Factors that influence decision-making over online and face-to-face examination preparation training courses

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Abstract: Distance education has become a widely used means in both campus and training institutions. Yet, a huge gap still exists between the market shares of online courses and traditional classroom courses. This study seeks to investigate the factors that influence students' decisions of not accepting online courses over traditional classroom courses. The researchers conducted interviews and questionnaires to survey 318 Xi'an Jiaotong-Liverpool University (XJTLU) students and nine interviewees. The main findings are as follows: 1) in general, students are more likely to select traditional courses over online courses; 2) external factors such as price, characteristics of instructors and courses, and internal factors like gender and age play an essential part in decision making; 3) incorporation between digital techniques and online courses is too insufficient to maximise the effectiveness of online courses. The researcher believed the biggest obstacle is that the training agency lacks careful consideration from the perspective of students.

Keywords: e-learning; face-to-face learning; online learning; integrated learning; interactive learning; e-learning case study.

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1 Introduction

1.1 Background of the study

Electronic devices have caused revolutionary changes in people's learning methods as well as behaviour. Initially, network communication such as electronic mail (e-mail) enabled students to have access to their teachers online, which increased students' after-school study efficiency. Later, the rising of instant messaging further guaranteed students' unlimited access to their teachers anywhere and anytime, which led to a substantial improvement in initiatives and enthusiasm. Accelerated innovation leading to the creation of the smartphone has dramatically changed people's lifestyles and study habits. The history of traditional face-to-face classroom education traces back to hundreds of years ago. By contrast, the online school nearly begins its evolution period as an undeveloped emerging industry.

Online courses in its embryonic stage, was ambiguous and unstructured in systems and substance. During that period, its target audience was small and limited. The 21st century has seen online courses gradually come into the public's view and take an increasing market share of students.

In 2001, the Massachusetts Institute of Technology (MIT) launched 'Open Courseware' (OCW), which provided all its course materials from undergraduate to

postgraduate, freely to the world on the internet. MIT's decision received positive feedback from all sectors of society and brought great transformation for distance education (Abelson, 2007). Since then, a list of prestigious universities and organisations had been inspired and motivated to produce its online curriculum. Globally speaking, it has been a growth spurt of online open courses during the last decade. Coursera, for instance, had cooperated with hundreds of colleges to provide free online open courses to students worldwide (Severance, 2012). By the end of 2015, it had reached over 1.5 million international course subscribers from over 190 different countries (Silvia, 2015). As Wuensch et al. (2008) stated, distance courses would define and shape how students study in the era of science and technology.

Within the XJTLU, the dominant online courses are commercialised examination preparation courses, a typical domestic university situation. Thus, this research will take several students of XJTLU University as its sample to determine what factors affect their decision to choose face-to-face courses over online courses for non-academic instructional training.

1.2 Methodology and findings

This research used qualitative and quantitative methods for collecting and analysing data. Interviews were used under qualitative methods, while questionnaires were administered under quantitative methods. In the quantitative method, most answers to corresponding questions were designed with a response scale of 0 to 5. In a qualitative aspect, the interviews were carried out with open-ended questions. As a result of combining these two methods and the data processing software (Excel and SPSS), the result of this study was more reasonable within a comprehensive range.

In summary, this study found that the degree of teaching qualities, instructor's enthusiasm, interaction with students and teachers, promptness on the problem-solving, flexible timetable of courses, are the top five external determinants of choosing between online classes. In terms of internal factors, age (academic year) and gender were both significantly influential. In the meantime, the degree of self-discipline, the degree of self-study ability, the degree of persistence and the degree of concentration or focusing ability also played a significant role in the results.

1.3 Motivation

The research is limited to students' opinions and attitudes at XJTLU towards commercial non-academic educational training.

Firstly, the demand for non-academic educational training is high. Due to the particularity of the university, nearly 90% of undergraduates are going to continue further study aboard, a prerequisite of which is an absolute score of standardised language tests such as IELTS and TOFEL. Beyond that, an increasing number of demanding universities require GRE/GMAT test scores. Furthermore, students from different majors need professional skill training, such as hand sketching courses for architecture major, programming course for computer science; engineering drawing for electronic engineering; and accounting and financial analysis courses (ACCA & CFA) for business-related major.

Secondly, differentiated from campus network courses, industrial non-academic educational training is designed with more substantial purpose and pertinence, whose aim is high examination grade. Furthermore, training institutions were more motivated to increase students' satisfaction rates. Nearly every commercial training course was attached to the contractual commitment of certain examination grade or compensatory service aiming at the low-grade outcome. Consequently, the content and form of online courses require more frequent adjustments and improvements to maintain consistent consistency with the ever-changing examination syllabus.

Finally, students are mainly at a passive and disadvantaged position during the online courses, unlike the traditional classroom environment. Due to its poor communication and feedback mechanism, it is inevitable that the after-sale service becomes relatively weak. Thus, it is considered crucial to survey from the perspective of students.

1.4 The detailed aims and objectives of this research

- To investigate previous research and studies in the development and analysis of online courses and the comparison between traditional and distance education.
- To determine whether the proportion of students of XJTLU accept and prefer online courses for non-academic educational training.
- To understand what factors play a role in decision making between distance and traditional face-to-face courses.
- To determine the different influential levels for each practical factor that play a role in decision-making between distance and conventional face-to-face courses.
- To collect expectations and feedback toward online examination preparation training courses of students via questionnaires and interviews.
- To summarise the limitations and shortages of online courses.
- To give corresponding suggestions for future improvement of online courses of examination preparation training.
- To provide recommendations for students about choosing suitable courses over online and traditional face-to-face form.
- To give suggestions for students to better adapting the online courses.

2 Literature review

Several types of research have been conducted on online courses within the past few decades. Some studies provided a comprehensive theoretical framework to support the outline and design of this study. Although their primary focus has been a web-based campus academic curriculum, it still shared similar theories and core principles, which enabled the researcher to grasp a better understanding of online courses from several distinctive perspectives.

2.1 History of online courses and the teaching pattern

In the development history of distance education, more and more modern technologies have been employed to improve the application of e-learning. For example, cloud computing, called software as a service (SaaS) service layer, has been used in the design of the e-learning applications. Although e-learning has been known as reducing cost, with SaaS's support, the cost can be further reduced as several users can be on the same e-learning platform at the same time but protected individually (Fithri et al., 2020).

As Henry and Meadows (2008) stated, there have always been attempts at finding the balance between educational content and hi-tech features. There are mainly three patterns illustrated in chronological order based on the disparate teaching objectives:

1 *Classroom-centred pattern:* this pattern is based on the campus network platform and dominant with professors lecturing. As the assistive tool, the main target of online classes under this target is to guarantee students' systematic learning flow.

2 *Content-centred pattern:* separated from the standardised nature of the current educational curriculum, the target of this pattern is to customised courses into skills workshops or examination training.

3 *Problem-centred pattern:* through a computer supported cooperative work (known as CSCW) and discussion seminars between students, and between students and teachers, this pattern is primarily concentrated on case studies and problem-solving approaches in search of the best solution.

Combining with practical experience of XJTLU students, this research will mainly focus on the second pattern, 'content-centred pattern', where the content is testing techniques. Such a pattern can ensure that abundant knowledge is transferred within a relatively shorter period, which is very suitable and satisfying for most Chinese students. However, there are several inherent challenges, as well. The first of these is the potential of it to be turned into a spoon-feeding session by only focusing on the automatic impartation of knowledge. It almost ignores the cultivation of comprehension ability and practical application of knowledge, which is a narrow vision and eventually results in numbness and sometimes resistance of specific area [McKay and Kember's (1997) experiment]. Secondly, the 'content-centred pattern' means that it is the training agencies and teachers who master the initiatives. Under this concept, students with average or higher learning capabilities, absorbing capacity and self-suitable, is suitable and highly efficient. On the contrary, for those students with weaker abilities and mental faculties, the course is likely to be less effective and sometimes viewed as a waste of time due to the insignificant nature of the impact it makes (Herman and Banister, 2007).

There is comparatively severe polarisation in learning outcomes under such a pattern, consistent with Cavanaugh and Jacquemin's (2015) conclusions. According to Cavanaugh and Jacquemin (2015), there is a cumulative effect whereby usually students with higher GPAs would perform even better in online courses (or conversely, struggling students perform worse when taking online courses compared to a face-to-face delivery).

Another theory proposed by Harris et al. (2016), existing online courses were classified into three types, the main representative types in the Chinese educational online training market. As Harris et al. (2016) stated, the original intention of the online course is to overcome the monotony associated with traditional education through its multiple forms and formats, including audio, video and even sometimes animation. However, with

most online courses since most of them are based on textbooks within a monotonous media form, it imposes restrictions on tutors' teaching and presentation styles. Normally, there have been three different types during the evolution of the mode presentation:

- *Pure-text:* along with the recorded audio, the screen is completely filled with lecture notes in addition to several exercises, making it seems more like an electronic page-turning machine.
- *Text and PowerPoints:* the screen is equally divided into two parts for displaying lecture notes and PowerPoint presentations. In addition, video tutorials are attached at the bottom right corner, which basically appears as though a teacher is sitting in front of a desk in a frame.
- *Simulated classroom:* this is a recorded video of a teacher giving lectures as if it is standing on the screen's platform (Haarris et al., 2016).

For students at XJTLU, all the online courses they experienced were the second type, 'text and PowerPoints'. As a result, educational training online courses are at the transitional phase from the second type to the third type, which, to some extent, requires another bold evolution of technology.

The e-learning platform has been used in many areas or courses. In the study of the effectiveness of e-learning in the course of medical image interpretation, Ogura et al. (2018) found that e-learning is significantly effective in this course and the images with ground glass shadow especially. Additionally, the e-learning platform is also proved to be effective in an English course taught to international students. Sadiq (2020) conducted an experiment on the 20 students in an English course. Firstly, the students were taught according to the textbook first for 15 lectures and then were taught on an e-learning platform for another 15 lectures. The exam results were compared and Sadiq (2020) found that with the support of e-learning techniques, the students' grades were significantly higher than just using the traditional approach.

2.2 Potential external influential factors

The study conducted by Xie and Gao (2009) aimed at the construction of online courses, where they emphasised the existing problems associated with distance education. According to Xie and Gao (2009), the peculiarity or uniqueness of online courses can be both advantageous and disadvantageous. After investigating over 12 Chinese key universities with extensive application of online courses and discussion with educational experts and scholars to analyse current problems in the national campus curriculum, Xie and Gao (2009) found five key issues affecting online study. Out of the five issues, four are in a part of the research objectives of this paper. Combined with the practical situation of off-campus distance courses, the following are the four those four objectives which have been elaborated.

Imbalance in input and construction of the courses between the earlier and later stage

Normally, it requires a considerably large amount of resources, both human and material, during the construction of an online course. On the one hand, the directors and assistants are supposed to collect and sort all the teaching materials, including electronic teaching

aids, PowerPoint notes, video recorders and so on. On the other hand, the required network construction is of high technical capabilities, covering the building and maintenance of the back-end databases and front-end exploitation. Generally speaking, there is less investment during the later periods than in setting it up. For example, the last update date of some online courses remains several years ago.

A simple form of content presentation

The overwhelming number of online curriculums is fundamentally consistent with the subsequent chapters of textbooks, which are a restatement and re-demonstration of the textbooks. There is nearly no significant change in the structure and presentation of the learning content and outcomes. Furthermore, the lack of design for deeper-scale content and case-based teaching is another inherent unavoidable problem.

Inadequate teaching activity

The main form of learning in an online platform is by viewing the videos and reading electronic materials (such as notes), which mostly focuses on the inculcation rather than on guidance. Without adequate arrangements for specific offline teaching activities, it fails to achieve the academic objective – which is to lead students throughout the whole learning process combined with exploration, analysis, selection and creativity. Nevertheless, the current online curriculum remains at the stage of students' adoption of the teaching videos.

Lack of interaction between students and teachers

Since the main focus of the online curriculum construction is the course content, the designers usually attach less significance to the communication module, which is usually limited to the confines of e-mail. In addition, apart from the passive receiving of courses, students hardly consult their teachers by watching the video tutorials. Compared to the traditional face-to-face classroom, there is less frequent interaction and lower efficiency for online courses, which leads to negative teaching outcomes (Callister and Love, 2016; Helms, 2014).

Another research focused on the pedagogical characteristics of distance and traditional courses by inviting a total of 4,789 students. As respondents gauge and rate the distinctive characteristics for both online and traditional courses, they managed to quantify the influence of each factor. Compared to face-to-face courses, significant negative differences exist in the following characteristics: 'communication with other students', 'aid learning complex material', 'communication with the instructor', 'accurate assessment' and 'understanding of course materials', which were basically the disadvantages of online courses as well (Wuensch et al., 2008). According to their survey, the most problematic issue with the existing online course was that the subjective needs of both instructors and learners were neglected, which leads to communication barriers and unsatisfactory course quality.

In Hammouri and Abu-Shanab's (2018) study, they identified five factors that may affect student satisfaction with e-learning, including the use of ease, the quality of platform or system, the quality of material, usefulness and computer self-efficacy. Among them, the first four factors belong to the external factors. The same authors

(Xie and Gao, 2009; Wuensch et al., 2008), Hammouri and Abu-Shanab (2018) found that the quality of the material was necessary. Besides, the three factors, use of ease, the quality of platform or system, usefulness were significant to the student satisfaction as well. Ease of use means that the platform or system is easy to understand and not complex. The platform's quality means that the e-learning platform can process information at high speed and the information can be adequately protected. Usefulness means that by using the e-learning techniques, the student's performance will be improved.

2.3 Potential internal influential factors

Cavanaugh and Jacquemin (2015), utilised a dataset of over 5,000 courses taught by over 100 faculty members over ten academic semesters in one public university, which facilitates macro-level comprehension of course formats at an institutional level. With their large sample size for comparison between grade-based student learning outcomes in online and face-to-face courses, about 33% of students chose online courses instead of the face-to-face ones. With fewer credit hours, the online students' GPA was 12.9% higher than offline students. Most significantly, the average age of online learners was five years older than face-to-face. In the meantime, the proportion of women was higher in online courses. The results indicated that the students from the higher grade or the female students are more willing to choose the online courses.

Furthermore, another research conducted by Amro et al. (2015) also arrived at the same conclusion in the aspect of the age. By using the quantitative approach with archival data, this team explored the relationship between students' characteristics and academic performance compared to online and traditional college algebra class. They found that the average age of the online learner and offline learners was respectively 26.95 and 25.14. The result agreed with Cavanaugh and Jacquemin (2015)'s. In addition, female students tend to achieve higher academic grades in online courses.

Yilmaz (2017) collected data from around 240 students taking a course taught in the flipped classroom model and studied the influence of students' e-learning readiness on their satisfaction and motivation in a flipped classroom. Students' e-learning readiness is defined as their ability to use learning materials online and technologies to support their study (Kaur and Abas, 2004). Several factors belong to e-learning readiness, including computer self-efficacy, internet self-efficacy, online communication self-efficacy, self-directed learning and learner control. These factors are personal abilities or skills that cannot be obtained from the external environment. Yilmaz (2017) studies the influence of e-learning readiness and its sub-factors on student satisfaction, respectively and found that they all had significant impacts on student satisfaction with e-learning. Same with Yilmaz (2017) found that the computer self-efficacy was significant to student satisfaction as well.

Chang et al. (2020) conducted a survey among 224 undergraduates and interviewed 11 of them and found that the level of self-discipline, the level of self-learning, the level of regulation and the degree of concentration were also significant to their satisfaction with e-learning. These factors focus on the students themselves, such as their attitude towards learning, their ability to control and discipline themselves, etc.

2.4 Features and further development orientation of online courses

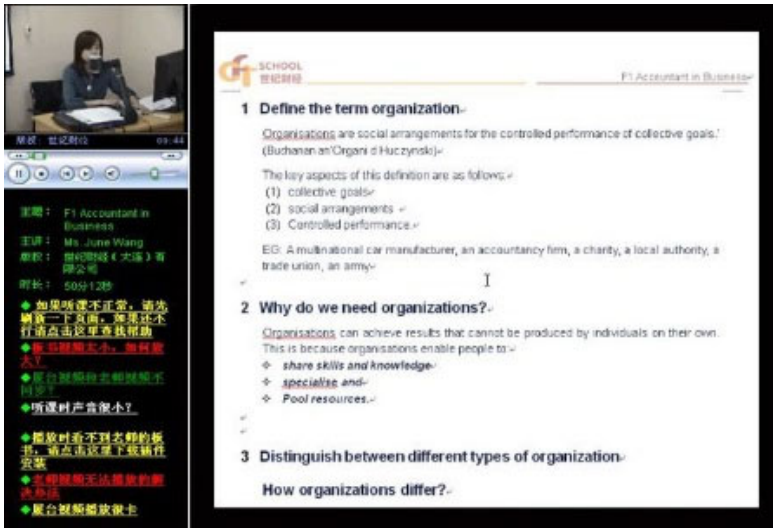
Since students are accustomed to the traditional classroom-teaching pattern, it requires a certain length of period for them to adapt to this emerging system of distance education, and it would require professional guidance in most cases. Furthermore, it also requires some psychological readiness for students to accept and adapt to another form of the educational environment with different didactical methods. Under such circumstances, students are supposed to adjust their state of mind for learning as well as approach.

During the process of online education, unlike the traditional classroom system, the information and knowledge acquired by students of distance courses do not only depend on what teachers teach, but it is also affected by other elements such as openness, virtuality as well as the lack on the face-to-face communication leads to the limitation of communication effects. To optimise the learning outcomes, it is essential to fully comprehend the advantages of its teaching pattern in three perspectives:

- In today's environment of the networked society, both teachers and students can play the dominant role to a maximum extent. On the one hand, students can choose courses or even internal modules with full freedom and complete flexibility according to their academic level, study preference, and personal habits. On the other hand, instead of being the mediators of transferring knowledge, teachers are the instructors for learners to realise effective learning outcomes, who could decide the teaching pattern, supply of teaching materials, etc.
- With the online courses, students are provided with full convenience in terms of selecting the course content. Regarding the perspective of informational structure, there are fundamental differences between distance and traditional education. As pictures in Figures 1 and 2 presented, the traditional face-to-face course normally follows a unitary linear structure, where limited choices are provided and available. In comparison, distance education is similar to a structured online platform supporting a wide range of teaching materials and services.

Figure 1 The lead author's pictures of traditional classroom course at the university (see online version for colours)

Figure 2 Pictures of online courses (see online version for colours)



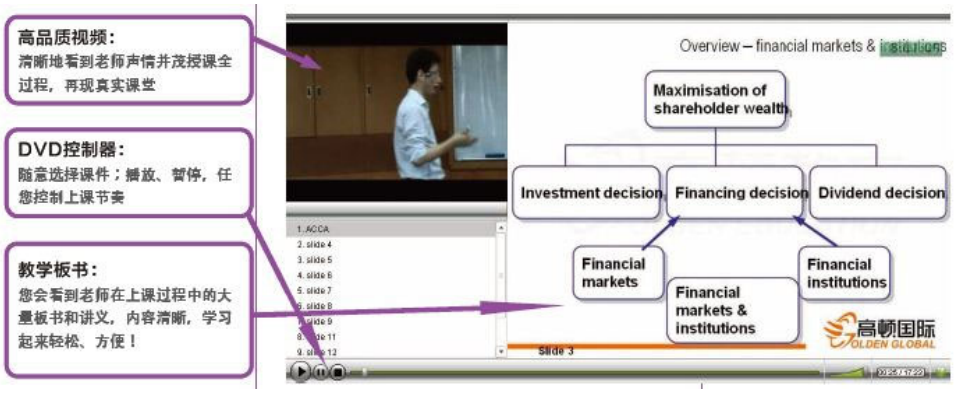
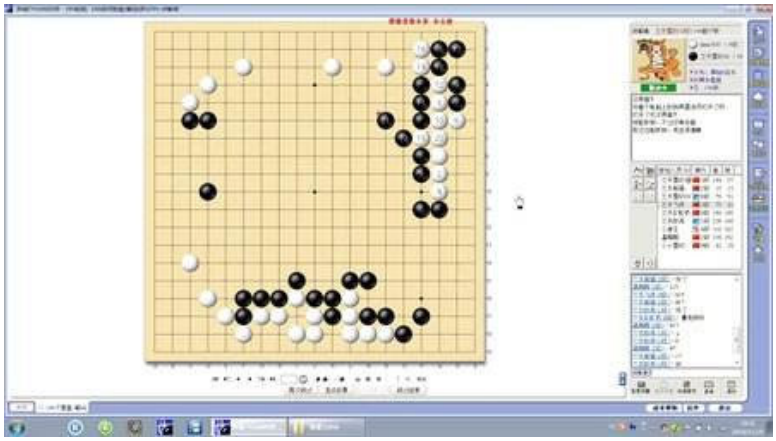


Figure 2 Pictures of online courses (continued) (see online version for colours)



Under such circumstances, information of all sorts can be easily arranged and organised, and this increases the quantity of teaching information, as well as the flexibility of course alternatives.

- Online courses enable the development and exploration of new teaching approaches. With the traditional paper-based teaching materials, teachers, textbooks and students are discrete and independent. The range of activities is limited to the classroom, which results in the collectivisation teaching experience. On the contrary, due to the nature of online courses, teachers, teaching materials, techniques and students are organically combined (Jaggars, 2014).

Another research conducted by Kim et al. (2005) focused on the online curriculum and provided constructive suggestions from the learners' perspective. A brief summary for directors, teachers, as well as learners, was paraphrased as follows:

- *Directors:* above all, the design of the online curriculum should follow the principle of being student-oriented. The curriculum should be devoted to incubating a suitable environment for promoting individualised learning while maximising every learner's skills and knowledge through the use of the internet as the basis for teaching. In the meantime, with all sorts of online services to guarantee the adequacy of communication between teachers and students, it is highly possible to mobilise the initiatives and enthusiasm of learners.
- *Teachers:* in the online curriculum, teachers are supposed to play a dominant role in the delivery. Firstly, they have to lead students to participate in the course fully. Secondly, they should be committed to providing personalised tutoring or counselling services, which tends to engender a sense of acceptance and belonging. Thirdly, it is essential to help students master the necessary knowledge and skills by using unique network tools and techniques, such as instant chat and online simulation-based testing.
- *Learners:* before the curriculum is delivered, it is of considerable significance for learners to overcome the blindness and lack of systematic goal through strengthening the awareness and need for independent study and enhancing self-consciousness. On

top of this, learners should focus on the improvement of learning effectiveness via a series of approaches such as a scientific arrangement of schedule and skilful use of internet technology.

In general, despite the steady growth and significant achievement of online courses, there remain some incompatibilities with the goals and expectations of education.

The structure of some online courses is not completely developed in a way suitable to students' cognitive functions. This can indirectly lead to failure in autonomous learning. Without an integrated planning and systematic design of execution, simple loading and layout of teaching material would fail to take factors such as age, academic background, cognitive characteristics and learning needs into account (Johnson and Palmer, 2014). That is why it is refreshing to see that some courses have learning schedules and introduction to learning approaches. Nevertheless, most of them are a result of the accumulated experiences summarised from traditional education methods, which are inconsistent with online courses. The director's starting point mainly corresponds to the teachers' responsibility, without considering the features of the internet era, in terms of the exploitation of courses and the design of effective teaching strategies.

While aiming to reach a particular teaching objective, it is necessary to implement a variety of didactical activities. More importantly, by setting simulated classroom environments, students are allowed to share opinions, suggestions, or even objective criticisms rather than passively accept the teaching content. As Tobin and Tippins (1993) stated, with the assistance of others (including study partners and teachers) and the necessary learning materials, students can acquire knowledge through meaningful construction instead of merely following teachers' instructions. Under the distance education, simply providing teaching materials can no longer satisfy students' need. While directing students on how to go about self-teaching is efficient and covers sections of the detailed introduction of learning method guiding, reasonable schedule arrangements suitable for self-study and progressively leading-in of course content and timely supportive exercises.

3 Methodology

3.1 Description

The primary purpose of comparative research is to determine the characteristics of online courses and learners' influences when students decide to choose face-to-face courses instead of online courses. In other words, this research aims to investigate and assess the factors with adverse effects on distance education. This study has undertaken research methods, both quantitative and qualitative. Through a questionnaire and face to face interviews, the researcher eventually reached a rough conclusion following the collected high-quality data and information.

3.2 Survey area

The concept of online courses did not emerge in China until this century due to the relatively sluggish digital media and technology development. To keep pace with the Chinese education system, the main form of domestic online courses has been

exam-oriented education. Since there is an enormous quantity of literature aiming at campus academic online curriculum, the survey area of this research will focus on another form of education: commercial non-academic examination preparation training. Compared to the campus network courses, training courses are of a more substantial purpose. In most situations, the ultimate object of the training course is a certain score level of standardised examination or a qualification certificate of a certain skill.

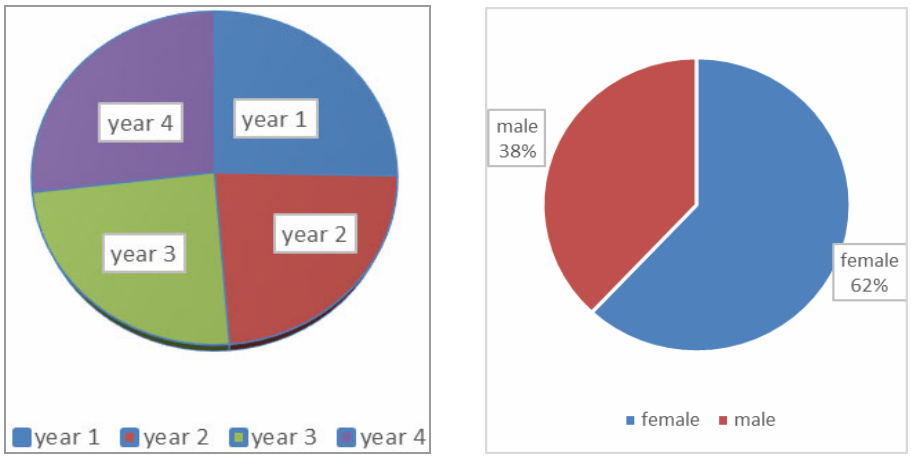
At Xi'an Jiaotong-Liverpool University (XJTLU), there is a continuing upward trend of signing up for non-academic educational training in surrounding agencies. For instance, since 2009, the certificate from Association of Charted Certified Accountants, which is known shortly as ACCA, entered the market of XJTLU. Since then, an increasing number of students major in accounting-related majors have registered as ACCA members and signed up for the corresponding agency training. Each year, over 500 students in XJTLU showed their interests in the ACCA certificate examination. Additionally, recently, students from majors such as architecture and electric automatisation, which were not slightly related to accounting, occupied a rising proportion of ACCA learners. However, the most popular one was language tests such as IELTS and TOFEL, which nearly occupied over half of the training market by over ten training agencies around campus. This was thanks to the massive demand for pursuing advanced education. Therefore, the researcher narrowed down the survey area into language standardised examination training within the XJTLU, where the paper-based questionnaire and face-to-face interviews could be conducted with high feasibility.

Finally, the formal research process has lasted for one and a half months to ensure an adequate, equally-distributed (in terms of the academic year) dataset.

3.3 Respondents

Apart from the researching area, respondents are another essential element to consider as well. The researcher conducted a paper-based questionnaire in front of the campus library, where relatively self-disciplined students were likely to appear since only students with an experience of distance education were eligible candidates.

Figure 3 The participants' demographics (see online version for colours)



Duan et al. (2015) stated that researchers should give priority to utilising purposeful sampling, selecting participants who meet the requirements of the target objects.

Since age and academic year are variables, this research completed a corresponding online questionnaire survey with a total of 318 XJTLU students who have taken online and face-to-face commercial examination training courses. Among the 318 eligible respondents, 61.9% were female, while 38.1% were male.

Table 1 Overall results

Variable	*Means*		
	All	*Online course*	*F2F courses*
Overall observations	318	66 (20.75%)	252
Student's academic year (1 to 4)	2.14	2.62	1.91
Experienced online courses before	96	57 (59.4%)	39 (40.6%)
Male	121	15 (12.4%)	106 (87.6%)
Female	197	51 (25.9%)	146 (74.1%)
Average study hour per week	12.7	11.4	13.1

Table 2 Students' choices by year

Academic year	*Means*		
	All	*Online course*	*F2F courses*
1	80	11 (13.75%)	69
2	74	14 (18.91%)	60
3	77	17 (22.01%)	60
4	85	24 (28.24%)	61
All	318	66 (20.75%)	252

Tables 1 and 2 show the overall outcomes and the students' year of distributions of our questionnaire. In the meantime, to reduce the error, the researcher slightly amended the strategy and selected a similar amount of students from each academic year. After collecting and arranging the data, 66 students choose online courses over face-to-face courses, which was approximately one-fifth of the total. As predicted in previous research, there would be significant differences between online and face-to-face courses in terms of gender and academic year in comparison. Commonly speaking, female students of higher academic year tend to enrol in online classes.

3.4 Quantitative research

A wide-range sampling would be more serviceable and result in a more precise outcome. Likewise, the essence of quantitative analysis was to explore through wide-range sampling. As Aliaga and Gunderson (2002) explained, quantitative research is "explaining phenomena by gathering and analyzing numerical data through mathematically-based approaches (in particular statistics)."

Under the purpose of collecting data in numerical form to illustrate a particular phenomenon, the researcher implemented a quantitative questionnaire both online and offline. Eighty percent of the questions in the survey were converted into number-based

answers. For instance, the response to gender was converted into 0 (male) and 1 (female); the satisfactory degree was ranked numerically from 1 to 5 between online and face-to-face courses.

There were about 318 distinctive answers to identical questions to be sorted and analysed with a large number of raw data from quantitative research. According to Begun (2006), it could be of high efficiency to apply Statistical Package for the Social Science (SPSS) into statistics. Table 3 shows a list of questions for our questionnaire.

Table 3 Questionnaire

Gender	*0 (male)/1 (female)*
Academic year	1 2 3 4
In-class supervision and urging of teachers	1 2 3 4 5
Problem-solving promptly by teachers	1 2 3 4 5
Teacher's enthusiasm	1 2 3 4 5
Teacher's explanations	1 2 3 4 5
Teacher's utilisation of class time	1 2 3 4 5
Teacher's preparation	1 2 3 4 5
Teacher's teaching quality	1 2 3 4 5
Teacher's interest in student learning	1 2 3 4 5
Regular discussion arrangement within the course	1 2 3 4 5
The integrity of the course	1 2 3 4 5
Content of the course	1 2 3 4 5
Amount learned	1 2 3 4 5
Effectiveness/relevance	1 2 3 4 5
Satisfaction on examination grade	1 2 3 4 5
Quantity and quality of off-class activities	1 2 3 4 5
Flexible schedule of the course	1 2 3 4 5

3.5 Qualitative research

Through conducting quantitative research, the research could directly acquire students' comments and views on some specific points (Roessner, 2000). Due to the possibility of a failing hypothesis on quantitative research, qualitative research was more like a supply of complementary factors or even alternatives. Generally speaking, quantitative research often involved with the application of professional software. Nevertheless, qualitative research is more easily understandable and adaptable to the public. According to Newman and Benz (1998), qualitative research is applied when observing and interpreting an absolute phenomenon to propose a theory to clarify what was experienced.

For this study, the form of qualitative research was the interview. Nine interviewees participated in, who all satisfied with the two requirements: experienced online courses before, took corresponding examinations after the online training courses. The designed draft of the interview outline was presented below.

- When was your last experience in online courses?
- How long did it last and what were the specific academic hours?
- What is the main form and content?
- Did you take the corresponding exams after the online course? If yes, how was the outcome, if no, why not?
- What is the price of your online courses? Are you aware of the identical face-to-face courses with the same staff/teachers? If yes, do you know the price of that face to face courses? Do you think the ratio of price reasonable?
- What do you think of the quality of the courses?
- What do you think of the quality of lecturers?
- Were there any regular academic meetings or Q & A? If yes, how was the quality of that?
- Was there any offline meeting?
- What is the rate of time-consuming between online course study and offline self-learning?
- Compared with traditional, what do you think are the advantages and disadvantages of online courses?
- Did you find yourself suitable for the online courses?
- What do you think are the distractions during online classes?
- Were you being asked to give feedback to the online courses as well as the teachers? If yes, did you get the reply?
- Could you predict the future development of online courses? And why?
- Did you think online courses may be mainstream of the educational training market? And why?

For each interviewee, the interviewer are supposed to cover at least cover 50% of the questions above.

3.6 Limitations

By objectively assessing this survey, there are three limitations throughout the whole process.

- *An inadequate number of sample/respondents:* although it collected over 300 students' information, the data is still not representative and generalisable. More than 7,000 undergraduates of different majors at XJTLU, which means this survey only covered less than 5% of the significant sample. Beyond that, there are over 2,590 institutions of higher education in China, further decreasing the reliability and dependability of this research. Consequently, this research could only be of practical use and reference value within a small scale of students in XJTLU and training agencies competing in the market.

- *The convenient location of training agencies:* within open online courses or courses in other modes, there are usually students of distant locations or even other countries. Nevertheless, the advantage of flexibility and convenience of online courses on space hardly played a role here due to that all the training agencies' location is within 5 kilometres of the campus. It rendered no competition for online courses with less than 10-minutes cost of walking from dormitory to training classroom.
- *Lack of diversity on courses:* in order to collect valid data within a limited time, this research narrowed its object range in IELTS/TOFEL training courses, which were nearly all language standardised tests. According to Salzmann (1994), females are more talented and better-performed in second-language learning ability than males. Language learning requires more patience and a systematic learning approach, unlike subjects like science or programming, which is the weak spot of the majority of male students. Furthermore, another study showed that this language learning gift should also owe to the different physiological structures of men and women, where female hormones played a positive part (Barrett, 2008).

4 Result and discussion

Based on the compilation of results from quantitative analysis (including mean, standard deviation and t-test) and qualitative surveys (face-to-face interview), it is reasonable to draw to a set of conclusions on factors influencing students to choose online courses over traditional classroom courses.

While aiming to evaluate the differences in rating between online and face-to-face courses, 16 questions related to teachers' and courses' characteristics were assessed. Descriptive statistics were presented in the following two tables, with each item as a dependent variable.

4.1 Variables of teachers' characteristics

In terms of teachers' characteristics, to determine if there existed group differences, independent samples t-test were conducted towards eight factors regarding teacher's characteristics. There were five significant group differences. The results from the analyses were presented in Table 4.

Table 4 Description of variables of teachers' characteristics

		F2F		*Online*		*t-test*	
		Mean	*SD*	*Mean*	*SD*	*t*	*Effect-size*
1	In-class supervision and urging of teachers	4.91	0.29	4.32	0.91	2.34*	1.33
2	Problem-solving promptly of teachers	4.92	0.32	4.45	0.87	3.86**	2.05
3	Teacher's enthusiasm	4.87	0.24	4.40	1.26	2.75*	1.79
4	Teacher's explanations	4.81	0.82	4.66	1.18	0.97	
5	Teacher's utilisation of class time	4.69	0.70	4.60	0.84	1.42	
6	Teacher's preparation	4.43	0.57	4.62	0.88	–2.68*	1.75
7	Teacher's interest in student learning	4.60	0.36	4.13	1.26	2.01	
8	Teacher's teaching quality	4.84	0.45	4.77	2.40	3.01*	1.99

Notes: *$p < 0.05$ and **$p < 0.01$.

As shown in the table, five groups with significant differences were respectively: in-class supervision and urging of teachers, problem-solving promptly by teachers, teacher's enthusiasm, preparation and teaching quality. Based on the interview and related literature, the following part will discuss through each factor.

4.1.1 In-class supervision and urging of teachers

During the real classroom environment, instructors had the opportunity to pay close attention to each student's individual learning state and attitude to manage and maintain discipline in the class. Students with a low attention span and a lack of focus would find online courses to be counterproductive due to the overwhelming freedom (Morrison, 2011). Hence, a dynamic face-to-face classroom was more appropriate and suitable to meet their personal needs.

- *Problem-solving promptly by teachers:* there were significant differences between long-distance and traditional courses in their degree of involvement. Firstly, within online courses, a collective time/short-term of 20 minutes is dedicated to problem-solving and answering questions. Due to the relatively long time gap between the points of the student's problem, it had a negative influence on productivity as they remain stagnant. According to Richardson (2010), under such situations, it will be more time-consuming when students usually require several minutes to recall and re-describe the problem after some time. Secondly, the Q&A period was typically limited to half an hour, which cannot guarantee to satisfy every student's needs. Thirdly, compared to face-to-face problem solving, it is less effective and efficient for students, thus creating a poor user experience from their perspective.
- *Enthusiasm (positive class atmosphere):* in front of a digital screen, it will be more difficult for online students to feel the teacher's enthusiasm or positive emotions, while offline students could be encouraged or inspired by their positive attitude.
- *Teaching quality:* although there are little differences between the distance and the traditional courses concerning the instructors' teaching quality, the standard deviation of the former is much higher. Coincidently, through interviews, two opposite voices existed on this subject. One insisted that online teachers were severely deficient in terms of teaching skills. As students claimed, the content was too fast and boring hence hard to follow. The other one, by contrast, argued that teachers are faster paced and highly efficient without any irrelevant chatting or jokes. Based on Ellis's (2003) theory, participation in a networked learning environment was decided by their personality type, which could be roughly divided into two specific examples: active and passive. Typically, students of passive personality were void of enthusiasm and initiative, who needed stimulations incorporated with short courses to guarantee an active learning experience.
- *Teacher's preparation:* there are significant differences between the online and the traditional students' satisfaction with the teacher's preparation for their courses. Generally speaking, contrary to the personalised instructional methods of real classrooms, teaching materials used by online instructors are elaborately designed by professional teaching and researching groups to optimise the effects on students and to increase satisfaction rate (McKay and Kember, 1997). Consequently, online

students receive numerous consolidated textbooks and materials to assist their studies in coordination with online teaching.

4.2 Variables of courses' characteristics

While determining if there existed group differences, independent samples t-test were conducted towards eight factors regarding the course's characteristics. There were four significant group differences. The results from the analyses were presented in Table 5.

Table 5 Description of variables of courses' characteristics

		F2F		*Online*		*t-test*	
		Mean	*SD*	*Mean*	*SD*	*t*	*effect-size*
1	Regular discussion arrangement within the course	4.40	0.29	3.02	1.45	2.75*	1.79
2	Integrity of the course	4.45	0.46	4.57	0.78	–0.84	
3	Content of the course	4.32	0.27	4.29	1.06	1.58	
4	Amount learned	4.13	0.72	3.96	1.68	1.88	
5	Effectiveness/relevance	4.11	0.68	4.08	1.14	0.87	
6	Available of repetitive learning	4.03	0.23	4.51	1.42	–2.24*	0.83
7	Quantity and quality of off-class activities	4.36	0.67	3.21	1.54	2.67*	1.75
8	Flexible schedule of the course	4.23	0.45	4.50	0.96	–2.06*	0.76

Notes: *$p < 0.05$.

As shown in the table, four items with significant differences were respectively: regular discussion arrangement within the course, available of repetitive learning, quantity, and quality of off-class activities and flexible schedule of the course. Based on the interview and related literature, the following part will discuss through each factor.

4.2.1 Academic discussion arrangement within the course

There were significant differences between the online and traditional students in terms of their assessment of the course. On the one hand, the format of the current class course for traditional offline students enabled them to organise regular meetings (each time after the class). Furthermore, for offline students who spent most of the learning time together, their relative familiarity with one another's progress with the course was more advantageous and beneficial in initiating helpful academic discussion in which most of the students were engaged. On the contrary, for online students, most of the students' private information was protected and hidden, which means that they could barely find out about one another or get to know each other. In other words, collaboration outside the teaching framework was hardly feasible, and coordinating with a group of strangers proved not so efficient, not to mention the difficulty of arranging an academically-orientated discussion. On the other hand, the training agencies would usually hold regular

academic seminars, including both the teachers and the students involved in traditional courses. These seminars turned out to improve students' academic performances.

4.2.2 Available of repetitive learning

The online learners were more significantly concerned with the examination grade than traditional students. However, this point could be considered controversial because of the existing disagreement on the difference in the effects of grades improving between distance and traditional courses. There was a substantial amount of supporting literature accompanied by detailed analyses of quantitative research data for both online and traditional students. Most of them reached an agreement on the phenomenon of polarisation and its possible reasons. Due to the unsubstantial supervision system, students were required to depend on their self-discipline. There was no daily sign-up or attendance record kept in a long-distance teaching format, nor any form of assessment gauging each class's performance. Without humanistic care nor prudent after-sales services, the main determinant was the learner himself instead of teachers or training agencies. Thus, the polarisation was less severe for traditional courses, where instructors could pay attention to poorly performing students and manage to maintain a balance in the class (Johnson and Johnson, 2005).

4.2.3 Quantity and quality of off-class activities

The online learners were significantly more unsatisfied with the quantity and quality of off-class activities compared to traditional learners. Similarly, with the regular academic meetings for traditional courses, the organisation of off-class gatherings and group activities was a valuable opportunity to strengthen student loyalty. It was also quite a strategic marketing approach (Stover, 2005). The lack of offline bonding activities was a weakness that led to low user retention for online courses.

4.2.4 Flexible schedule of the course

For traditional face-to-face learners, the schedule of courses was basically fixed and completely decided by training agencies, which sometimes had to make concessions to teachers' timetables and classroom service situations. Nevertheless, relying on portable electronic devices, online students could decide on their own study plan based on their own condition. Once an emergency or other unforeseen situation occurred, it was flexible for online students to postpone the class without absence, which also explained the significant negative difference in the item 'the integrity of course'.

4.3 Variables of learners' characteristics

In terms of learners' characteristics, to determine if there existed group differences, independent samples t-test were conducted towards six factors regarding the course's components. There were four significant group differences. The results from the analyses were presented in Table 6.

Table 6 Description of variables of learners' characteristics

		Online		*F2F*		*t-test*	
		Mean	*SD*	*Mean*	*SD*	*t*	*Effect-size*
1	The degree of self-discipline	4.02	0.87	3.12	0.72	3.76**	2.01
2	The degree of self-study ability	3.88	0.36	3.42	0.67	2.43*	1.41
3	The ability to memorise	3.56	0.64	3.48	1.12	1.22	
4	The degree of persistence	4.20	0.84	3.86	1.18	2.74*	1.79
5	Reaction velocity	3.79	0.43	3.67	0.80	1.42	
6	The degree of concentration/ focusing ability	4.13	0.97	3.68	0.82	2.65*	1.72

Notes: *p < 0.05 and **p < 0.01.

As shown in the table, four items with significant differences were respectively: the degree of self-discipline, the degree of self-study ability, the degree of persistence and the degree of concentration or focusing ability, which indicated that online courses required a more comprehensive range of strength. Based on the interview and related literature, the following part will discuss the four factors together since they are all classified as the students' study ability.

Compared with traditional face-to-face, the most prominent unique feature of the online course was that, during the class, it filled students with initiatives. All the materials were provided to students, and the best part was all about independent self-learning. It could be easily indicated from the six positive difference that, it requires comprehensive learning capacity and ability to maintain an online learner.

4.3.1 Little correlation between gender and learning ability

While aiming to determine if there was a group difference between female and male students, independent samples t-test were conducted towards the identical six factors regarding the course's characteristics. There was only one little significant group difference. The results from the analyses were presented in Table 7.

Table 7 Description of gender

		Male		*Female*		*t-test*	
		Mean	*SD*	*Mean*	*SD*	*t*	*Effect-size*
1	The degree of self-discipline	3.98	0.47	3.91	0.62	0.76	
2	The degree of self-study ability	3.64	0.36	3.55	0.67	0.69	
3	The ability to memorise	3.46	0.64	3.49	1.12	1.02	
4	The degree of persistence	4.21	0.84	4.30	1.18	2.05*	0.76
5	Reaction velocity	3.75	0.43	3.46	0.80	1.32	
6	The degree of concentration/ focusing ability	3.87	0.97	3.76	0.82	1.04	

Notes: *p < 0.05.

As shown in the table, there was little correlation between gender and learning abilities, which failed to prove the previous assumption.

5 Suggestion and conclusions

5.1 Suggestions and advice

5.1.1 Suggestions for educational training agencies

According to the experiences of 96 respondents, the fundamental process of an online course is like the following: after independent self-purchase, the learner will receive a personal account authorising him to view specific online courses. Typically, there will be over two alternatives for teachers with 'demo lessons'. Learners are acquired to make choices within a short period. Afterward, with little after-sales service, students can take online courses through laptops or smartphones within a certain period (after the expiration date, videos or teaching materials are not available anymore).

From the perspective of commercial training agencies, the essential object is public praise, which is directly linked to the course's satisfaction rate. Hence, improving the teaching quality and user experience should be located in the priority. To achieve such purpose, the agencies should consider the characteristics and of both instructors and learners.

Providing different types of online courses

As indicated in the 'finding' part, students' requirements, preference and expectations vary from person to person. For example, freshmen learners might require a higher proportion of tutoring modules and a stricter supervision system. The training agencies should offer multiple choices for training courses with different features.

Pre-course test and professional sorting

Before a student is officially enrolled in as a member, the first thing for training agencies is to conduct a standardised ability test or survey for the students, which should be consist of academic ability, learning style and attitude.

With the provided information on personal characteristics, the training agencies can recommend suitable courses for learners.

Regular online problem solving and Q&A meeting

One of the biggest criticisms about online courses is the inadequate time of problem-solving instruction and the Q&A section. To solve this problem, regularly held online problem solving and Q&A meetings seem to be an optimal solution. In addition to teacher-student communication, discussion, or even debate between students should be encouraged.

Timely mutual feedback from teachers and students during the course

In fact, there is a feedback section for the majority of online courses. Nevertheless, it is usually available at the end of courses, which is ineffective and pointless for the learners at that time. The training agencies should collect comments and feedbacks of all stages, especially from an earlier stage, when efficient and targeting alterations are still feasible.

Furthermore, feedback from teachers is of identical significance. Every adjustment and improvement of courses should be informed and discussed with teachers timely.

Interesting and effective supervising system

Due to low-discipline, the institution should implement some interesting and effective supervision measures. One of the interviewees suggested that the institution set an incentive system to encourage students to attend online courses and give feedback. For instance, students with attendance rate over 90% will be provided with material reward.

5.1.2 Suggestions for teachers of online courses

Although directors and designers of the course determined the general form and contents, teachers could still make a difference regarding the teaching quality.

Expressive enthusiasm and positive attitude

As indicated in the finding part of this paper, a significantly more online students rate lower grades for 'teachers' enthusiasm'. The digital screen will inevitably limit and weaken the teacher's emotional expression. Still, the teacher could make more efforts to present a vigorous and enthusiastic instructing style, which could motivate and inspire students to generate interest and concentrate on the content.

Encouragement and reminding

Considering the students' easily distracted characteristics, teachers could incorporate some interesting facts with teaching content. In the meantime, timely encouragement and reminding would be appreciated by students.

5.1.3 Suggestions for students in need of decision making over online and traditional training courses

Based on the research result, females in the higher academic year tend to choose online courses over conventional face-to-face courses. Apart from internal factors as gender and age, the learning ability, psychological quality, as correlated factors, are of significant influence.

Accurate self-evaluation of self-discipline, study habit, learning ability and capacity

Based on the previous learning experience, students could evaluate their own learning ability and capacity and classify themselves into a specific learner type to make optimal choices for training courses. There exist all kinds of sortation and classifications for learning style. Dale's (1969) 'learning pyramid' is the most simple and effective approach considering the practical use of assisting decision-making over online and traditional courses. By dividing all the learners into two types: active learners and passive learners. Generally speaking, the passive learner is more suitable to attend online courses.

In other words, if the student finds that he usually acquires new knowledge by reading, listening, and independent digestion of lecture, then it is reasonable and wise to consider online courses.

Better adapting to online courses

There are several effective suggestions for those students who already choose an online course to help them better adapt to the course.

Physical and psychological state adjustment and preparation before class

Before starting an online class, learners should adjust their state of mind and brain to optimal situations. Firstly, the learner should preview the specific class's learning material and have an approximate outline for the content involved. Secondly, the learner should guarantee adequate rest and be fully energetic.

Remove of distractions

There were 23 students provided practical answers to the open-ended questions of 'list the distractions for online study for you'. While combining with the results of the same questions from the interview, there are five top distractions presented in Table 8 (out of 32 learners).

Table 8 Five top distractions

Distractions	*Number of students mentioned*
Hunger	16
Portable electronic devices	30
Friends	19
Television	6
Surrounding noise	24

As indicated from the table above, online students should choose a comfortable and quiet location for online learning. Most importantly, nearly every student claimed that he would be distracted by portable electronic devices. Thus, it is wiser to attend the course without a smartphone.

An offline-support study group

It is highly possible for college students to find a partner who is preparing for the same examination. Through establishing a study group, it provides a mechanism for students with similar academic to gather. In terms of educational issues, it is an optimal platform to discuss and solve the problem. Beyond that, students could also acquire mutual support and encouragement.

Practicable and high-efficient schedule

Since the majority of offline learners rated highly for the characteristic of 'reasonably established timetable', a fixed learning schedule is also a significant preparation for

learners. However, for most of the online courses, students are authorised to use the teaching materials within a limited period, with a vigorously recommended schedule or no specific learning plan. To maximise the efficiency of the online courses, students should establish a strategic program for further study.

5.2 Conclusions and future work

To summarise, this study found that the degree of teaching qualities, instructor's enthusiasm, interaction with students and teachers, promptness on a problem-solving, flexible timetable of courses, were the top five external determinants of choosing between online courses. In terms of internal factors, age (academic year) and gender were both significantly influential. In the meantime, the degree of self-discipline, the degree of self-study ability, the degree of persistence and the degree of concentration or focusing ability also played a significant role in the results. In a word, to encourage the development of online courses, both educational institutions and students should make some changes. Educational institutions should attach great significance to interaction and communication between students and teachers. In the meantime, they could focus on enhancing the performance-price ratio. Students should evaluate both courses and themselves with caution before making decisions. After entering an online course, they should make it a priority to adjust both psychologically and physically continuously.

It was believed by most of the scholars and specialists that, the online course would become the mainstream approach for academic training in the future. Thus it was beneficial and significant to conduct a survey from the perspective of students from an international university in China. The factors that influence decision making between online and face-to-face courses could provide further insight into this evolving development.

This research was conducted before COVID-19, which has completely changed how higher education can be delivered and how assessment, interaction, and teaching quality can be evaluated differently. Therefore, our future work will include the investigation of modern online learning and virtual face-to-face learning, the effectiveness of the hybrid new delivery, and ways to improve learning efficiency and satisfaction.

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References

Abelson, H. (2007) 'The creation of OpenCourseWare at MIT', *Journal of Science Education and Technology*, Vol. 17, No. 2, pp.164–174 [online] http://dx.doi.org/10.1007/s10956-007-9060-8 (accessed 26 April 2017).

Aliaga, M. and Gunderson, B. (2002) *Interactive Statistics*, Pearson Education, Virginia.

Amro, H., Mundy, M. and Kupczynski, L. (2015) 'The effects of age and gender on student achievement in face-to-face and online college algebra classes', *Research in Higher Education Journal*, January, Vol. 27.

Barrett, R. (2008) 'Review of gender and language: theory and practice. By Lia Litosseliti', *Gender and Language*, Vol. 2, No. 2 [online] http://dx.doi.org/10.1558/genl.v2i2.233 (accessed 28 April 2017).

Begun, A. (2006) 'Book review: using statistical methods in social work practice: a complete SPSS guide', *Research on Social Work Practice*, Vol. 16, No. 4, pp.455–455 [online] http://dx.doi.org/10.1177/1049731505283942 (accessed 28 April 2017).

Callister, R. and Love, M. (2016) 'A comparison of learning outcomes in skills-based courses: online versus face-to-face formats', *Decision Sciences Journal of Innovative Education*, Vol. 14, No. 2, pp.243–256 [online] http://dx.doi.org/10.1111/dsji.12093 (accessed 27 April 2017).

Cavanaugh, J. and Jacquemin, S. (2015) 'A large sample comparison of grade based student learning outcomes in online vs. face-to-face courses', *Online Learning*, Vol. 19, No. 2 [online] http://dx.doi.org/10.24059/olj.v19i2.454 (accessed 27 April 2017).

Chang, V., Liu, M., Xu, Q. and Chang, X. (2020) 'Factors affecting student satisfaction in e-learning', *Int. J. of Business and Systems Research*.

Dale, E. (1969) *Audiovisiual Methods in Teaching*, 3rd ed., Holt, Reinhart & Winston, New York.

Duan, N., Bhaumik, D.K., Palinkas, L.A. and Hoagwood, K. (2015) 'Optimal design and purposeful sampling: complementary methodologies for implementation research', *Administration and Policy in Mental Health and Mental Health Services Research*, Vol. 42, No. 5, pp.524–532.

Ellis, A. (2003) 'Personality type and participation in networked learning environments', *Educational Media International*, Vol. 40, Nos. 1–2, pp.101–114 [online] http://dx.doi.org/10.1080/0952398032000092152 (accessed 28 April 2017).

Fithri, D.L., Utomo, A.P. and Nugraha, F. (2020) 'Implementation of SaaS cloud computing services on e-learning applications (case study: PGRI Foundation School)', *Journal of Physics: Conference Series*, Vol. 1430, p.012049.

Hammouri, Q. and Abu-Shanab, E. (2018) 'Exploring factors affecting users' satisfaction toward e-learning systems', *International Journal of Information and Communication Technology Education (IJICTE)*, Vol. 14, No. 1, p.14 [online] https://doi.org/10.4018/IJICTE.2018010104.

Harris, C., Olesova, L. and Brown, S. (2016) 'From face-to-face to online and back again: how Masonâ^{TM}s online course development institute can help you!', *Innovations in Teaching & Learning Conference Proceedings*, Vol. 8 [online] http://dx.doi.org/10.13021/g8pk6z (accessed 29 April 2017).

Helms, J. (2014) 'Comparing student performance in online and face-to-face delivery modalities', *Online Learning*, Vol. 18, No. 1 [online] http://dx.doi.org/10.24059/olj.v18i1.348 (accessed 28 April 2017).

Henry, J. and Meadows, J. (2008) 'An absolutely riveting online course: nine principles for excellence in web-based teaching', *Canadian Journal of Learning and Technology/ La revue canadienne de l'apprentissage et de la technologie*, Vol. 34, No. 1 [online] http://dx.doi.org/10.21432/t20c7f (accessed 27 April 2017).

Herman, T. and Banister, S. (2007) 'Face-to-face versus online coursework: a comparison of learning outcomes and costs', *Contemporary Issues in Technology and Teacher Education*, Vol. 7, No. 4, pp.318–326.

Jaggars, S. (2014) 'Choosing between online and face-to-face courses: community college student voices', *American Journal of Distance Education*, Vol. 28, No. 1, pp.27–38 [online] http://dx.doi.org/10.1080/08923647.2014.867697 (accessed 27 April 2017).

Johnson, D. and Palmer, C. (2014) 'Comparing student assessments and perceptions of online and face-to-face versions of an introductory linguistics course', *Online Learning*, Vol. 19, No. 2 [online] http://dx.doi.org/10.24059/olj.v19i2.449 (accessed 29 April 2017).

Johnson, D.W. and Johnson, R.T. (2005) 'Cooperative learning, values, and culturally plural classrooms', *Classroom Issues*, pp.29–47, Routledge.

Kaur, K. and Abas, Z.W. (2004) 'An assessment of e-learning readiness at the Open University Turkey', *International Conference on Computers in Education*, Melbourne, Australia.

Kim, K., Liu, S. and Bonk, C. (2005) 'Online MBA students' perceptions of online learning: benefits, challenges, and suggestions', *The Internet and Higher Education*, Vol. 8, No. 4, pp.335–344 [online] http://dx.doi.org/10.1016/j.iheduc.2005.09.005 (accessed 29 April 2017).

McKay, J. and Kember, D. (1997) 'Spoon feeding leads to regurgitation: a better diet can result in more digestible learning outcomes', *Higher Education Research & Development*, Vol. 16, No. 1, pp.55–67 [online] http://dx.doi.org/10.1080/0729436970160105 (accessed 27 April 2017).

Morrison, R. (2011) 'A comparison of online versus traditional student end-of-course critiques in resident courses', *Assessment & Evaluation in Higher Education*, Vol. 36, No. 6, pp.627–641 [online] http://dx.doi.org/10.1080/02602931003632399 (accessed 27 April 2017).

Newman, I. and Benz, C.R. (1998) *Qualitative-Quantitative Research Methodology: Exploring the Interactive Continuum*, University of Illinois Press, Carbondale.

Ogura, A., Hayashi, N. and Negishi, T. (2018) 'Effectiveness of an e-learning platform for image interpretation education of medical staff and students', *J. Digit. Imaging*, Vol. 31, pp.622–627 [online] https://doi.org/10.1007/s10278-018-0095-6.

Richardson, J. (2010) 'Face-to-face versus online tuition: preference, performance and pass rates in white and ethnic minority students', *British Journal of Educational Technology*, Vol. 43, No. 1, pp.17–27 [online] http://dx.doi.org/10.1111/j.1467-8535.2010.01147.x (accessed 27 April 2017).

Roessner, D. (2000) 'Quantitative and qualitative methods and measures in the evaluation of research', *Research Evaluation*, Vol. 9, No. 2, pp.125–132 [online] http://dx.doi.org/10.3152/147154400781777296 (accessed 28 April 2017).

Sadiq, B. (2020) 'The effect of e-learning in teaching English as a foreign language to postgraduate students at college of physical education and sciences sports for women', *English Language Teaching*, Vol. 1, No. 1, pp.161–170.

Salzmann, Z. (1994) 'Women, men and language: a sociolinguistic account of gender differences in language by Jennifer Coates', *Language*, Vol. 70, No. 3, pp.601–602 [online] http://dx.doi.org/10.1353/lan.1994.0027 (accessed 28 April 2017).

Severance, C. (2012) 'Teaching the world: Daphne Koller and Coursera', *Computer*, Vol. 45, No. 8, pp.8–9 [online] http://dx.doi.org/10.1109/mc.2012.278 (accessed 26 April 2017).

Silvia, A. (2015) 'Coursera online course: a platform for English teachers' meaningful and vibrant professional development', *TEFLIN Journal – A Publication on the Teaching and Learning of English*, Vol. 26, No. 2, p.228 [online] http://dx.doi.org/10.15639/teflinjournal.v26i2/228-246 (accessed 26 April 2017).

Stover, C. (2005) 'Marketing distance programs and courses: a relationship marketing strategy', *Distance Education Report*, Vol. 9, No. 15, pp.1–12 [online] https://www.mendeley.com/research-papers/marketing-distance-programs-courses-relationship-marketing-strategy/ (accessed 28 April 2017).

Tobin, K and Tippins, D (1993) Constructivism as a referent for teaching and learning. In Tobin, K. (Ed.): *The Practice of Constructivism in Science Education*, pp.23–38, AAAS Press, Washington DC.

Wuensch, K., Aziz, Z. and Ozan, E. (2008) 'Pedagogical characteristics of online and face-to-face classes', *International JI on E-Learning*, Vol. 7, No. 3, pp.523–532.

Xie, J. and Gao, Y. (2009) 'Issues and suggestions of online courses construction', *Modern Education Science*, Vol. 3, No. 2, p.49.

Yilmaz, R. (2017) 'Exploring the role of e-learning readiness on student satisfaction and motivation in flipped classroom', *Computers in Human Behavior*, May, Vol. 70, pp.251–260.