0.00**

DV: CSA expectation
D-W value: 1.95
* p<0.05 ** p<0.01

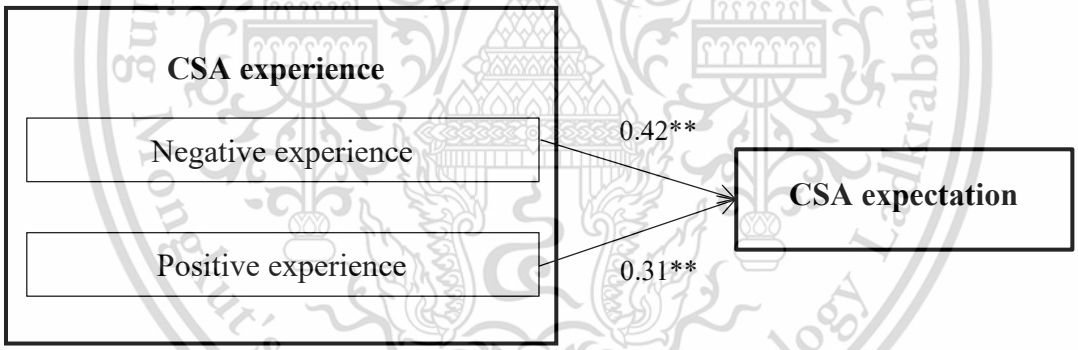


Fig 4.8 Model results of multiple regression analysis for H6

4) Summary of hypothesis 4-6

The summary results of hypotheses 4 to 6 based on the multiple regression analysis methods were detailed in Table 4.21.

Table 4.21 Summary of hypothesis 4-6

Hypothesis	IV		DV	Result	Supported?
H4: “Cloud study abroad” perception and “Cloud study abroad” experience is positively related	CSA perception	Student attitude& participation	CSA experience	Negative	No
		Internet& Devices accessibility		None	No
		Online technology application		Positive	Yes
		Class performance& assignment delivery		Positive	Yes
		Communication& Interaction		None	No
		Teaching organization& Implementation		None	No
H5: “Cloud study abroad” perception and “Cloud study abroad” expectation is positively related	CSA perception	Student attitude& participation	CSA expectation	Negative	No
		Internet& Devices accessibility		None	No
		Online technology application		Positive	Yes
		Class performance& assignment delivery		Positive	Yes
		Communication& Interaction		None	No
		Teaching organization& Implementation		Positive	Yes
H6: “Cloud study abroad” experience and “Cloud study abroad” expectation is positively related	CSA experience	Negative experience	CSA expectation	Positive	Yes
		Positive experience		Positive	Yes

CHAPTER 5

RESEARCH CONCLUSIONS

This chapter aims to provide an objective source of information for this research through a limited interpretation of the data analysis result. This chapter is divided into three parts: discussion, limitation, and recommendations for practice and academic research.

5.1 Discussion

This research aimed to understand the perception, experience, and expectation of Chinese overseas students in Thai universities about "Cloud study abroad" and to explore the relationship between the perception, experience, and expectation. With this aim in mind, I proposed three research questions.

First is the perception, experience, and expectation of "Cloud study abroad." Since the COVID-19 outbreak, most students have completed more than three online courses and spent more than 10 hours per week studying. More students logged into ZOOM Meetings for their systems from their home computers. Their primary internet connection was Wi-Fi, as Chinese families typically purchase an annual Wi-Fi service.

The research results showed that students' perception performance of "Cloud study abroad" was good. However, this differs from the negative cognitive results of Blizak et al. (2020). However, this was in line with Akuratiya and Meddage (2020). However, there were some problems regarding an accessible foreign network, university technical support, and language use for student and teacher communication. The different regulations of network management in other countries lead to students not being able to open some foreign network resources shared by their teachers. It differed from the network accessibility mentioned by Agung, Surtikanti, and Quinones (2020), whose accessibility refers to rural areas with low Internet coverage.

Regarding technical support, as students have less prior experience with online learning, they inevitably encounter technical operational problems that require help from universities and teachers when facing the IT-based online learning process. Naidu (2020) mentions that the fundamental barrier to online learning is the lack of necessary technological infrastructure, which, if poor or inadequate, may lead to unpleasant experiences for teachers and students. In the research of Song et al. (2004), they similarly mentioned the technology problem. However, in Almusharraf and Khahro's (2020) research, their students were satisfied with the provision and follow-up of the school's platform. The same results were obtained in the study of Puljak et al. (2020), where more than half of the students were satisfied with the information, tools, and training provided by the school about online learning and the services offered by the IT office. Regarding teacher-student language communication, language barriers exist in non-native learning environments, even when learning

offline.

Regarding the "Cloud study abroad" experience, students endorsed the descriptions of positive experiences such as financial cost savings, safer approach, convenience, and promotion of student engagement, which was in line with Hussein et al.'s (2020) research. For the negative aspects, a few students had distractions in online classes and were unfamiliarity with online technology. It was in line with the results of Maqableh and Alia (2021). Their research also had a few students who experienced distractions and technology problems. In the research of Puljak et al. (2020), most students had enough IT skills, net, and equipment conditions to participate in online learning independently. Nevertheless, in this research, most students did not share negative experiences with lag due to network instability due to faster 5G networks already covering many areas of China. It differed from the results of Hussein et al. (2020), as their subjects mentioned network problems.

Students were more optimistic about their "Cloud study abroad" expectations, both in terms of future learning outcomes and about the future of "Cloud study abroad," and they believe that "Cloud study abroad" is worth promoting even after the end of the epidemic. This was consistent with Wang, Lin, and Su's (2021) view that online learning created unique opportunities for teachers and students in their epidemic. Puljak et al's (2020) results similarly showed that most students believe that e-learning should continue and be able to complement classroom learning after COVID-19 is over. However, this differed from the results of Unger and Meiran (2020) and Henaku (2020). Most of their participants disapproved of learning away from school and even wanted this online learning to be suspended. The findings of Almomani et al. (2021) were also negative.

The second was the variability in the perception, experience, and expectation of "Cloud study abroad" among students of different genders, education levels, IT skill levels, and motivation levels. I hypothesized that there were significant differences.

In this research, there were no differences in the perception, experience, and expectation of "Cloud study abroad" by gender, which was contrary to my hypothesis in this section and different from Muilenburg and Berge's (2005) findings, but the same as Blizak (2020), Nandal and Jora's (2021), who also concluded that students' gender is not significantly associated with online learning.

Most aspects of students' perceptions of "Cloud study abroad" (student attitudes& participation, online technology application, classroom performance & assignment delivery, and teaching organization & implementation) differed across educational levels. There was no difference in students' negative experiences with "Cloud study abroad," but there was a difference in positive experiences. The higher the education level of students, the longer the learning experience and the different basis for judging the learning process. There was also no significant difference regarding the expectations of "Cloud study abroad," which supported the hypothesis I proposed for that section. Students of all levels have the same expectations for the authentic experience of studying abroad. However, this differed from the results of Yu

(2021) because graduate students outperformed undergraduate students in his research on online learning. It was also different from the findings of Blizak (2020), where first-year master's students were significantly different from first-year undergraduates in their study because the master's students were about to graduate.

Regarding students' IT skills, the perceptions, experiences, and expectations of "Cloud study abroad" all showed significant differences because the foundation of online learning is based on information technology and having good IT skills directly affects the activities of the entire online learning process. It supported the research hypothesis in that section.

Finally, students' motivation levels differ in their perception (except for student attitudes & participation). Still, they did not show significant differences in their experience and expectation of "Cloud study abroad," which partially supported my hypothesis in this section. In contrast, Rodriguez et al. (2005) showed that both IT skills and motivation levels were related to the perception and experience of online learning.

The third was the relationship between the perception, experience, and expectation of "Cloud study abroad," which I hypothesize were all positively related.

However, the results on the relationship between perception and experience of "Cloud study abroad" were partially supported (online technology application, classroom performance & assignment delivery). "The relationship between perception and expectation results was partially supported (three of the six items: online technology applications, classroom performance & assignment delivery, and teaching organization & implementation). It was consistent with the findings of Almusharraf & Khahro (2020) and Wang, Lin, and Su (2021), where the usefulness of online technology was positively associated with online learning. Notably, in both sets of relationships, "student attitudes & participation" in the perception of "Cloud study abroad" were negatively related to the experience and expectation of "cloud study abroad." I did not find the same results in the previous literature, which may be related to the form and group specificity of "cloud study abroad." In the descriptive analysis, I obtained that the attitudes and participation of the sample students were good, which stemmed from student motivation. They were interested in and liked this form because "cloud study abroad" is a new product that stimulates students' state of mind to investigate new things (curiosity), which is one of the intrinsic motivations of individual learning. The motivation of students to actively and diligently complete their learning activities also stems from their motivation (e.g., the pleasure and sense of accomplishment that comes from learning, the requirement to graduate, etc.), which means that students will strive to complete their learning assignments regardless of whether their learning activities were online or offline, cross-border or local because graduation is the end of their journey. However, it cannot be denied that participation in "Cloud study abroad" happens passively. The deprivation of real experience on campus is unavoidable because no matter how active and hard you are, it cannot change the current status of "Cloud study abroad" because the epidemic decides it. This is also mentioned in the research by (Pena-Shaff, Altman &

Stephenson, 2005), where some of the problems of online learning were attributed to the passivity of students. So, although students were active and trying hard, it did not mean that their experience would be better and more expected. This point should continue to be mined and verified in future studies through interviews. Only the experience and expectation of "cloud study abroad" were positively correlated, consistent with my hypothesis. It was also consistent with Wang, Lin, and Su's (2021) finding that the higher the student's experience, the greater their continued intention.

5.2 Limitations

This research had several limitations. First was the sample size. The population of this research was Chinese overseas students studying in Thai universities, and the sample was homogeneous. Given the impact of the epidemic and time constraints, the sample size was collected from only four universities, which was not large enough to adequately represent the opinions of the whole group to represent the opinions of entire group adequately. In addition, the proportion of gender, education level, et al. in the sample differed from the proportion of the whole group and may be biased.

The second was the basis of the research. Since this research topic arose in the context of the COVID-19 burst, there were few large-scale and long-term online learning before then, so there were fewer related studies, and most of them focused on the online learning of national students. In contrast, this research focuses on a minority group like overseas students (as opposed to home students) and Chinese overseas students attending Thai universities. There were even fewer studies related to them.

The third was self-reported data. This research used an online survey, and the questions involved some personal information of the participants and contained some evaluation components about themselves and their universities. The data reported by the participants may be biased.

The fourth was the research method. Using only one questionnaire survey to understand the “Cloud study abroad” situation of Chinese overseas students may affect the reliability of the results. In addition, since this research used a closed-ended questionnaire, it was challenging to include all the options, and the breadth and depth of the questions were limited, making it difficult to understand individual and specific situations. For example, “student attitudes& participation” in “Cloud study abroad” were negatively correlated with the experience and expectations of “Cloud study abroad.”

The fifth is the target population. The research only had students but no teachers, but teachers’ perceptions, experiences, and expectations of “Cloud study abroad” were also valuable.

5.3 Recommendations

5.3.1 Recommendations for future practice

In the context of the epidemic, the participants of "Cloud Study abroad" teachers and students have no previous experience to refer to. The epidemic has continued for nearly three years, and the situation in various places is still unstable. We cannot predict how long such online learning will last. Therefore, providing perfect online teaching and learning service mechanism is essential.

The first was the service mechanism of the school. First, schools should provide technical support, such as advice on selecting meeting software and even buying better meeting software services. For example, Google Meet can provide a free service for schools, and Teams can gather the Office tools commonly used by teachers. However, ZOOM can only be used for free within 40 minutes, which requires schools to purchase collective services for teachers to protect their teaching. The facilities offer a high Internet speed teaching environment and a good computer for the teacher. If the teacher does not have a good home office, the school can open up the computer room to provide the teacher with a computer and online teaching environment. Secondly, the school should give financial support to the teacher by raising the cost of classroom hours and encouraging the teacher to take the initiative to adapt and try new methods. As teachers were faced with a sudden shift to large-scale online teaching, they need to learn the relevant skills, revise their lesson plans, and adapt their teaching programs to suit online teaching in a short period. The third was to provide training support for teachers by offering more lectures on online teaching experience and organizing more teaching seminars to inspire each other. Teachers should also learn how to incorporate educational technology tools into their classrooms and create videos, lesson plans, and interactive materials that fit the "cloud-based study abroad" model by actively learning skills from teacher learning sites such as Tech & Learning Professional development Hub, PBS Learning Media, and OER Commons Professional Learning and Teacher Training. The fourth was to play the role of the school's IT office. Provide online technical consultation and problem-solving for teachers and students at any time. Only when teachers have good teaching conditions and environment can students enjoy a better learning experience.

The second was the service mechanism from the teachers. It is mainly reflected in the course teaching process. First, for students unfamiliar with online technology and in need of technical support， teachers should provide students with necessary technical support and guidance, such as helping students to solve the problems of using new conference software or being able to introduce the main functions of conference software to students, such as how to use the ZOOM discussion forum and how to add the "raise your hand" sign, to promote students' effective use of software functions and enhance the interactive effect. Second, the problem of difficult access to global network resources is addressed. On the one hand, teachers can prepare the more available number of resources in advance or take the initiative to find the same type of resources in students' countries; on the other hand,

select a few students to test first to ensure whether students can access these resources to ensure good classroom results. The third problem was language communication and interaction between teachers and students, which teachers can solve by slowing down the speed of speech and using simpler words and phrases. Students should also be actively encouraged to speak more and practice more. For example, the teacher can try to organize some simple English mini games, such as Call My Bluff, Guess who, Describe your drawing, et al.) to help students overcome the language barrier. Also, the teacher can use the real-time captioning function of the conference software, such as ZOOM, which can detect the language of the participants and display the captions in real-time, which can also avoid problems such as the teacher's dialects speaking and the students' poor listening skills. Fourth, in confronting students' distraction problems, we should focus on motivating students to learn. Good motivation can push students to continue learning in a single learning environment. Online learning course design is different from face-to-face teaching. The design of online learning courses should consider time, content, and student needs, as students are easily distracted during online learning. Teachers can try to create classroom content by introducing questions to stimulate students' desire to learn. Alternatively, motivate them with gamified rewards like Kahoot, Quizlet, Gimkit, et al. Teachers should provide students with recorded videos of course content on time after class. In addition to the recordings that come with the conference software, tools such as Loom, Panopto, and QuickTime can be used to record to help students review, as overseas students have varying language skills.

5.3.2 Recommendations for future research

Expanding the scope and number of the sample is a priority in future research. It can be done either by increasing the number of Chinese overseas students or by expanding the nationality of international students to study the “Cloud study abroad” situation of overseas students from different countries. Secondly, future research can focus on qualitative research, such as interviews, focus groups, and other methods to investigate, explore, and analyze specific issues. Third, future research could examine teachers’ perception of the “Cloud study abroad” process, as both students and teachers were essential aspects of teaching and learning activities.

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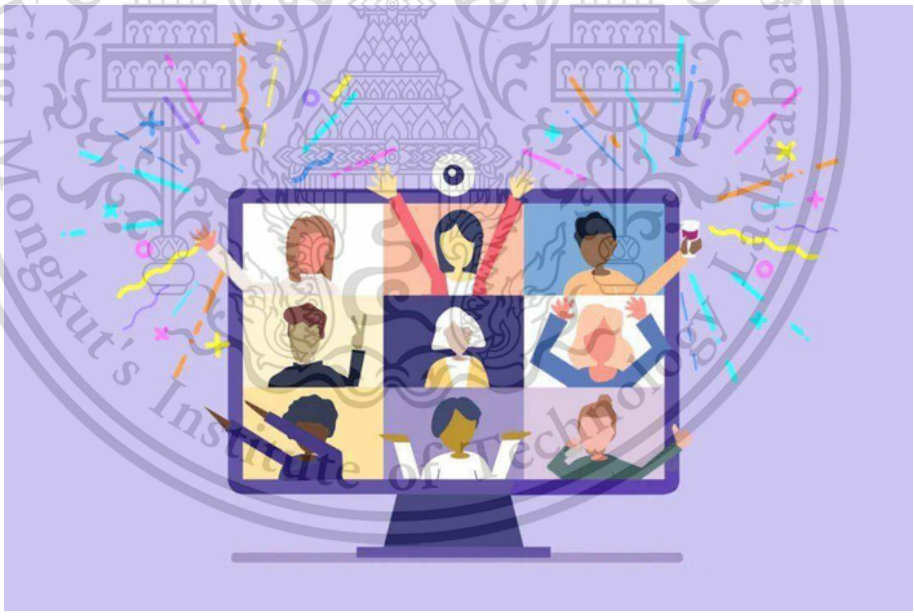
Appendix A

"Cloud Study abroad" for Chinese Overseas Students during the COVID-19 Pandemic questionnaire

Dear Students,

As we all know, the COVID-19 pandemic blocked our path to studying abroad. We had to start studying abroad on the clouds. This questionnaire aims to learn about "Cloud study abroad" during this special time and to understand students' perceptions, experiences, and expectations of "Cloud study abroad" for better improvement and implementation. I hope you will take a few minutes to complete the following questions. Please read it carefully and fill it out according to your actual situation. This questionnaire will not reveal any personal information about you. Thank you very much for your cooperation!



I. Background of participate

1. What is your gender? [] *

○Male

○Female

2. What is your age? [] *

○Under 20 years old

○20-30 years old

○31-40 years old

○Over 40 years old

3. Which province do you currently live in in China? (Options are sorted by first letter A-Z) [] *

○Anhui	○Hebei	○Jilin	○Sichuan
○Beijing	○Heilongjiang	○Liaoning	○Taiwan
○Chongqing	○Henan	○Macao	○Tianjin
○Fujian	○Hong Kong	○Ningxia	○Xinjiang
○Gansu	○Hubei	○Qinghai	○Xizang
○Guangdong	○Hunan	○Shaanxi	○Yunnan
○Guangxi	○Inner Mongolia	○Shandong	○Zhejiang
○Guizhou	○Jiangsu	○Shanghai	
○Hainan	○Jiangxi	○Shanxi	

4. What is the university you are currently studying at? (Please fill in the normalized English full name) [] *

_____

5. What is your school type？ [] *

○Public

○Private

○Not sure

6. What is the education level you are currently enrolled in? [] *

○Bachelor’s degree

○Master’s degree

○Doctor degree

7. What is your professional discipline? [] *

○Philosophy

○Economics

○Law

○Education

○Literature

○History

○Science

○Engineering

○Agriculture

○Medicine

○Management

○Art

○Others

8. Number of Online Courses you are taking for university credit during your "Cloud study abroad" period? [] *

○Less 1

○1-3

○Over 3

9. Number of hours you spend per week online with your online learning course? [] *

○1-5

○6-10

○Over 10

10. Access device to online courses? [] *

○Home computer

○Office computer

○Tablet

○Smartphone

○All of them

11. Main type of internet connection? [] *

○Wi-Fi

○4G or 5G

○Both of them

12. What online learning support software did you use during online learning? (Multiple choice) [] *

□Cisco Webex meeting

□Zoom

□Google meet

□Microsoft Teams

□GoTo Meetings

□Others

13. What information technology knowledge and skills did you have before “Cloud study abroad”? [] *

□Computer operation and maintenance skills

□Word processing skills

□Spreadsheet skills

□Database skills

□Presentation software skills

□Web browsing skills

□Electronic communication skills

□Other skills

14. IT skills are the operation of computers or other mobile devices and the use of software programs and applications. How would you describe your IT skills compared with your peers? [] *

○Poor -Beginner can do the basic operation of the computer such as keyboard and mouse, Internet browsing, creating office, software downloads, etc.

○Medium-Mastered some keyboard shortcuts, advanced applications and processing of Office, independent operation of software or applications, etc.

○Advanced-Obtained a vocational or professional level certificate, or Access language programming, database design and above

15. Learning motivation is a psychological state of mind that inspires individuals to engage in learning activities and drives learning performance. How would you rate your learning motivation level compared to your peers? [] *

○High-I feel happy to study

○Upper Medium -I study because I am or I want to be a good student

○Medium-I study because I need to go to university and graduate

○Low-I study because I am pressured to do so. e.g., mainstream society, career requirements, parental demands, etc.

II. "Cloud study abroad" perception

Please check the following statements regarding your real situation on "Cloud study abroad" perception.

Student attitude& Participation

16. I am interested in the "Cloud study abroad" mode [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

17. I enjoy the "Cloud study abroad" mode [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

18. I can actively participate in the activities of "Cloud study abroad" [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

19. I can work hard to complete the activities in "Cloud study abroad" [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Internet& Devices accessibility

20. I have a reliable digital device (e.g., Computer, tablet, mobile device, etc.) [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

21. I have a reliable internet service (e.g., wired and wireless networks) [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

22. I have an easy access to foreign internet [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

23. I have a software/tool for online lectures (e.g., Zoom, Ciscowebex, Teams, etc.), and I can apply it well [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

24. I have support for solving technical issues from teachers or universities [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Online technology application

25. I have keyboarding skills for learning online [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

26. I can easily open a browser and visit a specific link [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

27. I can easily use keywords for web searches [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

28. I can easily enter and exit the online meeting system [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

29. I can easily post and read information from the online meeting system [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

30. I can easily download or save web resources to disk [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

31. I can easily upload or send files to a specific location (e.g., cloud drive, email, etc.) [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Class performance& assignment delivery

32. I usually get to class on time [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

33. I can stay focused when I study online [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

34. I can manage time well during my “Cloud study abroad ” period [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

35. I can finish my assignment independently [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

36. I can hand in my assignment on time [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Communication& Interaction

37. I have a teacher-student contact group with my teachers and classmates where I can always exchange feelings, course-learning, and academic content at any time [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

38. I can communicate with teachers and classmates in English properly [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

39. I can use online tools (e.g., E-mail, Discussion boards in online meeting tools, WeChat, etc.) to communicate with teachers and classmates [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

40. I like to share my opinions and ideas in online discussions between teachers and classmates [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Teaching organization& Implementation

41. My teachers’ lecture is often stimulating and attracting [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

42. My teachers are well prepared for each online teaching session [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

43. My teachers are very friendly and patient with me [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

44. My teachers are following the official curriculum and according to the official schedule [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

45. My teachers actively give guidance (e.g., participation in lessons, assessment models, completion of assignments, or writing seminars), and all of them are tailored to the specific circumstances of "Cloud study abroad" [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

46. My teacher uses easy-to-understand English language to help me understand teaching content [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

47. My teachers are making an effort to enable me to follow online learning more easily. For example, by highlighting the key elements of the lecture or highlighting the transition to new content [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

48. My teachers verify whether we have understood the teaching contents by seeking feedback or encouraging us to ask questions [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

49. The activities and tasks that teachers organize and provide in online classes or on assignments usually help me to better understand the teaching content [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

50. I can receive timely feedback from my teachers [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

51. My teachers are easy to reach through E-mail or other social ways during the "Cloud study abroad" period [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

III. "Cloud study abroad" experience

Please check the following statements regarding your real situation on the "Cloud study abroad" experience.

Negative experience

52. Sudden plan and life changes [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

53. Stress balancing learning and life [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

54. Concentration difficulties living at home [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

55. Lack of Social Interaction with teachers and classmates [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

56. Lack of Supporting academic Resources [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

57. Being distracted during online Class [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

58. Unfamiliar online technology [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

59. VPN limits the transmission of teaching content [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

60. Second Language skills barrier [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

61. Some teaching content is not suitable for online display or cannot be fully displayed [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

62. Unstable equipment and network, resulting in audio and video lag [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

63. Long-term use of electronic devices for Internet classes causes physical and eye discomfort [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Positive experience

64. Keeping lives and health safe [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

65. Cost savings [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

66. Increasing opportunities for special students (e.g., full-time workers, family caregivers, disabled students, and others who cannot easily leave the country for long periods of time.) [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

67. Fresh and interesting format [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

68. More individualized learning experiences [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

69. Can access courses from any location (home, office, traveling, etc.) [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

70. Cultivates greater student interaction and collaboration [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

71. Fosters greater teacher-student communication [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

72. Exercise and enhance application skills of network information technology [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

73. Ability to record an online classroom meeting is convenient and helpful for students to review and recap [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

74. Online classroom access to more multimedia resources [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

75. Exercise and improve self-management and self-control [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

IV. “Cloud study abroad” expectation

Please check the following statements regarding your real thoughts on the “Cloud study abroad” expectation.

76. If I continue to “Cloud study abroad,” I think my learning effect would be better [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

77. After the epidemic is over, I hope to finish “Cloud study abroad” and return to campus as soon as possible [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

78. After the epidemic is over, I hope that when I return to campus, my teachers will use the extra time to make up for some content of the “Cloud study abroad ” period [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

79. I think the learning type post-COVID-19 is face-to-face [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

80. After the epidemic is over, I think “Cloud study abroad” is worth promoting [] *

Strongly disagree	○1	○2	○3	○4	○5	Strongly agree

Appendix B

Experts of IOC checking

Table B.1 List of experts

No.	Experts' name	Working position and affiliation		
Expert 1	Asst. Prof. Dr. Sirirat Petsangsri	Head of Department of Industrial Education, lecturer	Faculty of Industrial Education and Technology	King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand
Expert 2	Dr. Vorasuang Duangchinda	Director, lecturer	Office of Online Education	Sripatum University, Bangkok, Thailand
Expert 3	Prof. Dr. Wang Ping	Lecturer	Faculty of Teacher Education	Dezhou University, Shandong, China
Expert 4	Asst. Prof. Dr. Qin Lijun	Lecturer	Faculty of Pedagogy	Tianjin Normal University, Tianjin, China
Expert 5	Asst. Prof. Dr. Li Tongtong	Associate Chair of Faculty of Educational Technology, lecturer	Faculty of Educational Technology	Tianjin Normal University, Tianjin, China

Appendix C

Official letter for IOC checking

No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

May 2 , 2022

Dear Asst. Prof. Dr. Sirirat Petsangsri

Ms. Xiaochen Jia, student ID 63603141, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "The "Cloud Study Aboard" Perception of Chinese Overseas Students in Thai Universities During the COVID-19 Pandemic" with Asst. Prof. Dr. Thanin Ratanaolarn as thesis advisor and Asst. Prof. Dr. Jirarat Sitthiworachart as thesis co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Xiaochen Jia's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr.Worapong Pairindra)
ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี
2022/05/02 Time 15:05:08 Non-PKI Server Sign-LN
Signature Code : NQBBA-EYAMA-AxAEY-ANgBD

No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

May 2 , 2022

Dear Dr. Vorasuang Duangchinda

Ms. Xiaochen Jia, student ID 63603141, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "The "Cloud Study Aboard" Perception of Chinese Overseas Students in Thai Universities During the COVID-19 Pandemic" with Asst. Prof. Dr. Thanin Ratanaolarn as thesis advisor and Asst. Prof. Dr. Jirarat Sitthiworachart as thesis co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Xiaochen Jia's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr.Worapong Pairindra)
ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี
2022/05/02 Time 15:06:37 Non-PKI Server Sign-LN
Signature Code : MQBEA-EYAOQ-A4ADU-AOABC

No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

May 2 , 2022

Dear Prof. Dr. Wang Ping

Ms. Xiaochen Jia, student ID 63603141, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "The "Cloud Study Aboard" Perception of Chinese Overseas Students in Thai Universities During the COVID-19 Pandemic" with Asst. Prof. Dr. Thanin Ratanaolarn as thesis advisor and Asst. Prof. Dr. Jirarat Sitthiworachart as thesis co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Xiaochen Jia's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr.Worapong Pairindra)
ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี
2022/05/02 Time 15:07:21 Non-PKI Server Sign-LN
Signature Code : OAAyA-EMARg-BBAEI-ARQA0

No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

May 2 , 2022

Dear Asst. Prof. Dr. Qin Lijun

Ms. Xiaochen Jia, student ID 63603141, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "The "Cloud Study Aboard" Perception of Chinese Overseas Students in Thai Universities During the COVID-19 Pandemic" with Asst. Prof. Dr. Thanin Ratanaolarn as thesis advisor and Asst. Prof. Dr. Jirarat Sitthiworachart as thesis co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Xiaochen Jia's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr.Worapong Pairindra)
ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี
2022/05/02 Time 15:08:05 Non-PKI Server Sign-LN
Signature Code : NwA3A-DcARA-AxAEM-AOQA5

No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

May 2 , 2022

Dear Asst. Prof. Dr. Li Tongtong

Ms. Xiaochen Jia, student ID 63603141, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "The "Cloud Study Aboard" Perception of Chinese Overseas Students in Thai Universities During the COVID-19 Pandemic" with Asst. Prof. Dr. Thanin Ratanaolarn as thesis advisor and Asst. Prof. Dr. Jirarat Sitthiworachart as thesis co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Xiaochen Jia's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr.Worapong Pairindra)
ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี
2022/05/02 Time 15:09:41 Non-PKI Server Sign-LN
Signature Code : NAAzA-DkAMA-A5AEE-ANQAy

Appendix D

The score of IOC checking

Table D.1 Details of IOC checking

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
II. "Cloud study abroad" perception											
Student attitude& participation											
1	I am interested in the "Cloud study abroad" mode	1	1	1	1	1	**5**	**1**	**Acceptable**		
2	I enjoy the "Cloud study abroad" mode	1	1	1	1	1	**5**	**1**	**Acceptable**		
3	I can actively participate in the activities of "Cloud study abroad"	1	1	1	1	1	**5**	**1**	**Acceptable**		
4	I can work hard to complete the activities in "Cloud study abroad"	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
Internet& Devices accessibility											
5	I have a reliable digital device (e.g., Computer, tablet, mobile device etc.)	1	1	1	1	1	**5**	**1**	**Acceptable**		
6	I have a reliable internet service (e.g., Wired and wireless networks)	1	1	1	1	1	**5**	**1**	**Acceptable**		
A	I have an easy access to foreign internet	1	1	1	1	1	**5**	**1**	**Acceptable**	I have an easy access to foreign internet	Newly added
7	I have a software/tool for online lectures (e.g., Zoom, Ciscowebex, Teams etc.) and I can apply it well	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
8	I have a support for solving technical issues from teachers or universities	1	1	1	1	1	**5**	**1**	**Acceptable**		
Online technology application											
9	I have keyboarding skills to learning online	1	1	1	1	1	**5**	**1**	**Acceptable**		
10	I can easily open a browser and visit a specific link	1	1	1	1	1	**5**	**1**	**Acceptable**		
11	I can easily use keywords for web searches	1	1	1	1	1	**5**	**1**	**Acceptable**		
12	I can easily enter and exit the online meeting system	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
13	I can post and read information from the online meeting system	1	1	1	1	1	**5**	**1**	**Acceptable**	I can **easily** post and read information from the online meeting system	Added “easily” to make the consistency
14	I can download or save web resources to disk	1	1	1	1	1	**5**	**1**	**Acceptable**	I can **easily** download or save web resources to disk	Added “easily” to make the consistency
15	I can upload or send files to a specific location (e.g., cloud drive, email, etc.)	1	1	1	1	1	**5**	**1**	**Acceptable**	I can **easily** upload or send files to a specific location (e.g., cloud drive, email, etc.)	Added “easily” to make the consistency
Class performance& assignment delivery											
16	I usually get to class on time	1	1	1	1	1	**5**	**1**	**Acceptable**		
17	I can stay focused when I study online	1	1	1	1	1	**5**	**1**	**Acceptable**		
18	I can manage time well during my “Cloud study abroad” period	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
19	I can finish my assignment independently	1	1	1	1	1	**5**	**1**	**Acceptable**		
20	I can hand in my assignment on time	1	1	1	1	1	**5**	**1**	**Acceptable**		
Communication& Interaction											
21	I have a teacher-student contact group with my teachers and classmates where I can always exchange feelings, course-learning and academic content at anytime	1	1	1	1	1	**5**	**1**	**Acceptable**		
22	I can communicate with teachers and classmates in English well	1	1	1	1	1	**5**	**1**	**Acceptable**	I can communicate with teachers and classmates in English **properly**	Changed “well” to “properly”

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
23	I can use online tools (e.g., E-mail, Discussion boards in online meeting tools, WeChat etc.) to communicate with teachers and classmates	1	1	1	1	1	**5**	**1**	**Acceptable**		
24	I like to share my opinions and ideas in online discussions between teachers and students	1	1	1	1	1	**5**	**1**	**Acceptable**		
Teaching organization& Implementation											
25	My teachers' lecture is often stimulating and attracting	1	1	1	1	1	**5**	**1**	**Acceptable**		
26	My teachers are well prepared for each online teaching sessions	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
27	My teachers are very friendly and patient with me	1	1	1	1	1	**5**	**1**	**Acceptable**		
28	My teachers are following the official curriculum and according to the official schedule.	1	1	1	1	1	**5**	**1**	**Acceptable**		
29	My teachers actively give guidance (e.g., participation in lessons, assessment models, completion of assignments, or writing seminar) and all of them are tailored to the specific circumstances of “Cloud study abroad”	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
A	My teacher uses easy-to-understand English language to help me understanding teaching content.	1	1	1	1	1	**5**	**1**	**Acceptable**	My teacher uses easy-to-understand English language to help me understanding teaching content.	Newly added
30	My teachers are making an effort to enable me to follow online learning more easily. For example, by highlighting the key elements of the lecture or highlighting the transition to new content	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
31	My teachers verifies whether we have understood the teaching contents by seeking feedback or encouraging us to ask questions	1	1	1	1	1	**5**	**1**	**Acceptable**		
32	The activities and task that teachers organize and provide in online class or on assignments usually help me to better understand the teaching content	1	1	1	1	1	**5**	**1**	**Acceptable**		
33	I receive timely feedback from my teachers	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
34	My teachers are easy to reach through E-mail or other social ways during “Cloud study abroad” period	1	1	1	1	1	**5**	**1**	**Acceptable**		
III. “Cloud study abroad” experience											
Negative experience											
35	Sudden plan and life changes	1	1	1	1	1	**5**	**1**	**Acceptable**		
36	Stress balancing learning and life	1	1	1	1	1	**5**	**1**	**Acceptable**		
37	Concentration difficulties living at home	1	1	1	1	1	**5**	**1**	**Acceptable**		
38	Lack of Social Interaction with teachers and classmates	1	1	1	1	1	**5**	**1**	**Acceptable**		
39	Lack of Supporting academic Resources	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
40	Being distracted during online Class	1	1	1	1	1	**5**	**1**	**Acceptable**		
41	Unfamiliar online technology	1	1	1	1	1	**5**	**1**	**Acceptable**		
42	VPN limits the transmission of teaching content	1	1	1	1	1	**5**	**1**	**Acceptable**		
43	Second Language skills barrier	1	1	1	1	1	**5**	**1**	**Acceptable**		
44	Some teaching content is not suitable for online display or cannot be fully displayed	1	1	1	1	1	**5**	**1**	**Acceptable**		
45	Unstable equipment and network, resulting in audio and video lag	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
46	Long-term use of electronic devices for Internet classes causes physical and eye discomfort	1	1	1	1	1	**5**	**1**	**Acceptable**		
Positive experience											
47	Keeping lives and health safe	1	1	1	1	0	**4**	**0.8**	**Acceptable**		
48	Cost savings	1	1	1	1	1	**5**	**1**	**Acceptable**		
A	Increasing opportunities for special students (e.g., full time workers, family caregivers, disabled students and others who cannot easily leave the country for long periods of time.)	1	1	1	1	1	**5**	**1**	**Acceptable**	Increasing opportunities for special students (e.g., full time workers, family caregivers, disabled students and others who cannot easily leave the country for long periods of time.)	Newly added
49	Fresh and interesting format	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
50	More individualized learning experiences	1	1	1	1	1	**5**	**1**	**Acceptable**		
51	Can access courses from any location (home, office, traveling)	1	1	1	1	1	**5**	**1**	**Acceptable**		
52	Cultivates greater student interaction and collaboration	1	1	1	1	1	**5**	**1**	**Acceptable**		
53	Fosters greater teacher-student communication	1	1	1	1	1	**5**	**1**	**Acceptable**		
54	Exercise and enhance application skills of network information technology	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
55	Ability to record a online classroom meeting is convenient and helpful for students to review and recap	1	1	1	1	1	**5**	**1**	**Acceptable**		
56	Online classroom access to more multimedia resources	1	1	1	1	1	**5**	**1**	**Acceptable**		
57	Exercise and improve self-management and self-control	1	1	1	1	1	**5**	**1**	**Acceptable**		
IV. “Cloud study abroad” expectation											
58	If I continue to “Cloud study abroad”, I think my learning effect would be better	1	1	1	1	1	**5**	**1**	**Acceptable**		

Table D.1 (Continued)

No.	Items	Item objective congruence(IOC) score（1,0,-1）							Result	Development questions after validation	Development explanation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total score	Average score			
59	After the epidemic is over, I hope to finish “Cloud study abroad” and return to campus as soon as possible	1	1	1	1	1	**5**	**1**	**Acceptable**		
60	After the epidemic is over, I hope that when I return to campus, my teachers will use the extra time to make up for some content while “Cloud study abroad”	1	1	1	1	1	**5**	**1**	**Acceptable**		
61	I think the learning type post-COVID-19 is face-to-face	1	1	1	1	1	**5**	**1**	**Acceptable**		
62	After the epidemic is over, I think “Cloud study abroad” is worth promoting	1	1	1	1	1	**5**	**1**	**Acceptable**		

Appendix E

Reliability results

For the reliability of the acquired data. The overall reliability coefficient for the 65 items was 0.97, which is higher than 0.9, indicating that the data were of high-reliability quality and can be used for further analysis. The minimum value of the reliability coefficient of each sub-item was also greater than 0.6, which is acceptable, as detailed in Table.

Table E.1 The Cronbach' α of sub-items

Items	Sub-Items	No. of Sub-items	Cronbach'α
CSA perception	Student attitude& participation	4	0.94
	Internet& Devices accessibility	5	0.86
	Online technology application	7	0.96
	Class performance& assignment delivery	5	0.95
	Communication& Interaction	4	0.86
	Teaching organization& Implementation	11	0.97
CSA experience	Positive experience	12	0.94
	Negative experience	12	0.97
CSA expectation	None	5	0.60

AUTHOR BIOGRAPHY

Author: Mrs. Xiaochen Jia

Degree: Master of Science

Date of Birth: 26th December 1990

Place of Birth: Shandong, China

Undergraduate and Graduate Education:

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Bachelor's degree in engineering,
University of Jinan, China, 2020

Major: Computer Science and Technology

Presentations and Publications:

Oral presentation at the 3rd National and International Conference on Humanities and Social Sciences (TSU-HUSOiCon 2022): New Findings During the "New Normal." July 8-9