

| Research Article / Araştırma Makalesi |

The Effect of Peer Mentoring on Acceptance of and Intention to Use Web 2.0 Tools

Akran Mentorlüğünün Web 2.0 Araçlarının Kabul ve Kullanım Niyetine Etkisi

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Keywords

1. Acceptance and Use
2. Adoption
3. Peer Mentoring
4. Web 2.0
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Abstract

Purpose: This study seeks to shed light on the effect of peer mentoring on the acceptance of and intention to use Web 2.0 tools.

Design/Methodology/Approach: In the study, the static-group comparison pretest-posttest design, which falls into the category of weak experimental designs, was applied. The study group consisted of 165 (Experiment=76, Control=89) pre-service teachers continuing their second-year education in different departments of a public university in the 2021-2022 academic year. The implementation period of the study lasted for eight weeks and a total of 16 hours. In the study, the "unified theory of acceptance and use of technology model-2 / UTAUT2" scale was used as a data collection tool. The SPSS 26 package program was employed to analyse the data obtained in the study. T-test, one-way analysis of variance (ANOVA), and correlational t-test were used in the analyses.

Findings: It was concluded that the acceptance of and intention to use Web 2.0 tools among the pre-service teachers receiving peer mentoring and teacher guidance were positively affected with a higher rate of effect for pre-service teachers receiving peer mentoring. Results based on gender revealed that the effect of peer mentoring on the acceptance of and intention to use technology among pre-service teachers was in favour of female pre-service teachers in various constructs. Results based on the ownership of a computer revealed that the effect was in favour of pre-service teachers owning computers in various constructs. And finally, results based on the department variable revealed that the effect was at a higher level for pre-service teachers in English Language Education than pre-service teachers in Elementary Mathematics Education. The results of the present study also contain some recommendations for future studies on the topic.

Highlights: The effect of different blended models can be examined in similar studies. Similar studies can be carried out with a full experimental design and mixed model methods. Studies can be re-examined with different variables.

Öz

Çalışmanın amacı: Akran mentörlüğünün web 2.0 araçlarının kabul ve kullanım niyetlerine etkisini incelemektir.

Materyal ve Yöntem: Çalışmada zayıf deneysel desenler arasında yer alan statik grup karşılaştırmalı öntest-sontest deseni kullanılmıştır. Çalışma grubu, bir devlet üniversitesinde 2021-2022 eğitim-öğretim yılında farklı bölümlerde ikinci sınıf eğitimine devam eden 165 (Deney=76, Kontrol=89) öğretmen adayından oluşmuştur. Çalışmanın uygulama süresi, sekiz hafta toplam 16 saat sürmüştür. Çalışmada "teknoloji kabul ve kullanım birleştirilmiş modeli-2 / UTAUT2" ölçeği veri toplama aracı olarak kullanılmıştır. Çalışmada elde edilen verilerin analizinde SPSS 26 paket programından yararlanılmıştır. Analizlerde t testi, tek yönlü varyans analizi (ANOVA) ve ilişki t testi kullanılmıştır.

Bulgular: Çalışmada hem akran mentörlüğündeki hem de öğretmen rehberliğindeki öğretmen adaylarının web 2.0 araçlarının kabul ve kullanım niyetlerini olumlu yönde etkilediği, ancak akran mentörlüğündeki öğretmen adaylarının daha fazla boyutta bir etkilenme yaşadığı sonucuna varılmıştır. Akran mentörlüğünün öğretmen adaylarının teknoloji kabul ve kullanım niyetlerine etkisinin cinsiyet değişkenine göre farklı boyutlarda kadın öğretmen adaylarının lehine, bilgisayar bulunma değişkenine göre çeşitli boyutlarda bilgisayara sahip öğretmen adaylarının lehine, bölüm değişkenine göre tek bir boyutta İngilizce öğretmenliği bölümü öğretmen adaylarının bir teknolojiyi kullanırken ilköğretim matematik öğretmenliği bölümü öğretmen adaylarına göre daha yüksek olduğu tespit edilmiştir. Çalışmada elde edilen sonuçlar ışığında gelecekte konuyla ilgili yapılabilecek araştırmalar için öneriler sunulmuştur.

Önemli Vurgular: Benzer çalışmalarda farklı harmanlanmış modellerini etkisi incelenebilir. Tam deneysel desen ve karma model yöntemleri yürütülebilir. Çalışma farklı değişkenler ile tekrardan incelenebilir.

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INTRODUCTION

The adventure of using technology in education covers a long period that gained momentum with the Second World War. There has been a great deal of change and development in educational technologies starting from that period with a focus on mass education until today. One of the underlying reasons behind the relevant change is the rapid development of Internet technologies. In particular, the advance of Web 2.0 technologies, which has resulted in the activeness of the users, has brought about a change in educational practices. Being a user-oriented structure, Web 2.0 has also catalysed an environment that allows interaction with content, acceleration of communication, information sharing, and collaborative work (Faboya & Adamu, 2017; Grosseck, 2009; O'Reilly, 2005). Web 2.0 technology is an active and open Web architecture that offers users to participate in collaborative learning activities, online video, animation, content creation, and sharing environments through social networks, blogs, and several applications (Downes, 2005; Huang, 2013). Web 2.0 tools have contributed to learning and teaching environments as well as many other fields (Kompen et al., 2019). Web 2.0 technologies in learning-teaching environments offer many opportunities for students to access and share information and collaborate in e-environments (Leh, et al., 2021). It is also possible to use Web 2.0 technologies for formative assessment purposes in learning and teaching environments (Gurel, 2021).

The integration of technology into educational environments has brought about a dynamic change (Çetin & Özdemir, 2018). It is known that pre-service teachers are very good at using technology for entertainment, communication, and information purposes (Ertmer et al., 2012; Habibi, et al., 2022; Martin, 2018). However, they have little knowledge and experience in the integration of technology into education (Habibi, Yusop, & Razak, 2020). In addition, it is reported that the way technology integration is presented and attitude towards technology is also influential in technological skills (Voogt and McKenney, 2017). The integration of technology is redesigned and adapted to the purposes as new technologies develop (Broadbent et al., 2020).

The acceptance and adoption of every emerging technology by users are among the most important research topics (Venkatesh, et al., 2003; Yilmaz, et al., 2018), a fact that lies behind the emergence of many models. A myriad of models is referenced when researching the diffusion, acceptance, and adoption of new technology or innovation. Among the examples is the Diffusion of Innovation Theory, the Theory of Reasoned Action, the Theory of Planned Behaviour, the Technology Acceptance Model, and the Unified Theory of Acceptance and Use of Technology Model 1 and 2.

In this study, considering the information in the literature, the acceptance of Web 2.0 tools and their effect on the intention to use were examined through the Unified Theory of Acceptance and Use of Technology Model-2 (UTAUT-2). UTAUT-2 is an updated and improved version of the original UTAUT theory, emphasizing that, unlike previous theories, technology acceptance and use are influenced by multiple factors. In the UTAUT-2 model, in addition to the four main factors (performance expectancy, effort expectancy, social influence, and facilitating condition), three factors were added: hedonic motivation, price value, and habit. As a result, the new structure managed to explain 74% of behavioral intention (Venkatesh, Thong, & Xu, 2012).

Performance expectancy means to what extent individuals will benefit from technology and their expectations regarding its use (Venkatesh et al., 2003). This factor is vital as it affects individuals' intention to adopt technology (Venkatesh et al., 2003; Kaplan, 2018; Kılıç and Yılmaz, 2021). Effort expectancy refers to the perception of how difficult and complex technology is to use and can negatively affect individuals' intentions to adopt technology. Ease of use and perceived benefit are positively affected if less effort is exerted when using an innovation (Usluel & Mazman, 2009). Social influence refers to the user's perception of whether others around him/her are using the technology. In another definition, it is defined as the degree to which individuals that matter to users believe that they should use the new technology (Venkatesh et al., 2003). Individuals that matter to users can be family, friends, and colleagues (Khechine, et al., 2014). Facilitating conditions are defined as the degree to which an individual believes in the existence of an organizational and technical infrastructure to support technology use (Venkatesh et al., 2003). Habit refers to the tendency of individuals to exhibit autonomous behaviour due to learning as a result of technology system learning (Venkatesh et al., 2012). Hedonic motivation, on the other hand, has been defined as enjoyment, entertainment, and satisfaction arising from the use of technology (Hashim, et al., 2022). Brown and Venkatesh (2005) reported that hedonic motivation plays an important role in the acceptance and use of technology. However, for non-essential technology acceptance environments, such as home or personal use, hedonic motivation is a more important driver than performance expectancy in determining intention to use technology (Venkatesh et al., 2012). Price value is the perceived cost of technology. Price value is among the factors that determine individuals' willingness to adopt technology (Venkatesh et al., 2012). Many Web 2.0 tools offer limited capabilities in their free versions. Therefore, several costs are faced by the users to benefit from the paid parts. In this case, it is thought that the price value will be effective in the adoption process. As a matter of fact, the inadequacy of the financial situation and the increasing prices of technological devices bring along difficulties in technology purchase (Dashtestani & Hojatpanah, 2020).

The studies on technology acceptance and use have revealed that the target groups of the studies conducted in Turkey are comprised of a wide variety of audiences including school administrators (Yahşi & Hopcan, 2021), teachers (Duyku 2021; Ömrüuzun, 2019), high school students (Diri, & Açıkgül, 2021), banking (Gursel, & Yanartas, 2021), women entrepreneurs (Özsungur, 2019), and consumers (Gündoğan, & Kazançoğlu, 2021; Belge, & Mutlu, 2020).

On the other hand, the international literature has demonstrated that the target group is mostly comprised of university students (Goto, et al., 2021; Apandi, & Raman, 2020; Liu, & Yan, 2020), teachers (Tseng, et. al., 2022; Avci, 2022), pre-service teachers (Fung, Smith, & Gandolfi, 2022; Mutambara, & Chibisa, 2022; Goto, Batchelor, & Lautenbach, 2021; Ning, & Dong, 2021; Bower, DeWitt, & Lai, 2020; Raman, & Don, 2013), and managers (Dakduk, et al., 2018). In addition, the topics include MOOCs

(Tseng, et al., 2022; Goto, et al., 2021), teacher professional development (Machingambi, & Batchelor, 2019), blended learning (Dakduk, et al., 2018; Apandi, & Raman, 2020). Learning management system (Zwain, & Haboobi, 2019), teaching tools (Liu, & Yan, 2020), digital game-based foreign language teaching (Fung, et al., 2022), and online shopping (Eneizan, et al., 2019). Technology acceptance and use, as a subject that researchers inquire about, is constantly investigated based on the effect of a tool, technology, or a need on individuals.

AlAwadhi and Morris (2008) scrutinized the adoption of e-government services in Kuwait to find out that performance expectancy, effort expectancy, and peer influence play a role in behavioral intention. In the study conducted on the basis of the UTAUT-2 model to determine the factors affecting the employees' intention to use Web 2.0 applications, the employees were reported to find Web 2.0 applications useful for their work and experience ease of use since they could use the applications easily along with an emphasis on the importance of the little effort required in individuals' acceptance and use of innovation for adoption (Wang et al., 2014). Alalwan et al. (2017) investigated mobile banking adoption, concluding that behavioral intention is significantly and positively affected by performance expectancy, effort expectancy, hedonic motivation, and price value. In a study on the Internet of Things and examining the perceived value effect, it was concluded that users could easily use IoT applications and in this context, a significant and expected positive effect on the perceived value was found in this context (Çoban & Özkan Tektaş, 2020). Tseng et al. (2019) studied teachers' acceptance and use of massive open online courses (MOOC) and revealed that performance expectancy, social influence, facilitating conditions, and price value variables affect teachers' behavioral intention while effort expectancy and hedonic motivation do not. Alkhwaldi and Abdulmuhsin (2022) investigated the acceptance of distance education and revealed that performance expectancy is a key predictor of facilitating conditions. In another study, Gu et al. (2021) employed the UTAUT-2 model and the structural equation model regarding e-health technology acceptance and use, concluding that effort expectancy, social influence, and facilitating conditions affect intention noticeably while performance has no effect on intention. Upadhyay, et al., (2022) revealed that effort expectancy does not have an effect on intention though it does have a positive effect on performance expectancy, social influence, hedonic motivation, and intention to accept artificial intelligence. Gender (Diri & Açıkgül, 2021; Nikolopoulou, Gialamas & Lavidas, 2020), experience, and age are observed to be used as intervening variables in the majority of studies on the technology acceptance and use model (Venkatesh, et al., 2012). Kandemir (2020) examined the use of educational environments such as EBA, Morpa Campus, Okulistik through many sub-variables such as gender, branch, age, institution, length of service, and technology use proficiency while variables of age and experience variables were not used since the same class and age group were taken into consideration. The acceptance of and intentions to use Web 2.0 tools were investigated in this study with the thought that Web 2.0 technologies could potentially affect their use in a cooperative way. UTAUT was used in this study to investigate behavioral intention to identify the technology as well as the factors affecting its adoption.

The literature review has shown that there are a limited number of studies that focuses on the acceptance of and intention to use Web 2.0 tools. It is noteworthy that a great number of such studies are based on a descriptive survey model with no experimental studies taken into consideration. Furthermore, peer mentoring is also expected to have an impact on the acceptance and use of Web 2.0 tools as it shows that the opinions of peers or other individuals around are key factors in the adoption of an innovation and such influence is what puts social influence into perspective (Usluel & Mazman, 2010). Thus, the present study has been designed to shed light on the effect of peer mentoring on the acceptance of and intention to use Web 2.0 tools. For this purpose, the following questions were addressed.

1. Is there a significant difference among the pre-implementation scores of the experimental and control group pre-service teachers in acceptance of and intention to use technology?
2. Is there a significant difference between the pre-implementation and post-implementation scores of the experimental and control group pre-service teachers in acceptance of and intention to use technology?
3. Is there a significant difference between the post-implementation and pre-implementation scores of the experimental and control group pre-service teachers in acceptance of and intention to use technology according to gender, ownership of a computer, and departments?
4. Is there a significant difference between the post-implementation and pre-implementation scores of the experimental and control group pre-service teachers in acceptance of and intention to use technology?

METHOD

This study was carried out through a weak experimental design based on the comparison of the pre-test and post-test scores of the experimental and control groups. The study group activities were carried out in two stages: peer mentoring and teacher guidance.

Research Model

The static group comparison pretest-posttest design, which falls into the weak experimental designs, was used in this study along with quantitative data. The static group comparison pretest-posttest design is a model used in cases where existing groups (experiment-control) are available without random assignment and matching (Fraenkel, et al., 2018). In this study, due to the

existence of the groups (six groups) and the presence of three teachers within the scope of the implementation, a lottery method was used regarding the intervention methods. In this context, it was decided that each teacher would lead the experiment and control group activities. The activities as part of the implementation were carried out within the scope of the "instructional technologies" course, and it was ensured that the experimental group activities were carried out through peer mentoring and the control group activities were carried out through teacher guidance.

Study Group

The study group consisted of 165 pre-service teachers continuing their second-year education in different departments at a public university in the 2021-2022 academic year. The demographic characteristics of the study group are summarized in Table 1.

Table 1: Demographic characteristics of the study group

Group	Gender	f	%	Ownership of the Computer	f	%	Department	f	%
Experimental	Female	50	65.8	Yes	35	46.1	Elementary Mathematics Education	22	28.9
							Primary School Education	17	22.4
	Male	26	34.2	No	41	53.9	Elementary Turkish Education	13	17.1
							English Language Education	24	31.6
Total	76	100		76	100		76	100	
Control	Female	63	70.8	Yes	27	30.3	Elementary Mathematics Education	21	23.6
							Primary School Education	29	32.6
	Male	26	29.2	No	62	69.7	Elementary Turkish Education	21	23.6
							English Language Education	18	20.2
Total	89	100		89	100		89	100	

A total of 165 (experimental=76, control=89) pre-service teachers participated in the study. 50 (65.8%) of the pre-service teachers in the experimental group are female, 26 (34.2%) are male, the number of pre-service teachers owning a computer is 35 (46.1%), the number of those without a computer is 41 (53.9%), 22 (28.9%) of them are in the field of Elementary Mathematics Education, 17 (22.4%) of them are in the field of Primary School Education, 13 (17.1%) of them are in the field of Elementary Turkish Education, and 24 (31.6%) of them are in the field of English Language Education. 63 (70.8%) of the pre-service teachers in the control group are female, 26 (29.2%) of them are male, the number of pre-service teachers owning a computer is 27 (30.3%), the number of those without a computer is 62 (69.7%), 21 (23.6%) of them are in the field of Elementary Mathematics Education, 29 (32.6%) of them are in the field of Primary School Education, 21 (23.6%) of them are in the field of Elementary Turkish Education, and 18 (20.2%) of them are in the field of English Language Education.

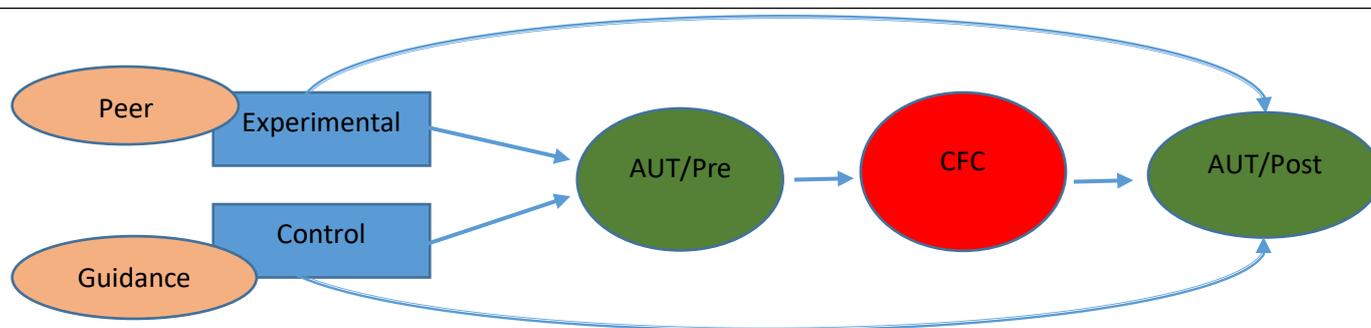
Implementation Process

In-class activities lasted two hours each week for a total of 16 hours for 8 weeks. Before the implementation, pre-test data were collected from the groups. Web 2.0 tools were part of activities in the context of the collaborative flipped classroom.

Both experimental and control cooperative study groups were formed under the guidance of the teacher. It was ensured that the groups consisted of 3 to 5 pre-service teachers. The videos prepared for Web 2.0 tools by the relevant collaborative study groups were shared with their peers on the YouTube channel created by the teacher (a special channel was created for each group). All the collaborative study groups were informed about how to prepare the videos along with an explanation of screen recording programs and implementation with the students. At the end of each in-class activity, the Web 2.0 tool, which would be held the next week, was explained to the groups through the lottery method. Thus, the time allocated for video preparation was equal in all groups to avoid any difference between the groups. Care was taken to include the following titles in the videos prepared for Web 2.0 tools.

1. Definition of the Web 2.0 tool
2. Membership login to the Web 2.0 tool
3. Introduction of the interface of the Web 2.0 tool
4. Use of the Web 2.0 tool
5. An in-class activity with the Web 2.0 tool

Before the videos prepared for this purpose were shared with the peers, the content and layout were confirmed by the teacher, and corrections were made after receiving feedback. Following the implementation process, data regarding the post-test were collected. The implementation process is summarized in Figure 1.



* AUT/Pre: Acceptance and Use of Technology/Pre-test, CFC: Collaborative Flipped Classroom, AUT/Post: Acceptance and Use of Technology/Post-test

Figure 1. Implementation process

Data Collection

The "unified theory of acceptance and use of technology model-2" scale developed by Venkatesh, et al., (2012) and adapted into Turkish by Yilmaz and Kavanoz (2017) was used to collect data from the experimental and control groups before and after the implementation.

The unified theory of acceptance and use of technology is a seven-point Likert scale rated as "(1) strongly disagree, (2) disagree, (3) partially disagree, (4) undecided, (5) partially agree, (6) agree, (7) strongly agree" and contains eight constructs and 28 items. The size and total Cronbach's alpha internal consistency coefficients of the scale, both in the original and in the present study, are presented in Table 2.

Table 2: Cronbach's alpha internal consistency coefficients

Constructs	In the scale adaptation study	In the present study	
		Pre-test	Post-test
Performance Expectancy	0.92	0.92	0.90
Effort Expectancy	0.89	0.82	0.87
Social Influence	0.87	0.79	0.81
Facilitating Conditions	0.82	0.74	0.86
Hedonic Motivation	0.93	0.95	0.92
Price Value	0.76	0.78	0.74
Habit	0.83	0.70	0.81
Behavioral Intention	0.89	0.86	0.85
Total	0.97	0.93	0.96

While calculating Cronbach's alpha internal consistency coefficients, $\geq .70$ is acceptable, $\geq .80$ is good, and $\geq .90$ is excellent (Cronbach, 1951). This indicates that the data obtained in the study are reliable (Murphy & Davidshofer, 2004).

Data Analysis

The SPSS 26 package program was employed in the analysis of the data. Before the data were analysed, the normality distribution to which analysis procedure the data would be subjected was evaluated. In addition to the Kolmogorov-Smirnov test of normality (experimental and control $p > .05$), the skewness and kurtosis values of the data were also evaluated. It was observed that the data ranged between ± 2 values. The literature review reveals that the data ranging between such values show the normal distribution and indicates the appropriateness to apply parametric tests in the analysis (Kerr, et al., 2002; George & Mallery, 2019). In this context, frequency, percentage, standard deviation, and arithmetic mean values were analysed through parametric tests. The mean scores of the pre-test data were primarily analysed in repeated measurements. Besides, a t-test was employed for independent samples and binary categories, a one-way analysis of variance (ANOVA) for more categories, and a correlational t-test for the difference between post-implementation and pre-implementation. Tukey test values were also evaluated to reveal the source of the difference as part of the ANOVA test.

FINDINGS

This section includes the findings of the analyses conducted to investigate the effect of peer mentoring on the acceptance of and intention to use pre-service teachers' Web 2.0 tools. Table 3 summarizes the results of the pre-implementation scores of the experimental and control group pre-service teachers regarding the acceptance of and intention to use technology.

Table 3: Pre-implementation scores of the experimental and control group pre-service teachers regarding the acceptance of and intention to use technology

Factors (Pre-test)	Group	Mean	Sd	t	p	Significant Difference
Performance Expectancy	Experimental	6.19	1.04	-0.522	.606	None
	Control	6.27	0.90			
Effort Expectancy	Experimental	5.19	1.00	-0.731	.466	None
	Control	5.31	1.01			
Social Influence	Experimental	5.75	0.97	-0.195	.846	None
	Control	5.78	0.97			
Facilitating Conditions	Experimental	4.30	1.23	-1.070	.286	None
	Control	4.51	1.24			
Hedonic Motivation	Experimental	5.54	1.22	0.101	.920	None
	Control	5.52	1.11			
Price Value	Experimental	4.84	1.16	-1.151	.258	None
	Control	5.03	0.98			
Habit	Experimental	4.83	0.97	-0.917	.361	None
	Control	4.97	0.95			
Behavioral Intention	Experimental	5.41	1.16	-1.031	.311	None
	Control	5.58	0.97			

* Experimental N=76, Control N=89, $p < .05$

Table 3 highlights that the pre-test mean scores of the acceptance and use of technology scale factors of the experimental and control groups are 6.19 and 6.27 for performance expectancy ($t = -0.522$), 5.19 and 5.31 for effort expectancy ($t = -0.731$), 5.75 and 5.78 for social effect ($t = -0.195$), 4.30 and 4.51 for facilitating conditions ($t = -1.070$), 5.54 and 5.52 for hedonic motivation ($t = 0.101$), 4.84 and 5.03 for price value ($t = -1.151$), 4.83 and 4.97 for habit ($t = -0.917$), and 5.41 and 5.58 for behavioral intention ($t = -1.031$). As a result of the t-test for independent samples, no statistically significant difference was found between the experimental and control groups, $p > .05$. This supports the finding that the experimental and control group pre-test mean scores are not statistically different from each other. Table 4 summarizes the results regarding the difference in post-implementation-pre-application scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools.

Table 4: Difference in post-implementation-pre-application scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools

Factors (Pre-test)	Group	Mean	Sd	t	p	Significant Difference
Performance Expectancy	Experimental	0.00	1.43	0.53	0.60	None
	Control	-0.11	1.20			
Effort Expectancy	Experimental	0.62	1.26	0.88	0.38	None
	Control	0.44	1.32			
Social Influence	Experimental	0.28	1.18	0.75	0.45	None
	Control	0.14	1.23			
Facilitating Conditions	Experimental	1.00	1.80	0.54	0.59	None
	Control	0.86	1.50			
Hedonic Motivation	Experimental	0.62	1.43	0.56	0.58	None
	Control	0.49	1.48			
Price Value	Experimental	0.66	1.36	1.22	0.23	None
	Control	0.40	1.39			
Habit	Experimental	0.61	1.30	1.62	0.11	None
	Control	0.27	1.38			
Behavioral Intention	Experimental	0.46	1.39	1.32	0.19	None
	Control	0.18	1.31			

* Experimental N=76, Control N=89, $p < .05$

Table 4 highlights that the posttest-pretest difference mean scores of the experimental and control groups in terms of acceptance of and intention to use Web 2.0 tools are 0.00 and -0.11 for performance expectancy ($t = 0.53$), 0.62 and 0.44 for effort expectancy ($t = 0.88$), 0.28 and 0.14 for social influence ($t = 0.75$), 1.00 and 0.86 for facilitating conditions ($t = 0.54$), 0.62 and 0.49 for hedonic motivation ($t = 0.56$), 0.66 and 0.40 for price value ($t = 1.22$), 0.61 and 0.27 for habit ($t = 1.62$), and 0.46 and 0.18 for behavioral intention ($t = 1.32$). As a result of the independent sample t-test test, no statistically significant difference was found between the experimental and control groups, $p > .05$. This indicates that the posttest-pretest difference mean scores of the experimental and control groups are statistically equal. The results of the post-implementation-pre-application difference scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools according to the gender variable are summarized in Table 5a.

Table 5a: Post-implementation-pre-application difference scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools according to the gender variable

Factors (Difference)	Gender	N	Mean	Sd	t	p	Significant Difference
Performance Expectancy	Female	113	0.07	1.35	1.87	0.06	None
	Male	52	-0.34	1.19			
Effort Expectancy	Female	113	0.58	1.28	0.87	0.39	None
	Male	52	0.39	1.32			
Social Influence	Female	113	0.35	1.16	2.29	0.02	In favour of female
	Male	52	-0.11	1.26			
Facilitating Conditions	Female	113	0.83	1.52	-1.15	0.25	None
	Male	52	1.14	1.87			
Hedonic Motivation	Female	113	0.73	1.43	2.40	0.02	In favour of female
	Male	52	0.15	1.45			
Price Value	Female	113	0.58	1.34	0.82	0.41	None
	Male	52	0.39	1.47			
Habit	Female	113	0.44	1.26	0.17	0.86	None
	Male	52	0.40	1.52			
Behavioral Intention	Female	113	0.38	1.32	0.97	0.33	None
	Male	52	0.16	1.41			

* Female N=113, Male N=52, $p < .05$

Table 5a highlights that the posttest-pretest difference mean scores of the experimental and control groups in terms of the factors of acceptance of and intention to use Web 2.0 tools according to gender are 0.07 and -0.34 for performance expectancy ($t=1.87$), 0.58 and 0.39 for effort expectancy ($t=0.87$), 0.83 and 1.14 for facilitating conditions ($t=-1.15$), 0.58 and 0.39 for price value ($t=0.82$), 0.44 and 0.40 for habit ($t=0.17$), and 0.38 and 0.16 for behavioral intention ($t=0.97$). On the other hand, the values are 0.35 for females and -0.11 for males in the social influence ($t=2.29$) factor, and 0.73 for females and 0.15 for males in the hedonic motivation ($t=2.40$) factor. As a result of the independent sample t-test, no statistically significant difference was found between the experimental and control groups in terms of gender (performance expectancy, effort expectancy, facilitating conditions, price value, habit, behavioral intention), $p > .05$, a statistically significant difference was found in the social influence and hedonic motivation factors, $p < .05$. In both factors, the difference was in favour of female pre-service teachers.

Table 5b summarizes the results of the post-implementation-pre-implementation difference scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools according to ownership of a computer.

Table 5b: Post-implementation-pre-implementation difference scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools according to ownership of a computer

Factors (Difference)	Ownership of the computer	Mean	Sd	t	P	Significant Difference
Performance Expectancy	Yes	0.17	1.41	1.74	0.08	None
	No	-0.20	1.23			
Effort Expectancy	Yes	0.69	1.36	1.26	0.21	None
	No	0.42	1.25			
Social Influence	Yes	0.22	1.25	0.09	0.93	None
	No	0.20	1.18			
Facilitating Conditions	Yes	1.45	1.36	3.25	0.00	In favour of "Yes"
	No	0.61	1.72			
Hedonic Motivation	Yes	0.87	1.51	2.19	0.03	In favour of "Yes"
	No	0.36	1.39			
Price Value	Yes	0.93	1.49	3.03	0.00	In favour of "Yes"
	No	0.28	1.25			
Habit	Yes	0.65	1.46	1.63	0.11	None
	No	0.29	1.26			
Behavioral Intention	Yes	0.40	1.65	0.68	0.50	None
	No	0.26	1.14			

* Yes N=62, No N=103, $p < .05$

Table 5b highlights that the posttest-pretest difference mean scores of the experimental and control groups in terms of the factors of acceptance of and intention to use Web 2.0 tools according to ownership of the computer are 0.17 and -0.20 for performance expectancy ($t=1.74$), 0.69 and 0.42 for effort expectancy ($t=1.26$), 0.22 and 0.20 for social influence ($t=0.09$), 0.65 and -0.29 for habit ($t=1.63$), and 0.40 and -0.26 for behavioral intention ($t=0.68$). On the other hand, the values are 1.45 and 0.61 for facilitating conditions ($t=3.25$), 0.87 and 0.36 for hedonic motivation ($t=2.19$), and 0.93 and 0.28 for price value ($t=3.03$). As a

result of the independent sample t-test, no statistically significant difference was found between the experimental and control groups according to ownership of the computer (performance expectancy, effort expectancy, social influence, habit, behavioral intention), $p > .05$, a statistically significant difference was found in the facilitating conditions, hedonic motivation, and price value factors, $p < .05$. The difference in these factors was in favour of pre-service teachers owning computers.

Table 5c summarizes the results of the post-implementation-pre-implementation difference scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools according to departments.

Table 5c: Post-implementation-pre-implementation difference scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use Web 2.0 tools according to departments

Factor Difference)	Departments	Mean	Sd	F	P	Significant Difference
Performance Expectancy	1	-0.44	1.30	1.925	.128	
	2	-0.05	1.30			
	3	0.10	1.42			
	4	0.19	1.19			
Effort Expectancy	1	0.33	1.23	1.785	.152	
	2	0.32	1.26			
	3	0.64	1.59			
	4	0.86	1.07			
Social Influence	1	-0.03	1.22	1.971	.120	
	2	0.04	1.17			
	3	0.31	1.23			
	4	0.53	1.17			
Facilitating Conditions	1	0.74	1.30	1.002	.394	
	2	0.73	1.79			
	3	1.00	1.78			
	4	1.26	1.67			
Hedonic Motivation	1	0.11	1.48	2.727	.046	English Language Education -Elementary Mathematics Teaching
	2	0.45	1.42			
	3	0.75	1.58			
	4	0.94	1.26			
Price Value	1	0.43	1.37	1.084	.357	
	2	0.30	1.52			
	3	0.58	1.35			
	4	0.81	1.24			
Habit	1	0.36	1.32	1.148	.331	
	2	0.21	1.22			
	3	0.42	1.51			
	4	0.73	1.36			
Behavioral Intention	1	0.08	1.04	1.587	.195	
	2	0.14	1.49			
	3	0.45	1.30			
	4	0.63	1.47			

* Elementary Mathematics Education (1) N=43, Primary School Education (2) N= 46, Elementary Turkish Education (3) N=34, English Language Education (4) N=42, $p < .05$

Table 5c highlights that the posttest-pretest difference mean scores of the experimental and control groups in terms of acceptance of and intention to use Web 2.0 tools according to departments, while there was no statistically significant difference in the performance expectancy ($F=1.925$), effort expectancy ($F=1.785$), social influence ($F=1.971$), facilitating conditions ($F= 1.002$), price value ($F=1.084$), habit ($F=1.148$) and behavioral intention ($F=1.587$) factors $p > .05$, there was a statistically significant difference in the hedonic motivation ($F=2.727$) factor, $p < .05$. According to the Tukey and Scheffe tests conducted to reveal the source of the difference in this factor, the difference was found between the Elementary Mathematics Education and English Language Education departments. This difference was in favour of the pre-service teachers receiving education at the English Language Education department. The results of the post-implementation-pre-implementation scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use technology are summarized in Table 6.

Table 6: Post-implementation-pre-implementation scores of the experimental and control group pre-service teachers in terms of acceptance of and intention to use technology

Group	Factors	Implementation	Mean	Sd	t	p	Significant Difference
Experimental	Performance Expectancy	Post-test	6.19	0.91	-0.02	0.98	None
		Pre-test	6.19	1.04			
	Effort Expectancy	Post-test	5.81	0.81	4.27	0.00	In favour of post-test
		Pre-test	5.19	1.00			
	Social Influence	Post-test	6.03	0.81	2.08	0.04	In favour of post-test
		Pre-test	5.75	0.97			
	Facilitating Conditions	Post-test	5.30	1.29	4.85	0.00	In favour of post-test
		Pre-test	4.30	1.23			
	Hedonic Motivation	Post-test	6.15	0.93	3.77	0.00	In favour of post-test
		Pre-test	5.54	1.22			
	Price Value	Post-test	5.50	0.91	4.24	0.00	In favour of post-test
		Pre-test	4.84	1.16			
	Habit	Post-test	5.44	0.90	4.10	0.00	In favour of post-test
		Pre-test	4.83	0.97			
Behavioral Intention	Post-test	5.87	0.83	2.89	0.01	In favour of post-test	
	Pre-test	5.41	1.16				
Control	Performance Expectancy	Post-test	6.16	0.91	-0.88	0.38	None
		Pre-test	6.27	0.90			
	Effort Expectancy	Post-test	5.75	0.93	3.16	0.00	In favour of post-test
		Pre-test	5.31	1.01			
	Social Influence	Post-test	5.91	0.87	1.06	0.29	None
		Pre-test	5.78	0.97			
	Facilitating Conditions	Post-test	5.37	1.07	5.40	0.00	In favour of post-test
		Pre-test	4.51	1.24			
	Hedonic Motivation	Post-test	6.01	1.05	3.12	0.00	In favour of post-test
		Pre-test	5.52	1.11			
	Price Value	Post-test	5.43	1.00	2.72	0.01	In favour of post-test
		Pre-test	5.03	0.98			
	Habit	Post-test	5.24	0.99	1.85	0.07	None
		Pre-test	4.97	0.95			
Behavioral Intention	Post-test	5.77	0.91	1.33	0.19	None	
	Pre-test	5.58	0.97				

* < .05

Table 6 highlights that the posttest-pretest mean scores of the experimental group in terms of the factors of acceptance of and intention to use Web 2.0 tools of are 6.19 and 6.19 for performance expectancy ($t=-0.02$), 5.81 and 5.19 for effort expectancy ($t=4.27$), 6.03 and 5.75 for social influence ($t=2.08$), 5.30 and 4.30 for facilitating conditions ($t=4.84$), 6.15 and 5.54 for hedonic motivation ($t=3.77$), 5.50 and 4.84 for price value ($t=4.24$), 5.44 and 4.83 for habit ($t=4.10$), and 5.87 and 5.41 for behavioral intention ($t=2.89$). In the control group, the values are 6.16 and 6.27 for performance expectancy ($t=-0.88$), 5.75 and 5.31 for effort expectancy ($t=3.16$), 5.91 and 5.78 for social influence ($t=1.06$), and 4.51 and 5.37 for facilitating conditions ($t=5.40$), 6.01 and 5.52 for hedonic motivation ($t=3.12$), 5.43 and 5.03 for price value ($t=2.72$), 5.24 and 4.97 for habit ($t=1.85$), and 5.77 and 5.58 for behavioral intention ($t=1.33$). As a result of the independent sample t-test, while there was no significant difference in the performance expectancy factor between the post-implementation and pre-implementation mean scores of the experimental group, $p > .05$, a statistically significant difference was found in the factors of effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and behavioral intention, $p < .05$. As a result of the independent sample t-test for the control group, there was no significant difference between the post-implementation and pre-implementation mean scores in performance expectation, social influence, habit, and behavioral intention, $p > .05$ while there was a statistically significant difference in effort expectancy, facilitating conditions, hedonic motivation and price value, $p < .05$. Significant differences in both experimental and control groups were in favour of the post-implementation.

DISCUSSION

Discussion, conclusion, and recommendations are presented in light of the findings obtained in this study, which focused on the effect of peer mentoring on the acceptance of and intention to use Web 2.0 tools of pre-service teachers.

In this respect, no statistically significant difference was found between the pre-test mean scores of the constructs in terms of acceptance of and intention to use Web 2.0 tools of the experimental and control groups. Besides, no statistically significant difference was found between the posttest-pretest difference scores of the constructs in terms of acceptance of and intention to use Web 2.0 tools of the experimental and control groups. It can be implied that collaborative flipped classroom practices have

an equally positive effect on technology acceptance and use of pre-service teachers receiving both peer mentoring and teacher guidance.

Another finding was that while no statistically significant difference was found in the posttest-pretest difference mean scores of the constructs in terms of acceptance of and intention to use Web 2.0 tools of the experimental and control groups according to gender, a statistically significant difference was found in favour of female pre-service teachers in terms of social influence and hedonic motivation. No significant difference was found between female and male participants in terms of behavioral intention. The relevant result overlaps with the results of some studies included in the literature (Dečman, 2015; Korucu and Biçer, 2017; Diri and Açıkgül, 2021). This indicates that female pre-service teachers have a higher level of belief that others should use technology as part of the collaborative flipped classroom practice than male pre-service teachers and that female pre-service teachers have more enjoyment and pleasure when using Web 2.0 tools than male pre-service teachers.

One may notice that while no statistically significant difference was found between the posttest-pretest difference mean scores of the experimental and control groups in terms of acceptance of and intention to use Web 2.0 tools according to the ownership of a computer, a statistically significant difference was found for the pre-service teachers with a computer in terms of facilitating conditions, hedonic motivation, and price value. This indicates that as part of the collaborative flipped classroom, pre-service teachers owning a computer have more enjoyment and pleasure while using a Web 2.0 tool than those without a computer with a higher level of relationship between the price and the benefit of using Web 2.0 tools than those without a computer and the perception of the existence of technical infrastructure can support easy access to Web 2.0 tools. The literature review makes it clear that the acceptance levels of individuals with more experience (Ibrahim & Walid, 2014) are higher. It was also concluded that students owning a computer with internet access have a significantly higher level of competence and use of Web 2.0 technologies than those who do not (Baran & Ata, 2013). Korucu and Biçer (2017) reported an inverse relationship between the acceptance of information and communication technologies and the professional concerns of pre-service teachers while Kandemir (2020) reported that teachers' perceptions of efficacy for the use of educational platforms affect their perception of behavioral intention. Furthermore, the present study found that ownership of a computer can be considered an experience. It can be argued that individuals owning a computer are likely to use Web 2.0 tools more effectively than those without a computer.

It was observed in the present study that while no statistically significant difference was found in the posttest-pretest difference mean scores of the experimental and control groups in terms of acceptance of and intention to use Web 2.0 tools according to departments, a significant difference was found in favour of the English Language Education department pre-service teachers in hedonic motivation. Thus, it can be implied that the pre-service teachers receiving English Language Education experience more joy and pleasure when using a Web 2.0 tool than those receiving education in the field of Elementary Mathematics Education. Along the same lines, Baran and Ata (2013) investigated university students' use of Web 2.0 technologies and their competence, concluding that students with a good level of foreign language knowledge have a higher level of competence in using Web 2.0 technologies than others. The lack of Turkish language support in most of the Web 2.0 tools is potentially the biggest reason for this. In addition, while Avcu and Gökdaş (2012), who shed light on the acceptance of information and communication technologies, did not find any difference in terms of departments, Kandemir (2020) reported a significant difference in favour of Primary School Education teachers in terms of facilitating conditions and hedonic motivation.

No significant difference was found between the posttest-pretest mean scores of the experimental group in terms of acceptance of and intention to use Web 2.0 tools in performance expectancy, a statistically significant difference was observed in effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and behavioral intention. On the other hand, as regards the control group, while no significant difference was found in performance expectancy, social influence, habit, and behavioral intention, a statistically significant difference was found in effort expectancy, facilitating conditions, hedonic motivation, and price value factors. The result regarding behavioral intention revealed that the significant result in favour of the post-test for the peer mentoring group coincides with similar results in the literature (AlAwadhi & Morris, 2008). Venkatesh (2003) reported that the acceptance of technology is affected by the intention of individuals that matter to the user. The result is backed up in the present study which found that peers affect the behavioral intention of classmates. It can be argued that in terms of both social influence and behavioral intention, there was a change in acceptance of and intention to use Web 2.0 tools among the experimental group, the members of whom received peer mentoring. As cited by Hashim, et al., (2022), while describing hedonic motivation, the use of Web 2.0 tools in both groups is a source of enjoyment. This indicates a higher relationship between the perceived convenience of pre-service teachers receiving teacher guidance in using Web 2.0 tools, a higher perception of the existence of technical infrastructure, and a higher relationship between the price and the benefit. In addition, the use of Web 2.0 tools, the belief that others should also use technology, the tendency to exhibit behaviors in this sense, and the intention to perform the given tasks are higher among pre-service teachers receiving teacher guidance than among pre-service teachers receiving peer mentoring.

Another striking result of the study is that no significant difference was found between the posttest-pretest mean scores of the experimental and control groups in terms of acceptance of and intention to use Web 2.0 tools in performance expectancy. The potential reason behind the relevant result is the collaborative nature of the flipped classroom practice in both groups since performance expectancy represents the degree of personal belief about the contribution of technology use to professional performance. Venkatesh et al., (2012) also reported that hedonic motivation is more effective than performance expectancy in determining individuals' intention to use when there is no compulsory use of technology. In the present study, hedonic motivation

was a source of a significant difference in both groups. Dečman (2015), on the other hand, investigated the acceptance of compulsory e-learning environments in higher education, emphasizing that performance expectancy is one of the most important variables. Therefore, it can be argued that individuals' perception of benefiting from a Web 2.0 tool may change according to their compulsory use of that tool.

CONCLUSION AND RECOMMENDATIONS

In a nutshell, it was concluded that acceptance of and intention to use Web 2.0 tools among pre-service teachers receiving both peer mentoring and teacher guidance had a positive effect while the relevant effect was higher for those receiving peer mentoring. The effect of peer mentoring on pre-service teachers' technology acceptance and use in some constructs was in favour of female participants according to gender, in favour of pre-service teachers with computers in some constructs according to ownership of a computer, and in favour of the participants in the field of English Language Education solely in one construct. In this context, some recommendations are presented for future studies, as shown below.

- The effect of different blended models can be examined in similar studies.
- Similar studies can be carried out with a full experimental design.
- Similar studies can be carried out with mixed model methods.
- Similar studies can be re-examined with different variables.

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Statements of publication ethics

I/We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

As part of the procedures of collecting research data, no objection was observed in terms of research ethics as per the decision of the Ethics Committee of Siirt University dated 2022 and numbered 2501.

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