A Study Of E-Learning Readiness And Gender Differences Of Students In Chinese Higher Education Institutions

Xinran Wang

University of Malaya, Malaysia

Abstract

The purpose of this study was to examine Chinese university students' readiness for E-learning and whether there are gender differences in E-learning readiness. To meet this purpose, this study used a quantitative research approach and data collection was conducted using an online questionnaire. A total of 88 college students participated in this study. These 88 students completed the Likert questionnaire on E-learning readiness. SPSS(Statistical Package for Social Sciences) was used to analyze the collected data descriptively and with analysis of variance. According to the findings, Chinese college students are relatively well prepared for E-learning, with high mean scores on several dimensions of technology access, online skills and relationships, online video/audio, Internet discussions, and importance to success, and moderate scores on motivation. In terms of gender differences, the study discovered significant differences in the E-learning readiness levels of Chinese university students based on gender, specifically in the online skills, interpersonal relationships, and importance to success dimensions. The findings of this study have implications for Chinese universities seeking to understand and improve the E-learning readiness levels of their students. In future research, this study should adopt a mixed-methods and large-sample approach.

Keywords: E-learning, gender differences, higher education institution

1. Introduction

The world of higher education has changed as a result of the constant advancements in information and communication technologies (ICT), especially with the quick development of Internet technologies (Prasojo et al., 2019). This has also given rise to dramatic changes in learning and teaching styles, especially in E-learning. These changes have triggered a series of concerns and research on online learning(!!! INVALID CITATION !!! [2-4]).

In the Chinese context, China was the first to initiate the integration of ICT and education in the 1990s (Wang et al., 2018). E-learning has changed the concept of when and where learning takes place (Ren et al., 2013). As of 2015, China's "public management platform for educational resources" had close to 1 billion visits(Rysbekkyzy & Jide, 2021). Through E-

learning and ICT, people can learn anywhere and at any time (Nikolić et al., 2019). Therefore, this is of crucial importance for China, which has a vast territory and uneven economic and cultural development. The emergence and development of E-learning have already brought convenience to many students and teachers and have many advantages over traditional learning methods(Arifiati et al., 2020). Therefore attention to E-learning is essential.

Although this is a possibility, the key issue is still how prepared students are for online learning. Studies from the past indicate that higher education institutions still lack the necessary infrastructure(Panyajamorn et al., 2018), as well as the fact that many students still lack computer literacy and motivation, puts a damper on the development of E-learning(Garrison & Anderson, 2004).Additionally, there is a lack of studies on how ready Chinese college students are for E-learning, and more research is required to close this gap.

Therefore, this study focuses on the readiness of students for e-learning in Chinese higher education institutions. Using a quantitative analysis, the findings will address the research gaps in the current Chinese context and the study will provide evidence and inspiration to e-learning policy makers.

2. Literature Review

2.1 E-learning

E-learning is a type of instruction that makes use of the Internet and other digital tools(Malik & Rana, 2020). E-learning started out as a program for students who had jobs and were not able to attend school full-time (Moore et al., 2011). Today, e-learning is available to all types of students, and full-time students have the option of participating in courses through e-learning, bringing great convenience(Aboderin, 2015).

On the contrary, many students do not prefer E-learning and prefer face-to-face traditional teaching methods(Paechter & Maier, 2010). Similarly, another study from the UK showed that many students still prefer traditional instructional materials and teaching methods as the primary method(Orton- Johnson, 2009).

2.2 Students' readiness for E-learning

Previous studies have shown that a Thai study that looked into PhD students' preparedness for online learning found that their level of readiness showed tremendous potential and that differences in age and gender did not significantly affect their level of readiness(Wattakiecharoen & Nilsook, 2013). In a similar vein, a Malaysian study revealed that gender had no bearing on preparation for online learning (Agboola, 2006)

In addition, studies have shown that students are ready to use e-platforms for learning, and students at a Saudi university indicated that they were ready to make the transition to new ways of teaching and learning activities(Fageeh, 2011). There is also a study from a public university in Malaysia that revealed that students are mostly ready for e-learning and that students are competent in all aspects of technology readiness(Adams et al., 2018).

However, some studies have yielded negative results. One study in Egypt showed that students' E-learning readiness is influenced by several factors such as technological skills, learning skills, and management behaviors and that the study yielded negative results, with many students performing poorly in E-learning readiness and requiring targeted measures to improve students' E-learning skills(Ali, 2010).

3. Methodology

3.1 Participants

The study employed a quantitative research method, and one variable that could be assessed by a questionnaire was the students' readiness for online learning. A sample of 88 college students was chosen at random using a convenience sampling technique for the study. The survey was conducted through an online questionnaire. Again for ethical reasons, consent to participate in this survey was first sought from participating students prior to distribution of the questionnaire, and it was explained that completion of this questionnaire was voluntary and anonymous. The demographic information of the respondents is shown in Table 1.

Table 1: Demographic information

	Frequency	Percent（%）
Male	27	30.7
Female	61	69.3
Total	88	100

3.2 Instrument

The research instrument was the E-learning Readiness Assessment, a self-assessment (questionnaire) developed to study the readiness of learners. The questionnaire contains a total of 27 items covering six dimensions: Technology, Online Skill and Relationships, Motivation, Online Audio / Video, Internet Discussions, and Importance to Success The mean of online learning readiness is divided into five levels: 1.00 to 1.49 is the lowest mean, 1.50 to 2.49 is the lowest mean, 2.50 to 3.49 is the moderate mean, 3.50 to 4.49 is the highest mean, and 4.50 to 5 is the highest.

3.3 Data analysis

SPSS was used to analyze the data in this study. The researcher collected and examined all completed questionnaires and analyzed 88 of them, accounting for 100% of the total. In this study, descriptive analysis was used to calculate the mean score and standard deviation for each dimension.

In addition, this study used the Welch test to compare and analyze the readiness for E-learning by gender. The Welch test is used when the homogeneity of variance assumption for One-Way ANOVA is violated.

4. Results

4.1 College students' readiness for E-learning

First, college students' readiness for E-learning was analyzed. The overall results showed that the overall mean and standard deviation of college students' e-readiness were high means (M=4.15), as shown in Table 2.

Table 2: E-learning readiness

	N	Mean	Std. Deviation
E-learning Readiness	88	4.1465	0.39457

Second, Table 3 showed that college students performed best in the online skills and interpersonal dimensions (M=4.51, SD=.50), followed by the technology access dimension (M=4.24, SD=.73), and conversely, college students had the lowest mean scores in the motivation dimension (M=3.49, SD=.79).

Table 3: Means and standard deviations of the dimensions of E-learning readiness

	N	Mean	Std. Deviation	Degree
Online Skill and Relationships	88	4.5076	0.50926	Highest
Technology Access	88	4.2462	0.73673	High
Importance to your success	88	4.0432	0.57251	High
Internet Discussions	88	4	0.53202	High
Online Audio / Video	88	3.9848	0.58702	High
Motivation	88	3.4924	0.79587	Moderate

First, for the technical access dimension, as Table 4 shows, the mean scores for all questions were high, indicating that the college students were better prepared at the technical access level.

Table 4: Technical Access

	Mean	Std. Deviation
A1. I have a computer with Internet access.	4.69	0.914
A3. I have a computer with sufficient software (e.g. Microsoft word, Adobe Acrobat, Zoom, etc.).	4.10	0.983

A2. I have a relatively new computer (e.g. with enough RAM, intact speakers, few lags, etc.).	3.94	1.128

Then, in the dimension of Online Skills and Relationships, it was found that the mean score for this dimension was the highest, which means that the students were well prepared in this aspect

Table 5: Online Skills and Relationships

	N	Mean	Std. Deviation
B3. I can send emails with attachments.	88	4.67	0.673
B5. I can use online technology to communicate effectively with others (e.g. WeChat, WhatsApp, email, etc.)	88	4.65	0.588
B2. I have basic skills in retrieving information on the Internet (e.g., using a search engine).	88	4.64	0.664
B1. I have basic skills in operating a computer (e.g. saving files, creating folders, etc.)	88	4.59	0.672
B6. I am able to express myself clearly through typing (humor, emotions, etc.)	88	4.55	0.726
B4. I feel no difficulty in using the computer to attend classes several times a week.	88	4.50	0.844
B7. I think I was able to use online tools to complete assignments with students from different time zones.	88	4.49	0.661
B9. I can clearly make comments and ask questions in text during the online communication.	88	4.28	0.726
B8. I am always able to respond to my classmates or teachers on line in a timely manner.	88	4.20	0.681

The next dimension is the motivation dimension, which was found to have the lowest mean score, indicating that college students are still more likely to be disturbed by other factors in the E-learning process. For example, the results of items C1 and C3 show that more than half of the students would be likely to be disturbed by factors such as teachers not being online, TV at home, and children. In item C2, at least 43% of the students also would be disturbed by Internet factors such as online games.

Table 6: Motivation

	N	Mean	Std. Deviation
C2. Even with network interference (message push or online games, etc.), I can still accomplish my tasks.	88	3.57	0.992
C1. In online courses, I think I can stay motivated even if the teacher is not always online.	88	3.45	1.005
C3. Even with distractions in the house (kids, TV, etc.), I can still get my work done.	88	3.45	0.909

In terms of the online video dimension, the survey results may still be difficult for some students (28.4%) in terms of connecting the online video knowledge to the book knowledge. There are also some students (24%) who may find it difficult to take notes while watching online videos.

Table 7: Online video/audio

	N	Mean	Std. Deviation
D3. I can understand when the information related to the course is presented in the form of a video.	88	4.20	0.646
D2. I can watch the video and take notes at the same time.	88	3.92	0.913
D1. I can relate what I learned in the course videos to what I learned in the book.	88	3.83	0.761

For the Internet discussion dimension, the survey results found that for question item E1（I think that I would be comfortable having several discussions taking place in the same online chat even though I may not be participating in all of them.）, 35% of students may not favor discussions in online classes. All other questions scored high.

Table 8: Internet discussion

	N	Mean	Std. Deviation
E1. I can use instant messaging software to start discussions and fluent conversations with others.	88	4.24	0.788
E4. Before answering questions in class, I sometimes wish I had more time to prepare my answers.	88	4.14	0.73
E3. I can track online conversations as I type.	88	3.93	0.785
E1. Having multiple discussions in the same class makes me feel comfortable, even if I won't be participating in the discussion.	88	3.69	0.939

The importance of each component to the success of e-learning received a high overall score. However, 30% of the students may disagree that frequent participation is crucial to the success of online coursework for question F3 (Frequent involvement throughout the learning process is critical to my success in online coursework).

Table 9: Importance to your success

	N	Mean	Std. Deviation

F5. Having easy access to course materials has been important to my success in online courses.	88	4.28	0.726
F2. Convenient Internet technology and support from the school administration were important to my success in online courses.	88	4.12	0.74
F4. My previous experience with computer and Internet technologies has been important to my success in online courses.	88	4.11	0.749
F1. Regular contact with the instructor was important to my success in the online course.	88	3.89	0.964
F3. Active and frequent participation throughout the online course was important to my success in the online course.	88	3.81	0.869

4.2 Gender differences in E-learning readiness

In addition, this study used the Welch test to compare and analyze the readiness of different genders for E-learning. As can be seen from Table 10, in general, for E-learning readiness, there are significant differences between males and females, as shown in Table 10. And the E-learning readiness score of female students (μ=4.21) was higher than that of male students (μ=3.99).

Table 10: Robust Tests of Equality of Means

	Statistic	Sig.
Welch	4.35	0.044

Specifically, Table 11 shows the level of significance for each dimension. The results show that there are significant differences between males and females in two dimensions, online skills and interpersonal relationships, and important to success, while gender differences are not significant in several other dimensions. Females in this study performed better in online skills and interpersonal relationships (μ=4.61), while females scored higher than males in the importance to success dimension (μ=4.13). Among the motivation dimensions, males scored higher than females (μ=3.49), but the difference was not significant.

Table 11: Differences in each dimension

		Statistic	Sig.
Technology Access	Welch	2.587	0.117
Online Skill and Relationships	Welch	6.659	0.014
Motivation	Welch	0	0.992
Online Audio / Video	Welch	0.124	0.726
Internet Discussions	Welch	0.036	0.85
Importance to your success	Welch	4.883	0.033

Specifically, a total of four items were identified as significantly different between genders in the areas of online skills and interpersonal relationships and importance to success. For item B3 (I can send an email with a file attached), it was found that females may have a better command of the skill of sending attachments to emails. Also, for item B4 (I think that I would be comfortable using a computer several times a week to participate in a course), it was found that female students would be more relaxed and comfortable when participating in E-learning multiple times compared to their male counterparts. For item B6 (I think that I would be able to express myself clearly through my writing (e.g., mood, emotions, and humor)), the results indicated that compared to male students, female students were more able to express their emotions and mood. In addition, for item F5 (The ability to immediately apply course materials is important to my success with online courses), the results found that girls were more certain about the importance of immediate access to materials for E-learning.

5. Discussion

This study looked at how prepared Chinese college students were for online learning and whether there were any gender-based disparities in students' levels of preparedness. The students who were interviewed for this study appeared to be generally ready for online learning and to have the essential technical capabilities, interpersonal skills, and knowledge-learning abilities. This result is in consensus with previous studies on the finding that students are mostly prepared(Adams et al., 2018; Fageeh, 2011).

Specifically, Chinese college students performed best on the online skills and interpersonal dimensions, the next best being the technology access dimension. In contrast, college students had the lowest mean scores on the motivation dimension, and almost half of the students' E-learning status was influenced by external factors such as online games, teacher absence, or television. Also, Chinese college students' low scores on questions related to online Internet discussions and in-class participation compared to other questions may be related to national culture, where teacher-centered teaching styles in Asian countries instill in students the habit of remaining silent in the classroom(Hsu, 2002). In addition, some students still have a certain degree of discomfort with the knowledge of online videos.

Welch's test showed that there were differences between genders in students' E-learning readiness, with female students scoring higher in E-learning readiness than male students. Similarly, a Malaysian study showed significant differences between males and females in E-learning readiness, however, the difference is that this Malaysian study found that males performed better than females on E-learning readiness, which is contrary to the results of the current study(Islam et al., 2011). The current study found significant differences between males and females on two dimensions, online skills and interpersonal relationships, and importance to success, while gender differences were not significant on several other dimensions. Specifically, a total of four entries were identified as significantly different by gender, with females likely to have a better mastery of email sending attachment skills, and similar studies have demonstrated positive attitudes and higher motivation for using online technology among females(Yau & Cheng, 2012). Also, female students are more relaxed and comfortable

participating in E-learning multiple times compared to their male counterparts. And girls are more able to express their emotions and moods through online communication, which may be due to the fact that women prefer to use social networks more than men (Thorell et al., 2015). In addition, the results showed that girls were more certain about the importance of immediate access to materials for E-learning.

6. Conclusion

The widespread implementation of E-learning has become inevitable (Garrison & Kanuka, 2004). Therefore, it is important to take into account the E-learning readiness of students. This study showed high levels of E-learning readiness, however, students were still more susceptible to external factors in terms of motivation and still scored moderately well in terms of online class participation and Internet discussions. the results of the Welch analysis showed significant differences in students' readiness for E-learning based on gender statistical variables.

This study does have certain limitations, though. First, this study just looked at students' viewpoints; future studies should look at teachers' or principals' perspectives as well. In order to assure the data's presentability and generalizability, future research may use a bigger sample size than the 88 students used in the current study. In order to further investigate potential explanations for these findings, future study will necessitate interviews.

With these findings in mind, higher education institutions should consider conducting relevant E-learning training. And, through testing to determine the characteristics of students' E-learning readiness, research pedagogy and design courses specific to students' characteristics. Alternatively policy makers or school leaders could conduct regular surveys of students' e-learning readiness levels and provide targeted training to address the issues revealed. Schools should also establish monitoring teams to supervise and check the effectiveness of students' e-learning, etc. In addition, schools can recognize and encourage classes that perform well in e-learning, thereby increasing student motivation to participate. Schools can also develop programs to monitor the learning status of teachers and students online. Finally, continuous evaluation rather than single outcome evaluation can be conducted in teaching evaluation, thus increasing students' motivation to participate in the e-learning process.Overall, more and more measures need to be put into practice to improve students' e-learning readiness and e-learning skills.

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