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Effects of Face To Face and E-Learning Trainings on Improving In-Service Teachers Educational Internet Use Self-Efficacy Beliefs*

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ABSTRACT

The study aimed to find out the effects of face to face and e-learning trainings for improving teachers' educational Internet use self-efficacy beliefs (EIUSEB) and determine the suitable approaches to be used in the future to improve teachers' EIUSEB. The sample consisted of 16 teachers from various disciplines — 8 teaching face-to-face and 8 teaching online who voluntarily participated and working in high schools affiliated to the Ministry of National Education (MoNE) in Turkey, Sakarya. This study had a pre-test-posttest matched control group quasi-experimental design within the subject limitation of the study. The "EIUSEB Scale for High School Teachers" developed by Akgün, Topal and Duman (2017) was used as the

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data collection instrument. Moreover, face-to-face interviews were conducted with the teachers participating in the experimental process. According to the results of the analysis, the both teaching approaches enhanced the self-efficacy beliefs of the participants to use the Internet in teaching and learning processes. However, the face-to-face training was found to be more preferable by the participants, to increase the participants' EIUSEB gain scores more than the online training. During the interviews, the participants recommended that the professional development trainings should (1) be given in an informal structure, (2) be practice-oriented and (3) given during the school seminars, and that (4) the e-learning platform should be usable by mobile devices, and its content should be more video-based. It is also suggested that self-efficacy beliefs be seen as one of the indicators of quality in education for tapping into teachers' Internet integration to teaching and learning processes.

Keywords

Educational Internet use, professional development, self-efficacy, teacher, e-learning.

Modern technology has reached an advanced level in recent years, intensifying the interest of people from all segments of the society in technology and Internet use at a degree which cannot be overlooked. According to the Internet use statistics of June 2018, 54.5% of the world population use the Internet, while this rate is 85.2% in European countries and 95% in North America. This ratio is well above the world average by 68.4% in Turkey (Internet World Stats, n.d.). Moreover, the rate of Internet use in Turkey was 66.8% in August 2017 in a study conducted by TUIK (the short for the Turkish Statistical Institute). Furthermore, eight out of ten households had access to the Internet, 42.3% of people benefited from e-government services, and one out of every four people made purchases online (TUIK, 2017). According to the report of the "We are social" foundation, the rate of Internet use compared to the world population reached 53% as of 2018 (We Are Social, 2018). It is inevitable that this use, as a part of our everyday lives, affects the field of education as significantly as it affects our social lives.

Today, individuals are born and grow in a world where digital tools are widespread in all areas of life. The generation consisting of today's individuals, also known as the digital natives, intensively uses these digital tools in daily life (Prensky, 2001a), more intensively than their predecessors, which suggests that these individuals may have different thinking processes and different learning styles (Tapscott, 1999; Prensky, 2001b; Oblinger, 2003; McCoy, 2010). Prensky (2001a) has argued that the educational system raising today's students is unable to address today's students, because their needs have changed. For this reason, in order for digital natives to develop themselves in using information and communication technologies for specific purposes, it is a necessity also for their teachers to improve their technological abilities (ISTE, 2017; Akkoyunlu, Yılmaz Soylu & Çağlar, 2010; Çoklar & Odabaşı, 2009). That's why the teachers' professional developments are essential for education systems.

According to the teacher competencies determined by the "International Society for Technology in Education" (ISTE), teachers and educators should be able to use information and communication technologies effectively and take responsibility for the integration of these technologies into everyday life in order to lead to innovations much needed in today's world (ISTE, 2017). It has been emphasized that teachers should possess the teaching and assessment competencies and be exemplar human models of the digital age (ISTE, 2017). Moreover, there are also competencies related to technology, its effective use and prolonging its use in our country. These competencies are listed in the Teacher Education and Educational Sciences Basic Domain Competencies of the Turkish Higher Education Competencies Framework (THECF) set by the Higher Education Council (HEC) (TYÇÇ, 2011). However, skills for using technology and Internet for

educational purposes were listed as required in many of the General Competencies of Teaching Profession (MEB, 2017) organized by the MoNE.

There are many projects carried out to develop educational approaches appropriate for the evolving characteristics of the era and for prospective teachers, including the ones such as Horizon (Johnson, Smith, Willis, Levine and Haywood, 2011) and Stellar (Tudhope, Binding, Jeffrey, May and Vlachidis, 2011). These projects deal with integration of information and communication technologies into education in general. They aim to teach individuals how to benefit more from information and communication technologies, to grasp the advantages and convenience of these technologies, to think using these technologies, to be able to overcome the problems they encounter in daily life and to get the skills and experience to use these technologies (Tudhope, Binding, Jeffrey, May & Vlachidis, 2011). Similarly, the Movement of Enhancing Opportunities and Improving Technology (in Turkish it is known as the FATIH Project) project in our country, Turkey, is designed to equip classrooms with smart boards for equal opportunity in education, to improve the technology in schools, to distribute tablet computers to students, and to develop digital learning materials. Moreover, MoNE and the Ministry of Transportation started to work on improving the Internet infrastructure of schools (Fatih Project, n.d.).

The high self-efficacy beliefs of teachers are some of the important reasons affecting the classroom teaching (Abbitt & Klett, 2007). However, problems arising from lack of knowledge, skills and competencies of teachers about technology use are one of the most important elements that prevent the effective use of these technologies in education (Hew & Brush, 2007; Yalın, Karadeniz & Şahin, 2007; Zhao, 2007; Kayaduman, Sırakaya & Seferoğlu, 2011). And, one of these factors is the possibility of low self-efficacy perceptions of teachers towards the use information technologies and the Internet for educational purposes (Akgün, 2008; Şahin, 2009). This is because one of the variables that most heavily influence the willingness and ability of individuals to use information technologies is their self-efficacy perceptions (Glassman & Kang, 2012). In Turkey, especially with the help of the FATIH Project, teachers' opportunities to use teaching materials by making use of the Internet have increased. Effective use of these opportunities depends on the condition that teachers have the necessary knowledge and skills as well as believing that they will use such knowledge and skills successfully — that is, having self-efficacy beliefs. Teacher candidates' beliefs in their own skills in using the technologies of the FATIH project are influenced by their educational Internet use self-efficacy beliefs (EIUSEB) (Topal & Akgün, 2015a).

Self-efficacy beliefs are associated with how sufficient one perceives himself or herself to do a particular job (Bandura, 1997). For this reason, they affect both whether a person starts an action and what his performance is in the process of realizing that action (Pajares, 2006). Self-efficacy perceptions are perceptions of competence, not skills, of individuals, and can affect the outcome of a job, behavior, or situation independently of whether individuals have qualifications that enable them to perform the job, behavior, or situation (Zimmerman, 1995). Before doing a certain job, a high self-efficacy belief of an individual that he will be able to do that job is an indication that he will be that much persistent in doing that job and a combatant against difficulties (Bandura, 1997). Before doing a certain job, a low self-efficacy belief of an individual — meaning that he will not be able to do that job — is an indication that he will not be persistent in doing that job, will not fight against difficulties, and will easily give up (Bandura, 1997). As is the case in many other fields, self-efficacy perceptions are an important variable that should be considered when using and teaching information technologies (Akgün, 2008). In the literature, there are

studies on perceptions of computer self-efficacy, Internet self-efficacy, and information literacy self-efficacy in related to information and communication technologies. Survey studies and studies with descriptive models have been conducted that examine EIUSEB of individuals according to various demographic characteristics (Baş 2011; Durmuş & Başparmak, 2014; Dursun, 2016; Eroğlu, Ünlü, Eroğlu & Yılmaz, 2011; Kahraman, Yılmaz, Erkol, & Yalçın, 2013; Yenilmez, Turğut, Anapa & Ersoy; 2011; Yoldaş & Argın, 2015; Topal & Akgün, 2015a; Tuncer & Tanaş, 2011). These studies reveal the existing condition of a certain mass of people determined within the scope of a research endeavor. On the other hand, it has been stated in studies on EIUSEB that such beliefs do not have a significant relationship with problematic Internet use (Durmuş & Başparmak, 2014), while they have significant relationships with knowledge acquisition skills (Kaya, Balay & Adıgüzel, 2014), achievement scores at graduation (Dursun, 2016), academic self-efficacy beliefs (Kabaran, Altıntaş & Kabaran, 2016) and attitudes toward the Internet (Balay, Kaya & Çevik, 2014). While the number of studies on enhancing self-efficacy, beliefs is few in the literature, it has been shown that EIUSEB can be enhanced through direct experiences (Topal & Akgün, 2015b) as it is the case in studies of computer self-efficacy beliefs (Torkzadeh, Pflughoeft & Hall, 1999; Compeau & Higgins, 1995a; Brinkerhoff, 2006).

Aim of the Study

The aim of this study was to determine the more effective and efficient instructional approach to enhance EIUSEB — the beliefs which are considered important for the FATİH project — of teachers who work in the high schools affiliated to the MoNE. Within the scope of this study, it was aimed to determine and compare the effectiveness of professional development program prepared according to the face-to-face and e-learning teaching approaches by using the same teaching objectives and content and implementing them independently on different subjects.

Within this scope, answers to the following questions were searched:

1) How do the professional development program prepared using the face-to-face and online teaching approaches affect teachers' EIUSEB?

2) What are the opinions of the teachers to the professional development program on educational Internet use at the end of the trainings?

Method

The study explored the effectiveness of the trainings implemented using two different methods in the form of face-to-face and e-learning to improve EIUSEB. For this reason, the pre-test–post-test matched control group design, which is one of the quasi-experimental designs, was preferred as the research model. Moreover, face to face interviews were conducted with the teachers who participated in the trainings to learn their expectations before preparing the professional development program (PDP), and their opinions and considerations after implementing the PDP.

Participants

The participants of the study consisted of the teachers working at high schools affiliated to MoNE in Sakarya province in the 2014–2015 school year. Hendek district was chosen for the implementation of the face-to-face trainings, while Serdivan district (36 kilometers away from Hendek) was chosen for the implementation of the e-learning training in Sakarya. The face to face training was given in Hendek to subjects living in Hendek while e-learning was given in Serdivan which is far enough for prevent unwanted interventions

between groups. First, the introductory meeting of the study was announced using official letters to the high schools affiliated to MoNE in Hendek and Serdivan districts with taking official supports of district governors and MoNE administrators in order to promote the participation in the study. A total of 270 high school teachers participated in the introductory meeting of the study. At this meeting, the project was introduced, and the teachers were asked to voluntarily participate in the professional development program (PDP). The subjects of the study consisted of 16 teachers who only they agreed to participate in the PDP — 8 of them were from Serdivan district assigned to the online training and 8 of them were from Hendek assigned to the face-to-face training. We randomly selected the groups according to their work addresses, not the participants. Because the teachers were asked to participate in the study in voluntary basis, the convenient sampling method was used. The teachers participating in the face-to-face training were one Religious Culture and Moral Knowledge teacher, one English teacher, one History teacher, two Secondary Mathematics teachers, one Turkish Language and Literature teacher, one Guidance teacher, and one Computer teacher. The teachers participating in the online trainings were one Turkish Language and Literature teacher, one History teacher, two Computer teachers, one Mathematics teacher, one English teacher, one Physics teacher, and one Chemistry teacher. Descriptive statics about the participants are summarized in Table 1.

Table 1.

Descriptive Statistics of the Participants

	Male (n)	Female (n)	Age			Experience		
			Min.	Max.	Mean	Min.	Max.	Mean
Face-to-Face Training Group	5	3	24	42	34.87	2	18	10.75
E-learning Training Group	4	4	24	38	27.75	2	16	7.75

Data Collection

The "Educational Internet Use Self-Efficacy Beliefs Scale for High School Teachers" developed by Akgün, Topal and Duman (2017) was used as the data collection instrument in the study. This scale was developed in 2015, submitted a journal and published in 2017. The scale consisted of 26 items and had only one factor. The following 5-point Likert type scale was used to be able to reveal the self-efficacy of the teachers about the items: "I strongly believe I am qualified" = 5, "I am qualified" = 4, "I am undecided whether I am qualified" = 3, "I am not qualified" = 2, and "I strongly believe I am not qualified" = 1. The lowest score that could be taken from the scale was 26 and the highest score was 130. The Cronbach Alpha internal consistency coefficient of the original scale was .97 (Akgün, Topal & Duman, 2017). The value calculated in the present study was .96. The internal consistency coefficient of the whole scale was .96 and well above the acceptable value (.70) (Büyüköztürk, 2012).

In the interviews with the teachers, open-ended questions to determine the opinions of the teachers about their expectations from the PDP overall, the content of the PDP, and the implementation process of the PDP were asked using a semi-structured interview form developed by the researchers. The first version of the interview form included five questions and it was revised after taking the opinions of two educational technology experts. The revised form consisted of three questions.

The data were directly collected by the authors by using instruments. The implementations were conducted by the authors as well.

Development and Implementation of Educational Internet Use Professional Development Program

It was planned to offer PDP by allowing teachers to learn educational internet use skills by direct experience in order to improve their EIUSEB. Direct experiences is the best method to enhance self-efficacy beliefs (Bandura, 1997). It could be seen in educational technology literature in the studies of Compeau and Higgins (1995b) and Torkzadeh and Van Dyke (2002) on computer self-efficacy perceptions, in the study of Kurbanoğlu and Akkoyunlu (2002) on information literacy self-efficacy perceptions, as well as in the study of Topal and Akgün (2015b) on improving EIUSEB. However, in order to standardize this kind of education and to be able to use it in both conditions in this study, PDP were developed first. The voluntary participation of the teachers was aimed in the PDPs. The PDPs were planned to be carried out in four sessions, taking into account various factors including the objectives (expected outcomes), activities, measurement and evaluation activities, success criteria, location, and time.

Two sources of information were examined when preparing the objectives of the PDP: (1) the teacher competencies related to information and communication technologies (MEB, 2017) from among the general teacher competencies prepared by the MoNE and (2) the competencies in the "National Educational Technology Standards - Educators" (NETs-E), which are widely accepted in the United States of America (ISTE, 2017). These qualifications were compared with each other by forming a table, and a comparative competency table (matrix) was prepared. As a result of this comparison, it was seen that the NETs-E educator competencies covered competencies related to information and communication technologies that were found in the general teacher competencies prepared by the MoNE. Finally, a common competencies table was established as a result of the comparisons.

After a common competencies table was prepared for determining objectives (expected outcomes) from the NETS-E educator competencies and from the competencies related to information and communication technologies in the general teacher competencies prepared by the MoNE, the objectives for these competencies were identified, and the PDP were developed to include practice activities. The PDP were divided into 4 sessions, and for each session; goals and objectives, sessions and contents of sessions, instructional activities, measurement and evaluation activities, success criteria, time and place were determined. The session names were specified thematically as follows: "Basic Internet Use," "Finding and accessing a Teaching/Learning Material Using the Internet," "Using Google Documents," and "Creating a Website Using an Online Web Design Tool (Wix)." In addition, activities were planned to be done by teachers on their own as it is like in project-based learning, outside the sessions. A separate rubric (a scoring key) was prepared for each of products to be prepared by the teachers during the instructional activities for evaluation. Finally, the PDP were made ready for implementation by taking expert

opinions from three faculty members with doctorate degrees working in the Department of Computer Education and Instructional Technology and from a person with a doctorate degree in the field of curriculum development.

Moreover, the teachers' expectations about the PDP were asked for needs assessment before they were designed and implemented. The teachers' opinions are summarized in Table 2.

Table 2.

Teachers' expectations from the PDP

Expectations	Frequency
I want to learn how to access the educational materials that I can use for my lessons on tablets and smart boards.	9
I want to learn how to use the Internet in a secure way and the protection of our personal information.	5
I want to learn how to create a personal web page of my own.	5
I want to learn how to share files over the Internet.	5

Based on the interview results (Table 2), the teachers' opinions were largely overlapped with the offered content of the PDP. They were also asked about how and when the course would be implemented. The participants recommended that the professional development trainings should (1) be given in an informal structure, (2) be practice-oriented and (3) given during the school seminars, and that (4) the e-learning platform should be usable by mobile devices, and its content should be more video-based.

Before the PDP began the Educational Internet Use Self-Efficacy Beliefs Scale for High School Teachers Scale (Akgün, Topal and Duman, 2017) was administered to all groups. The face-to-face training was held for 4 weeks,totally 6 hours in two days (3 hours Tuesday and 3 hours Thursday) in a week, at the computer laboratories within the Sakarya University Faculty of Education with the participation of two researchers on the day and time that the participating teachers found suitable. The e-learning PD was given using the Udemy platform. On the Udemy platform, educational videos prepared by the researchers were used. The videos were prepared by capturing real screens on using Internet resources and applications, and these materials were used only in the e-learning group. The e-learning subjects took the PDP asynchronously according to their individual schedules. They prepared and sent homework weekly to trainers for directly experiencing what they learned and actively using the Internet based technologies A Facebook group was created for the e-learning participants for communication. A week before the PDP started, an orientation meeting was held with both groups at different places. At the end of the implementations, the teachers' opinions about the PDP were taken, and the Educational Internet Use Self-Efficacy Beliefs Scale for High School Teachers Scale (Akgün, Topal and Duman, 2017) was re-administered.

Results

Quantitative Results

Before anything else, it was checked whether the data were normally distributed. Since the number of subjects were less than 30, the Shapiro-Wilks coefficient was taken into consideration for examining distribution of the data (Can, 2014). The calculated coefficient values were .473 and .827 for the pre-test scores and post-test scores, respectively. Since

these values were greater than .05, it was assumed that the data was normally distributed (Can, 2014). Nonetheless non-parametric tests were preferred due to data count was 8 for each group. We examined within-group variations using the Wilcoxon Sign test in order to examine the effectiveness of both PDPs (see Table 3).

Table 3.

Examination of Within-Group Score Variations in Online and Face-to-face Workshops Using the Wilcoxon Sign Test

Method	Final Measurement - Initial Measurement	N	Mean Rank	Total Rank	z	Sig.
Online	Negative Numbers	2	1.50	3.00	-2.103	.035
	Positive Numbers	6	5.50	33.00		
	No Difference	0				
Face-to-face	Negative Numbers	0	0.00	0.00	-2.524	.012
	Positive Numbers	8	4.50	36.00		
	No Difference	0				

The participants attending the online PDP ($z=-2.10$, $p<0.05$) as well as the ones attending the face-to-face PDP ($z=-2.52$, $p<0.05$) had a significant positive improvement in the self-efficacy perceptions after the trainings. Overall, both the online and the face-to-face PDPs significantly enhanced the teachers' EIUSEB. These findings indicate that the PDPs were effective in enhancing the teachers' EIUSEB both online and face-to-face.

The differences between the pre-test; post-test and derived gain scores were examined by using the Mann Whitney-U test (see Table 4).

Table 4.

Mann-Whitney-U Test Results for the Comparison of Pre-test, Post-Test and Gain Scores from Online and Face-to-face Workshops

Test	Method	N	Mean Rank	Total Rank	U	p
Pre-test	Online	8	11.63	93.00	7.00	.009
	Face-to-face	8	5.38	43.00		
Post-test	Online	8	10.56	84.50	15.00	.083
	Face-to-face	8	6.44	51.50		
Gain Score	Online	8	5.44	43.50	7.50	.010
	Face-to-face	8	11.56	92.50		

Because the difference between the pre-tests was significant and because the data did not meet ANCOVA assumptions (we wanted to conduct ANCOVA to statistically control

the pre-tests for comparing post-test but it was not possible because of the non-parametric distribution), gain scores were calculated by subtracting the pre-test scores from the post-test scores. Therefore, we used derived gain scores for examining the differences between the groups. The gain scores were examined using the Mann Whitney-U test (see Table 3). There was a significant difference in gain scores favouring the face-to-face PDP. These results showed that both PDPs are for improving EIUSEB, and face to face PDP seems more effective than face-to-face PDP within the limitations of this study.

Qualitative Results

The teachers were asked about their opinions about the PDPs at the end. The teachers' opinions are summarized in Table 5.

Table 5.

Teachers' opinions about the education in workshops

		Opinions	Frequency
Face-to-face PDP	Opinions about the implementation of the PDP	The participants were helped one-to-one during the implementation of the workshop, and there was a less formal environment than in-service education. These helped us to learn.	5
		It was helpful that the teachers were asked for their needs before the workshop, and these were taken into consideration.	3
		It was helpful that the workshop was practice-oriented.	3
		It was efficient in that only the people who volunteered participated.	2
	Opinions about the content of the PDP	It was very effective in that the course content was aimed at teaching basic skills for practice.	6
		Sharing of the course content beforehand helped teachers prepare themselves.	3
	Other	The training could be carried out during the seminar periods.	5
		Being able to get answers outside the course to questions we had helped us like the workshop.	2
E-learning PDP	Opinions about the implementation of the PDP	It could have been more effective to carry it out face-to-face.	6
		It was useful that it targeted practice and described the steps of the process one by one.	4
		It was quite comfortable not to be bound by the limits of time and space.	4
		Communication and correspondence via social media have enabled us to follow the training easily and communicate	3

	with other trainees.	
Opinions about the content of the PDP	It was fun to prepare and publish a web page.	2
Opinions about the e-learning platform used (Udemy)	Udemy was an organized platform; it was easy to use.	4
	The ability to login through the mobile application made it possible to access it whenever we wanted.	3
	It was very helpful to watch the videos prepared to show how to sign up for the Udemy platform and use it.	3

Opinions of the participating teachers show that most of them were satisfied with the PDPs. The teachers who participated in the face-to-face PDP thought that the fact that the training was less formal and involved less people than a usual in-service education contributed to the effectiveness of the training. Moreover, it can be said that the fact that the needs of the teachers were taken into account and that the PDP was practice-oriented was found effective by the teachers. Some examples of the teachers' opinions about the face-to-face PDP are as follows:

"I personally found this PDP very useful, because it was a very practice-oriented training. I learned many things that seemed simple but were quite useful. In fact, we take a lot of in-service courses during the year, but they are usually the things that do not interest us in practice or they are the things we already know. For that reason, such educational courses are both boring and inefficient." S1.

"I liked that the content of the PDP was given in advance and that it was in voluntary basis. After all, who comes here are those whoever needs this PDP. For example, we also sought answers to the questions that we had in addition to the content of the course, and we learned many useful things. I liked it very much and participated in it fondly." S2.

Considering the opinions regarding the e-learning PDP, the most frequently mentioned criticism was that could have been more effective to carry it out face-to-face. One of the reasons why the participants prefer face to face learning to e-learning may depends on their previous learning experiences especially learning about IT. In this study there were a lot of learning task that needed to actively engage learning and produce some materials. Another reason could be that while face to face learners can ask direct questions to instructors and get feedback and help in classroom, e-learners can ask questions but depending on their studying time, they get answers depending on the way such as using synchronous tools (e.g. instant message) or asynchronous tools (e.g. e-mail). These factors may have effect on participants preference on delivery of learning method. On the other hand, the participants found it beneficial that the training included step by step explanations of the skills that were targeted. While some participants found it useful to communicate via social media, others found it fun to have created a web page. Half of the participants stated that learning through an e-learning was comfortable because they were not dependent on time and place. However, some of the participants even tried the mobile application. Some examples of the teachers' opinions about the e-learning PDP are as follows:

"It has been a modern approach to provide education using up-to-date technologies. I have not had difficulty to use it as a computer teacher, but teachers from other disciples

may have had difficulty. It was very wise to have an introduction video for this. Though not as effective as face-to-face education, it did allow us to learn some things in order to do something step by step. Having a mobile app gives the system plus points; a good decision has been made." S3:

"It was hard to sign up for the site and get used to it in the first place; after all, it was not face-to-face education. I learned a little something after getting used to the site. I got a lot of help from the Facebook group. It was nice and comfortable to learn something from my home; I wish we could get such education during the seminar period." S4.

Conclusion, Discussion and Suggestions

Even though the small number of subjects limits the generalizability of the results, it is seen that both the online PDP and the face-to-face PDP significantly increased the teachers' EIUSEB. However, the perceptions of the teachers in the face-to-face training group are higher than those of the teachers in the e-learning training group. Based on the findings, it can be said that both the online and face-to-face trainings teaching educational Internet use were effective in enhancing the teachers' EIUSEB. However, the face-to-face PDP was preferable to the online one. One of the possible reasons of this preference may be the previous learning experiences of the participants were depending on face to face learning, especially while learning IT. In this study, the participants produced some products every week of the trainings. In this production processes they might want to ask questions and get immediate answers or to get directly help from trainers. In the study of Kemp and Grieve (2014), "the learners expressed a strong preference for class discussions to be conducted face-to-face, reporting that they felt more engaged, and received more immediate feedback, than in online discussion". Therefore, when conditions allow for all stake holders, it might be preferable to give this PDP face-to face for in-service teachers considering the participant number limitation of this study.

These findings support the claim that EIUSEB may be enhanced through direct experiences (Bandura, 1997, Compeau & Higgins, 1995a, 1995b; Schunk, 1987; Pajares, 2006; Zimmerman, 1995; Torkzadeh, Pflughoeft & Hall, 1999; Salanova, Grau, Cifre & Llorens, 2000; Topal & Akgün, 2015b). Moreover, it was also claimed in the experimental study of Kurbanoğlu and Akkoyunlu (2002) that the training they offered improved individuals' knowledge literacy self-efficacy perceptions. The findings of our study are similar with the findings of Kurbanoğlu and Akkoyunlu (2002) in terms of improving self-efficacy. This study originally showed that e-learning is an acceptable approach to let participants gain direct experiences with activities such as finding an online material to use for participants' own students, opening and using Google docs, creating a web site for supporting participants' own courses and submitting all these materials to trainers for completing this PDP as a requirement, and improve self-efficacy as well.

Opinions of the participating teachers show that most of them were satisfied with the PDPs. The participants recommended that the trainings should be in an informal structure. It can be said that in an informal learning environment the participants feel more comfortable and enjoy more in in-service teacher education. Participants prefer practice-oriented courses. It is concluded that participants at a certain level of education want to receive the theoretical knowledge on their own. For this reason, such PDPs need to be practice-oriented. According to participants' views the content in the courses conducted by e-learning should be more video based and accessible by mobile devices.

The PDPs that was carried out to enhance EIUSEB was effective. It was seen that the beliefs could be improved with direct experiences as shown in the literature even with e-learning. However, the face-to-face PDP was preferable in training individuals than the e-learning PDP. It is suggested that teachers should be provided with PDPs to use the Internet for educational purposes in teaching and learning processes more effectively and efficiently. In order to develop more efficient PDPs, similar studied should be carry out (a) with more participants, (b) with subject specific content and technologies, (c) with using delivery of instruction methods such as blended or flipped learning.

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