Investigating Chinese University Students' Perceptions about Blackboard Platform to Support Their Online Learning

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Abstract: In this paper, we investigated the current situation of BB (Blackboard) platform using and the Chinese university students' learning attitudes towards BB platform. Data were collected from 164 students (51 male and 113 female) in Beijing via self-reported questionnaires: Questionnaire of Perceptions about Blackboard platform (PBPQ), including three scales (Ease of Use, Usefulness, Attitude). Results showed that the PBPQ can be used for the Chinese context with good validity and reliability. Further analysis results indicated that different frequencies of using BB platform were related the most to all the three scales except gender, major and grade. The results also showed that students' learning attitudes can be improved by ameliorating the Ease of use and Usefulness of BB platform, and teachers should encourage students to use BB more frequently if they want to use BB platform for teaching. These results give some advice for future course designs on BB platform.

Keywords: Blackboard platform, perception, current situation, learning attitude

1. Introduction

The BB platform is one kind of network platforms that was developed by the U.S. Blackboard company. In October 2003, it was introduced to China by the Beijing CERNET Blackboard company. BB platform is the largest network teaching platform in the world, which can support millions of users. In the market of network teaching platform, BB platform has occupied 85% of the American market and more than 50% of the global market (Song, 2009). Previous studies (Athena & Maker, 2004; Zhang, 2012; Meng, 2011) mainly paid attention to user experience of BB platform and how to design a course with BB platform. For example, Athena and Maker (2004) introduced many teachers' use experience and course management results with BB platform. Zhang (2012) did a research on network collaborative learning. Meng (2011) did the research about how to design an interactive mode based on Blackboard platform. However, there was less research on the university students' learning attitudes towards BB platform. In order to explore about the Chinese college students' perceptions about BB platform, this study aims to take the PBPQ questionnaire, developed by Tsai, Tsai and Hwang (2012) to make a deep understanding about Chinese students.

In sum, this study included the following research questions:

1) Can this questionnaire be used for Chinese mainland college students to measure their perceptions about BB platform?
2) What is the current using situation about BB platform in China?
3) Is there any difference between different major, grade and gender students' perceptions about BB platform?
4) Is there any difference among different frequencies of using BB students' perceptions about BB platform?

2. Methods

2.1 Participants

The participants in this study included 164 college students in Beijing, China. The study took part in the convenience sampling. There were 51 male and 113 female students. They were from different grade (G1: G2: G3: G4 =54:44:42:24) and different major (Liberal arts: Science: Others=69:89:8) in a famous university in Beijing, China. All participants were volunteers to complete the questionnaires in one sitting to explore the current using situation of BB platform and their learning attitudes towards BB platform.

2.2 Instruments

This present study used the instrument developed by Tsai (2012). It was validated for Taiwan students, similar to the Chinese context. This instrument employed a multi-dimensional framework to show student' perceptions about Blackboard platform.

This instrument included the following three scales, with a sample item for each scales:

a) Ease of Use: This scale measures perceptions of the extent to which students prefer that BB platform are easy to use. The example item is 'The search results which are displayed in BB platform are clear and easy to read'.
b) Usefulness: This scale measures the usefulness of BB platform in different students' eyes. The example item is 'The use of BB platform would enhance students' ability to search for information when problem-solving'.
c) Attitude: This scale measures students' learning attitudes towards BB platform. The example item is 'I have more willingness to use BB platform than before'.

2.3 Data Collection and Analysis

Before filling the questionnaires, an instructor trained by the research team informed the responding students of the purpose of the study. The process first involved a survey of each participant's demographic data such as gender and grade. Then, the participant was asked to answer the PBPQ. It took about 15 min to complete this whole survey.

The PBPQ was utilized in this study. Exploratory factor analysis was used to clarify the questionnaire structure. Accordingly, the validity and reliability of the questionnaire was also evaluated. Moreover, an independent t-test was conducted to explore whether there were differences between the two major groups of students. In addition, Pearson's correlation analysis was performed on the students' responses to PBPQ for the students.

3. Results

3.1 Factor Analyses

To ensure a well factor structure and reliability of the factors, it is necessary to make a reexamination. The following Table 1 respectively reveals the consequences of factor analyses for the aforementioned three factors: Ease of use, Usefulness, Attitudes. To get the final instrument, items whose factor loading weighs more than 0.5 were retained. Therefore, there are 10 items showed in Table 1 in total, and the total variance explained is 77.121%. For every scale, alpha coefficient was from 0.819 to 0.897, indicating favorable interaction consistency to do the statistical analysis.

Table 1: Rotated factor matrix and the alpha coefficient for the Ease of use and Usefulness of BB platform (N=164).

	Factor 1	Factor 2	Factor 3
	Ease of use	Usefulness	Attitudes
Factor1 : Ease of use, α=0.897, mean=2.53, SD= 0.41			
Ease of use 1	0.83	—	—
Ease of use 2	0.85	—	—
Ease of use 3	0.78	—	—
Ease of use 4	0.80	—	—

Factor2 : Usefulness, α=0.853, mean=2.97 , SD= 0.45			
Usefulness 1	—	0.86	—
Usefulness 2	—	0.83	—
Usefulness 3	—	0.70	—
Factor3 : Attitudes, α=0.819, mean=2.99 , SD= 0.34			
Attitudes 1	—	—	0.81
Attitudes 2	—	—	0.82
Attitudes 3	—	—	0.70

3.2 The correlation between the frequency of Using BB and the Ease of use, Usefulness, the Attitudes

According to the Table 2, Ease of use was related to both student's age and frequency of using BB. Usefulness was related to their frequency of using BB while Attitudes were linked to both major and frequency.

Table 2: The correlation between the frequency of Using BB and the Ease of use, Usefulness, the Attitudes.

	Ease of use	Usefulness	Attitudes
Age	0.190*	0.063	0.126
Major	0.049	0.100	0.175*
frequency of using BB	0.318**	0.309**	0.358**

** p<0.05; **p<0.01*

3.3 Step-wise Regression Analysis

After analyzing the correlation between the factors, the study attempts to predict student's attitudes towards the BB. As following(Table 3), in the regression equation, the coefficients of Ease of use, Usefulness, Frequency of Using BB respectively were 0.403, 0.284, 0.154 while the constant equaled to 0.648.

Table 3: Step-wise Regression Analysis for predicting Students attitudes towards the BB.

		B	B	T	R
Attitudes	Ease of use	0.403		6.140	0.632
	Usefulness	0.284		4.358	0.689
	Frequency of using BB	0.154	0.181	2.173	0.700

3.4 Major difference

The study compared the possible difference between Liberal arts majors and Science majors. As shown in Table 4, Science major students had higher scores than students who majored in liberal arts, especially on attitudes ($p<0.05$). It means that Liberal arts major students are more likely to accept this platform easily, to get more convenient learning method and better sources.

Table 4: Major comparisons of the scores for all the scale.

scale	major(n)	Mean	SD	T	sig
Ease of use	Liberal arts majors(51)	2.48	0.97	0.14	0.704
	Science major(105)	2.54	1.00	0.10	
Usefulness	Liberal arts majors(51)	2.80	0.98	0.14	0.107
	Science major(105)	3.06	0.96	0.09	
Attitudes	Liberal arts majors(51)	2.72	0.77	0.11	0.014*
	Science major(105)	3.11	0.99	0.09	

3.5 Grade difference

This study also made a comparison between junior grade (including freshman and sophomore students) and senior grade (the third and fourth grade) to look for possible differences. Similarly, from the result of t-test, several significant differences were showed in Table 5. It revealed that senior grade students had better scores on Ease of use ($p<0.05$) than junior grade students. That is, senior grade students thought it easier to use than junior grade students.

Table 5: Grade comparisons of the scores for all the scale.

scale	grade(n)	Mean	SD	T	Sig
Ease of use	Junior grade(73)	2.73	1.00	0.12	0.020*
	Senior grade(91)	2.37	0.94	0.10	
Usefulness	Junior grade(73)	3.06	0.93	0.11	0.312
	Senior grade(91)	2.90	1.00	0.11	
Attitudes	Junior grade(73)	3.05	0.96	0.11	0.455
	Senior grade(91)	2.94	0.90	0.09	

3.6 Frequency of using BB difference

The comparison between high- frequency (frequently or often) and low-frequency (occasionally or sometimes) of using BB also revealed some differences by t-test. What showed in Table 6 is, Students who used BB in high-frequency had more identity on BB than the rest part students, they thought the BB platform were not only easy to use ($p<0.01$), but also useful ($p<0.01$), in addition, their attitudes ($p<0.01$) towards BB were more desired.

Table 6: BB using frequency comparisons of the scores for all the scales.

scale	frequency(n)	mean	SD	T	Sig
Ease of use	high- frequency(59)	2.26	0.84	0.11	0.008**
	low-frequency(105)	2.68	1.02	0.10	
Usefulness	high- frequency(59)	2.67	0.95	0.12	0.002**
	low-frequency(105)	3.15	0.94	0.09	
Attitudes	high- frequency(59)	2.71	0.80	0.10	0.003**
	low-frequency(105)	3.15	0.95	0.09	

4. Discussion and Conclusion

This study reports the validation of Questionnaire of Perceptions about Blackboard platform (PBPQ). A sample of students joined in reporting their perceptions of all prepared items. The instrument was certified reliable and valid based on three scales for Chinese mainland university students.

In this study, Table 2 indicated that Frequency of using BB was related the most to all the three scales while major, gender and grade had little relation. Table 3 predicted that students' learning attitudes can be improved by ameliorating the BB platform's Ease of use, Usefulness and encouraging students to use BB more frequently.

Table 4 and Table 5 uncovered that there were noticeable difference between different majors and grades students in the perceptions of BB platform. It showed that Liberal arts major students were likely to learn by BB more than Science major students were. The probably reason was that BB had stronger function on sharing literal files instead of Science instruments or so. As for the Ease of using BB, the senior grade students considered it easier, and this might be related to their using times or frequency compared to the junior grade students. It was also confirmed in Table 6 that higher frequency of using BB led to better experience. Its reason may be that students found more functions convenient to learn subjects to get a better impression of BB platform.

There were some advises from participants for BB platform such as associating with mobile applications, making friendlier interface, and setting modules of adding online friends and so on. All these results can give those courses designers of BB platform more valuable content.

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