Introducing Electronic Textbooks as Daily-use Technology in Schools: A Top-down Adoption

Process

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Abstract

This study took frequency of use and the adoption process into account to define the participants and external variables of the research model. School electronic textbooks are a daily-use technology and they are adopted in a compulsory, top-down way. Their introduction can evoke feelings of anxiety among teachers because of a possible increase in workload. This compulsory adoption process contrasts with that for most other technologies, which are voluntary and less disruptive. In a school context, instructional designs of electronic textbooks that help explain user acceptance are sufficient in a bottom-up, but not a top-down, approach. To address this, we included individual, organizational and social factors in our research model. We used a survey questionnaire to collect data from 306 in-service teachers from eight secondary schools. The results showed anxiety and positive attitude are the main barrier and catalyst, respectively, to acceptance of such technology. We make one suggestion for researchers and two suggestions for school leaders on the adoption process.

Keywords: electronic textbook, adoption process, teacher perception, secondary education

Introduction

An electronic textbook is more than a paper textbook in an electronic format, as it should also include collaborative, interactive and other authentic features (Fouh, Breakiron, Hamouda, Farghally, & Shaffer, 2014; Fouh et al., 2014; Gu, Wu, & Xu, 2015; McFall, 2005; McFall, Dershem, & Davis, 2006). Their design characteristics and factors affecting student learning with electronic textbooks have been much studied (Rodriguez-Solano, Sánchez-Alonso, & Sicilia, 2014; Chiu, accepted; Chiu & Churchill, 2015a, 2015b; Luik & Mikk, 2008), for example, the design should be interactive and differ for students of different learning abilities. These design variables of the textbook that affect user acceptance are sufficient in facilitating the bottom-up or innovation-oriented adoption process, but not in the top-down (Hargreaves & Shirley, 2012).

Textbooks adoption process for schools is considered to be top-down (Frydenberg, Matkin, & Center, 2007), i.e. the process is compulsory and involves all teachers, while their process in universities is bottom-up, i.e. teachers have their own freedom to make decisions on using the textbooks. Moreover, textbooks are used daily by teachers in classrooms (DiGisi & Willett, 1995; Wang, Lin, & Lee, 2011); therefore, unlike many other educational technologies, such as learning management systems and presentation software, electronic textbooks are not merely teaching accessories. Their introduction in schools has a greater impact on in-service teachers than other non-daily-use technologies do (Adams, Nelson, & Todd, 1992; Saadé & Kira, 2007) in term of workload. The electronic textbooks are more disruptive for teachers as their introduction may initially impact teaching routines in the class. What in-service school teachers think and feel about the textbooks is key to their successful adoption process (Kim, Kim, Lee, Spector, & DeMeester, 2013; Saye, 1998). Few studies provide much information on such daily-use technology in the top-down adoption process. The present study used

frequency of use and adoption process to define participants and external variables of the research model - Technology Acceptance Model (TAM). The study aims to explore the major catalyst and barrier to in-service teacher acceptance of electronic textbooks, ultimately to help school leaders introduce such textbooks more effectively.

Literature Review

Electronic textbooks as daily-use and top-down technology

Recent studies on electronic textbooks have focused on their design and use to promote effective learning (Fouh, Breakiron, Hamouda, et al., 2014; Fouh et al., 2014; McFall, Dershem, & Davis, 2006). They have suggested that electronic textbooks are a transformation of paper-based textbooks, and are more than just a digital version of the same. Their studies further showed that students gain more benefit from interactive and collaborative electronic textbooks that support authentic learning. Electronic textbooks are now adding peer review, sharing functionality and content creation to their original reading functions to support in-class and after-class activities (Fouh, Breakiron, Hamouda, et al., 2014; Fouh et al., 2014; McFall, Dershem, & Davis, 2006). Indeed, the instructional design of the textbooks is an important factor affecting user acceptance.

However, in the primary- and secondary-school context, textbooks are perceived as daily-use technology and they are adopted in a top-down fashion (DiGisi & Willett, 1995; Wang et al., 2011; Frydenberg et al., 2007). As such, the final decision to use electronic textbooks in teaching is made by principals and subject panel heads. The adoption of textbooks is compulsory for all subject teachers, and their introduction may evoke feelings of anxiety and frustration among teachers because of a possible increase in workload. This adoption process contrasts with that for non-daily technologies, such as LMS and mobile learning, which are

voluntary (Chiu & Churchill, 2015c; Hargreaves & Shirley, 2012) and individual teachers can choose whether to use them. Indeed, the process for electronic textbooks is affected not only by individual factors (e.g. anxiety and computer self-efficacy), but also organizational factors (e.g. institutional support) and social factors (e.g. voluntariness). Hence, variables of the textbooks should include anxiety, school support and peer/supervisor influences; the research participants should be in-service school teachers, neither students nor university teachers.

Individual, organizational and social factors

The individual factor category relates to personal skills, beliefs or feelings (Kim et al., 2013; Teo, 2009; Venkatesh, 2000). This includes anxiety and computer self-efficacy. Anxiety is an emotional state of unpleasantness, fear, frustration, rumination and apprehension (Nayak, 2014; Venkatesh, 2000), which threatens decision-making for themselves but not for others (Wray & Stone, 2005). This anxiety can affect user beliefs on how easy a technology is to use (Igbaria & Parausraman, 1989; Roberts & Henderson, 2000; Venkatesh, 2000). In an educational context, anxiety created by educational technology innovations influences in-service teacher decisions on the use of the technology (Zhao, Hueyshan, & Mishra, 2001). Teachers may feel anxious about a lack of familiarity with the innovation (Arndt, Feltes, & Hanak, 1983; Baloğlu & Çevik, 2009) or a possible increase in workload. Such teacher anxiety is a potent influencing factor on the value of interactive computer technologies in teaching (Agbatogun, 2010). The other individual factor considered here is computer self-efficacy, defined as a personal judgment of capabilities to use computers to achieve a specific task (Gong et al., 2004; Teo, 2009). Teachers with higher self-efficacy are more likely to find a new technology easy to use. In conclusion, electronic textbooks, while currently less common in classrooms, are used more often when available than learning management systems and devices. Moreover, their introduction may be associated with higher teacher

anxiety because of a lack of familiarity with (Arndt et al., 1983; Baloğlu & Çevik, 2009), and higher frequency of use of, the technology.

The other category is the organizational factor that focuses on institutional support, for example, through school policy and technical support (Blackwell, Lauricella, & Wartella, 2014; Gu et al., 2015, Teo, 2009). Institutional support means the degree to which an individual perceives sufficient support from her/his workplace, for example regulatory, financial and non-financial support (Blackwell et al., 2014; Teo, 2009). Perceived support from institutions positively affects adoption of a technology (Gu et al., 2015; Park, Rhoads, Hou, & Lee, 2014; Venkatesh, 2000). Individuals are more likely to find a technology easy to use when they believe they have adequate resources and support from their school (Blackwell et al., 2014; Teo, 2009). For example, providing adequate software and sufficient technical staff can facilitate the use of technologies including computers, internet, MP3 players and tablets in schools (Blackwell et al., 2014; Teo, 2009).

External pressure has an impact on adopter acceptance behavior (Agarwal, & Prasad, 1997), therefore, the last category is the social factor. This category puts emphasis on peer or supervisor influence (Park, 2009; Park et al., 2012; Park et al. 2014) and covers voluntariness (Moore & Benbasat,1991; Park et al., 2014; Venkatesh, 2000). Voluntariness means the degree to which an individual perceives technology acceptance as non-mandatory (Venkatesh & Davis, 2000). Superior mandate influences initial uptake of a technology in an organization (Agarwal, & Prasad, 1997; Park et al., 2014), and individuals are more likely to use new technology when it is compulsory for their jobs (Park et al., 2012, 2014; Venkatesh & Davis, 2000).

TAM as a predictive model

Originating from the psychological theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior (Ajzen & Fishbein, 1980), the TAM as developed by Davis and colleagues (1989) became a key model explaining the adoption of new technologies in various situations, for example, mobile games, (Ha, Yoon, & Choi, 2007), digital libraries (Park, Roman, Lee, & Chung, 2009) and e-learning (Edmunds et al., 2012; Park et al., 2012). The TAM has been empirically proven to be a valid theoretical framework predicting human behavior towards potential acceptance or rejection of the technology innovations (Venkatesh & Davis, 2000). Numerous studies used this model to identify the conditions or factors that facilitated technology integration into education (Teo, 2009, Edmunds et al., 2012; Park et al., 2012). Most TAM-based studies in education have focused on the acceptance of non-daily-use technology by students and tertiary educators. These include studies on attitudes of tertiary education teachers towards web-based learning (Gong, Xu, & Yu, 2004); and university student acceptance of an online learning management systems (Cheung & Huang, 2005; Park, Nam, & Cha, 2012; Ros et al., 2014), education tools (Teo, Lee, & Chai, 2008) and ICT tools (Edmunds, Thorpe, & Conole, 2012).

The present study

Many studies used the design of electronic textbook to explain the user acceptance from learning or teaching perspectives, which is sufficient in a bottom-up approach, but not in a top-down. This daily-use technology is more disruptive for employee. In school context, daily-use and top-down factors are the nature textbook implementation. This study is one of the first to use frequency of use and adoption process to define the participants and the external variables of research model. Therefore, the research participants are in-service teachers and the factors are individual, organizational and social. It also explored the problem

from a different angle, and used TAM as a tool with the four external variables – anxiety, computer self-efficacy, institutional support and voluntariness – to determine the major catalyst and barrier to the adoption of electronic textbooks by Hong Kong school teachers. The findings of this study are intended to provide the basis for some suggestions to school leaders on how to introduce the textbooks more effectively in schools. The following research hypotheses were proposed:

- H1: Attitude, perceived usefulness, perceived ease of use, computer self-efficacy, institutional support and voluntariness will have significant positive effects on behavioral intention.

- H2: Perceived usefulness, perceived ease of use, computer self-efficacy, institutional support and voluntariness will have significant positive effects on attitude.

- H3: Perceived ease of use, computer self-efficacy, institutional support and voluntariness will have significant positive effects on perceived usefulness.

- H4: Computer self-efficacy, institutional support and voluntariness will have significant positive effects on perceived ease of use.

- H5: Anxiety will have significant negative effects on perceived ease of use, perceived usefulness, attitude and behavioral intention.

Method

Research design and participants

We employed a structural equation modelling approach to develop a model to examine the relationships among the eight constructs: anxiety towards electronic textbooks, computer self-efficacy, institutional support, voluntariness, perceived usefulness, perceived ease of use, attitudes towards and behavioral intention. The first four constructs are external variables

influencing perceived usefulness and perceived ease of use. Structural equation modelling

allows us to use a theoretical model to examine all the variables simultaneously. We used a

survey questionnaire to collect data for each construct in the research model, see Figure 1.

The participants were 306 teachers from eight government-subsidized secondary schools in

Hong Kong. All of them were perceived electronic textbooks as daily-use and top-down

technology, and understood the definition of the textbook discussed in the literature review.

Among them, 53.9% were female and the average teaching experience was 11.08 years

(SD=7.60).

Materials

We developed a self-report 5-point Likert-type scale questionnaire anchored by "strongly

disagree" and "strongly agree" to measure all the constructs from a participants perspective.

We also conducted a read-through with two local in-service teachers to confirm the

questionnaire format and wording were understandable and readable. The questionnaire

included a consent form and items for the constructs.

Questions in the questionnaire were modified from relevant research studies. The questions in

perceived usefulness, perceived ease of use and attitude towards were adapted from Davis

(1989); the questions in behavioral intention were adapted from Hu and colleagues (1999);

the questions in computer self-efficacy were adapted from Compeau and Higgins (1995); the

questions in institutional support were adapted from Thompson and colleagues (1991), and

Mathieson and colleagues (2001); the questions in anxiety were adapted from Hsu and

colleagues (2009); the questions in voluntariness were modified from Moore and Benbasat

(1991). Table 2 summarizes the items related to each of the eight constructs in the research

model.

Procedure

We delivered the materials to the schools. The participants signed the consent forms and finished the questionnaire in their schools. We collected the completed questionnaires, and used SPSS 21.0 and AMOS 21.0 to conduct exploratory factor analyses and confirmatory factor analyses of scales, respectively.

In the process of data examination, we first deleted cases that had missing values before conducing data analysis. Second, we used exploratory data-driven factor analysis to examine the measurement scale and internal reliability. Finally, we followed the suggestion of Anderson and Gerbing (1988): we used theory-driven confirmatory factor analysis to evaluate the validity – convergent and discriminate validity – of the construct before we performed path analysis to test the hypotheses in the research model.

Results

Descriptive analysis

Descriptive statistics of all the constructs are reported in the first column of Table 1. All mean values were higher than 3.00, except for anxiety. The analysis further showed that the values for skewness and kurtosis were acceptable for normality of the data (Garson, 2012). Therefore, the constructs are appropriate for use in structural equation modeling (Kline, 2011).

Measurement model

Internal reliability, convergent validity and discriminant validity of the measurement model should be assessed (Fornell & Lacker, 1981). For acceptable internal reliability, a factor loading of each measure should be greater than 0.70 (Fornell & Lacker, 1981). The results in

Table 1 showed the factor loading of all measures exceeded 0.70, indicating the internal

reliability of the measurement model was adequate. To assess the convergent validity of the

measurement model, the composite reliability of each construct and the average variance

extracted also should be measured (Fornell & Lacker, 1981). Fornell and Lacker (1981)

recommended that the values of composite reliability and average variance extracted should

be greater or equal to 0.70 and 0.50, respectively. As shown in Table 2, the convergent

validity of the proposed constructs in the measurement model was acceptable. Moreover,

discriminant validity tests whether a construct is distinct from other constructs. It is a

measure of internal consistency (Byrne, 2013). Table 2 showed strong discriminant validity

according to Fornaell and Lacker (1981) recommendation. Hence, the constructs in the

research model are considered to be acceptable for further analysis.

Model fit

Confirmatory factor analysis was conducted to measure model fit. The literature suggested a

variety of indices can be used. Table 3 showed that all the values in the measurement and

research models satisfied their corresponding recommended values, which indicated that the

research model had a good fit.

Hypothesis tests and path analysis

Other than testing hypotheses, the analysis indicated how well the model is by estimating

path coefficients and R-square (R^2). Path coefficients and R^2 indicated the strength of the

relationships and the amount of variance of the dependent constructs explained by the

independent constructs, respectively.

As shown in Table 4, all hypothesized paths in the research model were significantly

supported, all p values <0.05. Moreover, Figure 1 shows the results of the path coefficients in

the research model; and Table 4 shows path analysis results of the standardized direct, indirect and total effects. Four endogenous variables – perceived ease of use, perceived usefulness, attitude towards and behavioral intention – were tested. Of the exogenous variables, the data show only anxiety had a negative effect on the four endogenous variables.

Four exogenous variables explained 36% of the variance in perceived ease of use. Anxiety had the largest effect on perceived ease of use (β= -0.65), followed by institutional support (β= 0.18). Moreover, five variables explained 42% of the variance in perceived usefulness. Perceived ease of use had the largest effect on perceived usefulness (β= 0.35), followed by anxiety (β= -0.41), institutional support (β= 0.32) and self-efficacy (β= 0.18). Furthermore, six variables explained 28% of the variance in attitude towards. Perceived ease of use (β= 0.35) and perceived usefulness (β= 0.35) had the largest effects on attitude towards, followed by anxiety (β= -0.29). In addition, seven variables explained 23% of the variance in behavioral intention. Attitude toward had the largest effect on behavioral intention (β= 0.40), followed by perceived usefulness (β= 0.35).

Moreover, the most dominant determinant of behavior intention, with a medium effect (Cohen, 1988), is attitude toward electronic textbook use; and the external variable with the most influence on behavior intention is anxiety. Of all the paths, perceived ease of use had the largest effect on perceived usefulness with a medium effect.

Discussion and conclusion

Research on in-service teacher acceptance of electronic textbooks is necessary (Gu et al., 2015) for their introduction in schools (Teo, 2009, Edmunds et al., 2012; Park et al., 2012), because of a lack of familiarity with (Arndt et al., 1983; Baloğlu & Çevik, 2009), high

frequency of use of (Gu et al., 2015), and top-to-down adoption process of,such textbooks in practice (Frydenberg et al., 2007).

Our empirical results for the fit indices indicate that the research model is a good fit, suggesting that the four variables are acceptable factors affecting electronic textbook acceptance of in-service secondary school teachers. Moreover, both perceived usefulness and attitude towards directly and positively influenced teacher behavioral intention to use electronic textbooks, whereas perceived ease of use had positive influences on perceived usefulness and attitude towards. Furthermore, while computer self-efficacy, institutional support and voluntariness positively and significantly influence perceived usefulness and perceived ease of use, anxiety had a significant negative impact on perceived usefulness and perceived ease of use. These are consistent with TAM-based current research on adopting an online learning system (Gong et al., 2004; Park, 2009).

Attitude towards and perceived usefulness have been recognized as the most influential catalysts in the model (Blackwell et al., 2014; Park, 2009). Our results reveal the same phenomenon. Attitude towards was the strongest predictor of behavioral intention to use electronic textbook in teaching; perceived usefulness was also identified as a secondary determinant of teacher behavioral intention. In-service teachers are likely to use an electronic textbook in their teaching if they have positive attitudes towards the use of the textbook.

Given the effects on perceived usefulness, our results show that anxiety towards using the textbooks had a greater effect than computer self-efficacy. This does not reflect the results of the study by Park and colleagues (2014) on online systems as a non-daily use technology, which suggested that computer self-efficacy had a greater effect than anxiety does. Compared

to online systems, electronic textbooks, while currently less common, are used more on a daily basis when available in organizations. This may imply that anxiety is a stronger factor than self-efficacy when the technology is daily-use and is less familiar to the user. A plausible explanation is teachers might feel anxious about a possible increased daily workload and therefore would be less likely to experience the potential usefulness of the technology.

Among the four external variables, anxiety was the primary influencing factor and had a negative impact on intention to use electronic textbooks in classrooms. We infer that in-service teachers with less anxiety are more likely to teach with electronic textbooks. This finding also confirms the counterproductive role of anxiety in teacher education in secondary schools. As more projects involving electronic textbooks are introduced into schools (Gu et al., 2015), professional development programs should be designed to first overcome anxiety towards using the textbooks.

Overall, the findings showed that positive attitude is the main catalyst and anxiety is the main barrier to the adoption of this daily-use technology through a top-down way.

This study affords three suggestions; the first is for researchers and the last two for school leaders. First, we advise researchers to use the frequency of use and adoption process a technology to define their participants and external variables of research model for examining user acceptance. For example, university electronic textbooks adopted through a bottom-up process should study students and explore instructional designs, a daily-use technology in the workplace should study employee, as well as include the factors of anxiety and frustration. Second, most current teacher training programs focus on skills development. Since anxiety was identified as a factor stronger than computer self-efficacy, the programs are not enough

for the introduction of textbooks. Therefore, school leaders should be aware of what and how teachers feel about using the textbooks, regardless of their apparent computer skills. The more hesitant teachers feel, the less likely they will be to use the textbooks even though they may be competent operating computers. To ease teacher anxiety towards the textbooks, resources may be provided to reduce possible increase of workload. Last, as anxiety (the major barrier) is a stronger factor than attitude (the major catalyst), strategies for the introduction of electronic textbooks should first ease anxiety, and then build a more positive attitude towards such textbooks.

There are some limitations of the present study that could be addressed in future research. Only individual, organizational and social factors were analyzed in the study. Since teacher perceived usefulness is one of the determinants of acceptance, some other factors should be added, such as the instructional design and functionality of electronic textbooks and digital literacy.

Finally, this study adds to the limited knowledge in the literature, as it is the first that consider the frequency-of-use level and adoption process of a technology to look at factors influencing in-service secondary school teacher adoption of electronic textbooks. Since higher education adoption process is bottom-up approach, future studies could include a comparative study between teachers in secondary and higher education to establish a better understanding of electronic textbook acceptance, and a study adding digital literacy to examine whether instructional design is stronger influential factor.

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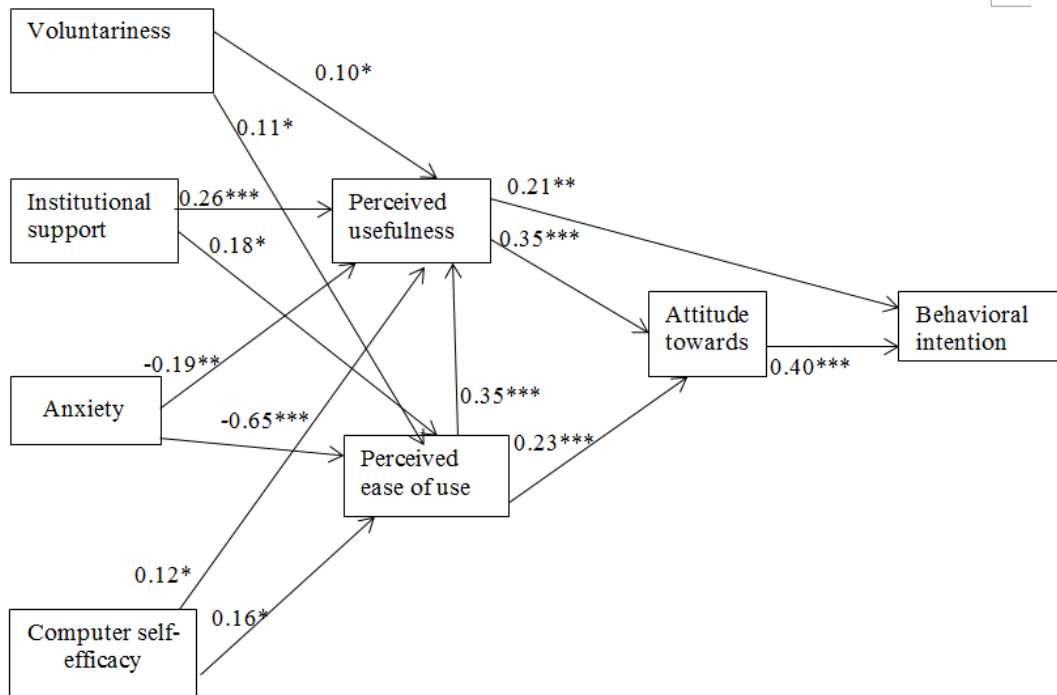
Figure 1: Research Model

*Note: *p<0.05, **p<0.01, ***p<0.001*

Table 1: Construct reliability and convergent validity

Construct and its descriptive statistics	Item	Factor loading	Average variance extracted	Composite reliability
Perceived ease of use (M=3.32,SD=0.85, Skewness=-0.11, Kurtosis=-0.56)			0.82	0.93
	I find electronic textbooks easy to use.	0.86		
	Learning to use electronic textbooks would be easy for me.	0.88		
	It is easy for me to become skillful in using electronic textbooks.	0.83		
Perceived usefulness (M=3.35, SD=0.73, Skewness=-0.66, Kurtosis=0.40)			0.76	0.90
	Using electronic textbooks will improve my work.	0.79		
	Using electronic textbooks will make my teaching more effective.	0.85		
	I would find electronic textbooks useful in my teaching.	0.82		
Attitude towards (M=3.42,SD=0.78, Skewness=-0.86, Kurtosis=0.77)			0.68	0.87
	Electronic textbooks make my teaching more interesting.	0.88		
	I look forward to using electronic textbooks in teaching.	0.79		
	I think it would be very wisely to use electronic textbooks in teaching.	0.82		
Behavioral intention (M=3.36, SD=0.85, Skewness=-0.26, Kurtosis=-0.31)			0.87	0.95
	I intend to use electronic textbooks in teaching when they are becomes available.	0.91		
	I plan to use electronic textbooks often.	0.88		
	I will use electronic textbooks in future.	0.93		
Anxiety (M=2.90, SD=0.71, Skewness=-0.06, Kurtosis=-0.11)			0.55	0.79
	I do not understand why somebody in my field needs electronic textbooks.	0.79		
	I feel electronic textbook is a waste.	0.78		
	I feel apprehensive about using electronic textbooks in teaching.	0.75		
Computer self-efficacy (M=3.64, SD=0.71, Skewness=-0.56, Kurtosis=-0.21)			0.71	0.88
	I know how to use a computer to do my work.	0.82		
	I could use computer to complete a task if someone showed how to do it first.	0.90		
	I am confident about using compute to do my work.	0.90		
Institutional support (M=3.66, SD=0.62, Skewness=-0.46, Kurtosis=0.73)			0.54	0.78
	I receive sufficient support from my school while I use electronic textbooks.	0.75		
	A specific person or group is available for assistance with the use of electronic textbooks.	0.89		
	When I need help to use electronic textbooks in teaching someone is there to help me.	0.79		
Voluntariness (M=3.29, SD=0.83, Skewness=-0.17, Kurtosis=-0.59)			0.91	0.95
	Teaching with electronic textbooks is compulsory in my job.	0.95		
	My principal expects me to teach with electronic textbooks.	0.94		

Table 2: Correlation matrices and discriminant validity

	Behavioral intention	Computer self-efficacy	Institutional support	Anxiety	Attitude towards	Perceived usefulness	Perceived ease of use	Voluntariness
Behavioral intention	1.000							
Computer self-efficacy	0.265	1.000						
Institutional support	0.191	0.078	1.000					
Anxiety	-0.143	-0.247	0.116	1.000				
Attitude towards	0.447	0.146	0.182	-0.366	1.000			
Perceived usefulness	0.351	0.316	0.227	-0.423	0.486	1.000		
Perceived ease of use	0.297	0.295	0.083	-0.548	0.453	0.575	1.000	
Voluntariness	0.318	0.261	0.111	-0.219	0.146	0.303	0.269	1.000

Table 3: Fit indices for the measurement and research models

	Measurement model	Research model	Recommended value
Chi-square / degree of freedom (x^2/df) (df=225)	2.37	2.43	≤ 0.3
GFI	0.87	0.86	≥ 0.8
AGFI	0.84	0.83	≥ 0.8
RMSEA	0.07	0.07	≤ 0.08
SRMR	0.05	0.06	≤ 0.08
NFI	0.90	0.90	≥ 0.9
CFI	0.94	0.94	≥ 0.9
IFI	0.94	0.94	≥ 0.9
TLI	0.93	0.93	≥ 0.9

Table 4: Hypothesis tests and Path analysis results of the direct, indirect and total effects

Endogenous variable	Exogenous variable	Direct effect	Indirect effect	Total effect	R^2	Hypothesis
Perceived ease of use	Anxiety	-0.65	-	-0.65	0.36	Supported***
	Institutional support	0.18	-	0.18		Supported*
	Computer self-efficacy	0.16	-	0.16		Supported*
	Voluntariness	0.11	-	0.11		Supported*
Perceived usefulness	Perceived ease of use	0.35	-	0.35	0.42	Supported***
	Anxiety	-0.19	-0.22	-0.41		Supported*
	Institutional support	0.26	0.06	0.32		Supported***
	Computer self-efficacy	0.12	0.06	0.18		Supported*
	Voluntariness	0.10	0.04	0.14		Supported*
Attitude towards	Perceived usefulness	0.35	-	0.35	0.28	Supported***
	Perceived ease of use	0.23	0.12	0.35		Supported***
	Anxiety	-	-0.29	-0.29		
	Institutional support	-	0.15	0.15		
	Computer self-efficacy	-	0.10	0.10		
	Voluntariness	-	0.07	0.07		
Behavioral intention	Attitude towards	0.40	-	0.40	0.23	Supported***
	Perceived usefulness	0.21	0.14	0.35		Supported**
	Perceived ease of use	-	0.21	0.21		
	Anxiety	-	-0.21	-0.21		
	Institutional support	-	0.13	0.13		
	Computer self-efficacy	-	0.08	0.08		
	Voluntariness	-	0.06	0.06		

*p<0.05, **p<0.01, ***p<0.001