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Analysis of teacher candidates' educational internet self-efficacy beliefs in terms of various variables

Mustafa SIRAKAYA^a, Uğur BAŞARMAK^b, Önder BALTACI^b

^aMucur Vocational School, Ahi Evran University, Kırşehir, 40500, Turkey

^bFaculty of Education, Ahi Evran University, Kırşehir, 40100, Turkey

ABSTRACT

Nowadays, the rapid developments in informational technologies result in significant changes in the field of education as well as other fields. One of the most important changes is the use of internet for educational aims. In this sense, a new competence is now among the competencies expected from teachers; moreover, educational use of Internet has become a concept regarded for an efficient teaching process. The aim of this study is to analyze teacher candidates' educational use of Internet self-efficacy beliefs in terms of various variables. The sample of the study conducted in descriptive model consists of teacher candidates at a state university. Educational Use of Internet Self-Efficacy Beliefs Scale and Personal Information Form were used as data collection tools. It is concluded that teacher candidates' educational Internet self-efficacy beliefs have meaningful differences in terms of gender, departments they study on, how long they have used the Internet, duration of daily Internet use, the place they get online, and whether they desire to take their lessons online.

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1. Introduction

The era we live in is a period that rapid and hardly followable developments are experienced in information and communication technologies. These developments have effected the field of education as well as other fields and the technology has become an indispensable part of educational environments. With the developments in technology, different solutions are preferred in meeting individual needs; and, the Internet -the biggest indicator of technology- has become a technological tool used in every stage of daily life. In this regard, we can say that one of the most frequently used technologies is the Internet (Gündüz and Özdiç, 2008).

That teachers have the ability of using the Internet effectively and improve themselves has become an obligation (Özerbaş, 2010). Internet technology is a beneficial tool in terms of learners; moreover, it is known that teachers also

E-mail address: mustafa.sirakaya@ahievran.edu.tr

frequently benefit from the Internet as well as learners (Tuncer and Özüt, 2012). Teachers have a significant role in the use of Internet in educational environments. The researches show that teachers' self-efficacy has positive effects on students' attitudes and behaviors towards school (Tschannen – moran et al.; 1998), their success (Ross, 1992), their motivation (Midgley, Feldlaufer and Eccles, 1989) and students' own self-efficacy (Anderson, Greene and Loewen, 1988) (Cited by Gürol ve Aktı, 2010). In this sense, one of the significant features that teachers should have is the Internet self-efficacy. Tsai and Tsai describe the Internet self-efficacy as individuals' perceptions and beliefs about the skills towards Internet use.

Teachers' having high self-efficacy while using it for educational aims make us think that learning process can be conducted more efficiently and productively. That teachers' attitudes towards information and communication technologies are positive and their self-efficacy perceptions are high enable them to perform their profession more productively and in a more motivated way. Based on the fact that teachers should be able to use technology in classrooms in the information age that we are in, we think that teachers who have high levels of educational Internet use self-efficacy should be trained. Thus, it is important to analyze teacher candidates' use of internet self-efficacy beliefs.

1.1. The Aim of the Study

The aim of the study is to analyze teacher candidates' Internet self-efficacy beliefs in terms of various variables. With this aim, we try to find responses to the following questions.

- What is the level of teacher candidates' educational use of Internet self-efficacy beliefs?
- Do teacher candidates' educational use of Internet self-efficacy beliefs differ according to gender?
- Do teacher candidates' educational use of Internet self-efficacy beliefs differ according to the department they study?
- Do teacher candidates' educational use of Internet self-efficacy beliefs differ according to how long they have used the Internet?
- Do teacher candidates' educational use of Internet self-efficacy beliefs differ according to daily Internet use duration?
- Do teacher candidates' educational use of Internet self-efficacy beliefs differ according to the place they get online?
- Do teacher candidates' educational use of Internet self-efficacy beliefs differ according to whether they desire to take their lessons online?

2. Method

In the study, we used survey model among quantitative research methods. In survey model, it is aimed to describe a situation from the past or present as it was or is (Karasar, 2009).

2.1. Participants

At the beginning of the study, data were collected from 604 undergraduates at Faculty of Education in Ahi Evran University, Faculty of Education, Department of Computer Education and Instructional Technologies, Department of Primary Education, Science, Mathematics and Classroom Teaching Departments, Department of Educational Sciences, Psychological Counseling and Guidance. However, 5 participants were excluded because of missing data. In Table 1, we can see the distribution of work group according to department and gender.

Table1. The Distribution of work group according to department and gender

Department	Gender				Total	
	Female		Male		N	%
	N	%	n	%		
Computer Education and Instructional Technologies	65	56,5	50	43,5	105	100,0
Science Teaching	103	71,5	41	28,5	144	100,0
Turkish Language Teaching	55	57,3	41	42,7	96	100,0
Maths Teaching	79	77,5	23	22,5	102	100,0
Classroom Teaching	72	73,2	26	26,8	98	100,0
Psychological Counseling and Guidance.	25	56,8	19	43,2	44	100,0
Total	399	66,6	200	33,4	599	100,0

2.2. Data Collecting Tools

“Personal Information Form” developed by the researchers and “Educational Use of Internet Self-Efficacy Beliefs Scale” developed by Şahin (2009) were used as data collecting tools.

Educational Use of Internet Self-Efficacy Beliefs Scale developed by Şahin (2009) consists of one factor and 28 items. The items are scored as Inefficient (1), Partly Efficient (2), Efficient (3), Quite Efficient (4), Completely Efficient (5). Reliability co-efficient of the Scale was measured Cronbach’s alpha 0.96.

2.3. Analysis of Data

We get benefit from SPSS 20 packed program in the analysis of the data. Total scores gathered from the scale were analyzed in terms of various variables. In the analysis of the data, we used descriptive statistics, irrelevant samplings, t test, and one-way variant analysis.

3. Findings

3.1. Findings about Teacher Candidates’ Educational Use of Internet Self-Efficacy Beliefs

Findings about Teacher Candidates’ Educational Use of Internet Self-Efficacy Beliefs are presented in Table 2.

Table 2. Findings about Teacher Candidates’ Educational Use of Internet Self-Efficacy Beliefs

	n	\bar{x}	SS
Educational Use of Internet Self-Efficacy Beliefs	599	97,19	21,55

When the Table 2 is analyzed , we can say that teacher candidates have a better-than-average educational use of Internet self-efficacy beliefs.

3.2. Findings about the Change of Teacher Candidates’ Educational Use of Internet Self-Efficacy Beliefs According to Gender

The findings about whether teacher candidates’ educational use of Internet self-efficacy beliefs change or not are presented in Table 3.

Table3. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to Gender

		N	\bar{x}	SS	Sd	t	P
Educational Use of Internet self-Efficacy Beliefs	Female	399	93,94	20,18	596	-5,35	,000
	Male	200	103,73	22,75			

When we analyze the Table 3 we see that there is a meaningful difference among teacher candidates' educational use of Internet self-efficacy beliefs according to gender ($t(2-596)=-5,35$; $p<0.01$). It is seen that male teacher candidates' educational use of Internet self-efficacy beliefs are higher than female teacher candidates'.

3.3. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to the Department They Study

The means related to teacher candidates' educational use of Internet self-efficacy beliefs according to the department they study are presented in Table 4.

Table4. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to the Department They Study

Department		n	\bar{x}	Ss
1.	Computer Education and Instructional Technologies	115	106,92	18,34
2.	Science Teaching	144	103,22	19,98
3.	Turkish Language Teaching	96	87,76	25,09
4.	Maths Teaching	102	95,20	19,58
5.	Psychological counseling and Guidance	44	88,89	21,24
6.	Classroom Teaching	98	91,95	18,59
Total		599	97,19	21,55

In Table 4, according to educational use of Internet self-efficacy beliefs, we can see that the department having the highest mean in Computer Education and Instructional Technologies ($\bar{X}=106,92$), the department having the lowest mean is Turkish Language Teaching ($\bar{X}=87,76$). The results of the variance analysis on whether the differences among the means according to the departments are meaningful or not are given in Table 5.

Table5. Findings of Variance Analysis Teacher Candidates Educational Use of Internet Self-Efficacy Beliefs According to Department They Study

Resource of the Variance	Sum of Squares	Sd	Mean of Squares	F	p	Meaningful Difference
Inter-groups	30788,044	5	6157,608	14,781	.000	1-3, 1-4, 1-5,
Intra-groups	247035,321	593	416,585			1-6, 2-3, 2-4,
Total	277823,366	598				2-5, 2,6

1: Computer Education and Instructional Technologies , 2: Science Teaching, 3: Turkish Language Teaching, 4: Maths Teaching, 5: Psychological counseling and guidance, 6: Classroom Teaching

As a result of the variance analysis, it is seen that the difference among teacher candidates' educational use of Internet self-efficacy level according to the department they study is meaningful ($F(5-593)=14,781$; $p<0.01$). According to the results of Bonferroni test conducted to see which departments have meaningful difference, it is seen that the students in the departments of Computer Education and Instructional Technologies and Science Teaching

are higher than the students in the departments of Turkish Language Teaching, Maths Teaching, Psychological Counseling and Guidance in a meaningful level. There is no significant difference among the students of Computer Education and Insructional Technologies and Science teaching.

3.4. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to How Long They Have Used the Internet

The means related to teacher candidates' educational use of internet self-efficacy beliefs according to how long they have used the Internet are presented in Table 6.

Table6. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to How Long They Have Used the Internet

Internet Use Duration	n	\bar{x}	SS
1. Less than 1 year	13	82,33	18,47
2. Between 1-3 years	56	87,92	19,25
3. Between 3-5 years	119	89,45	20,65
4. More than 5 years	408	101,35	20,96
total	596	97,30	21,52

In Table 6, we see that the group having the highest mean of educational use of Internet self-efficacy beliefs level is the group having more than 5 years-experience in using the Internet ($\bar{X}=101,35$). On the other hand, the group having the lowest mean of educational use of Internet self efficacy beliefs level is the group having less than 1 year-experience ($\bar{X}=82,33$).the results of variance analysis related to whether the difference among the means of teacher candidates' educational use of Internet according to how long they have used Internet are given in Table 7.

Table 7: Variance Analysis of Teacher Candidates' Educational Use of Internet self-Efficacy Beliefs According to How Long They Have Used Internet

Resource of the Variance	Sum of Squares	Sd	Mean of Squares	F	P	Meaningful Difference
Inter-groups	21890,040	3	7296,680	17,020	.000	4-1, 4-2, 4-3
Intra-groups	253795,418	592	428,708			
Total	275685,459	595				

1: Less than 1 year, 2: Between 1-3 years, 3: Between 3-5 years, 4: More than 5 years

As a result of the variance analysis, the difference between educational use of Internet self-efficacy levels according to how long they have used the Internet is meaningful ($F(3-592)=17,020$; $p<0.01$). According to the Bonferroni test conducted to see which groups have meaningful difference, educational use of Internet self-efficacy beliefs levels differ among the groups that having more than 5 years-experience and less than 1 year-experience; between 1-3 years and between 3-5 years.

3.5. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to Daily Internet Use Duration

The means related to teacher candidates educational use of Internet self-efficacy beliefs level according to daily Internet use duration are presented in Table 8.

Table8. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to Daily Internet Use Duration

	Daily Internet Use Duration	N	\bar{x}	SS
1.	Less than 1 hour	143	88,42	21,82
2.	Between 1-4 hours	333	98,32	20,44
3.	Between 4-8 hours	89	103,80	21,21
4.	More than 8 hours	33	106,80	20,71
	Total	598	97,17	21,56

In Table 8, we see that the group having the highest educational use of Internet self-efficacy beliefs level are those who use the Internet more than 8 hours a day ($\bar{X}=106,80$), the group having the lowest educational use of Internet self-efficacy beliefs level are those who use the Internet less than 1 hour a day ($\bar{X}=88,42$). Moreover, it is understood that teacher candidates frequently use the Internet between 1-4 hours a day. The results of the variance analysis related to whether the mean of teacher candidates' educational use of Internet self-efficacy beliefs according to daily Internet use duration are given in Table 9.

Tablo9. Findings of Variance Analysis of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to Daily Internet Use Duration.

Resource of Variance	Sum of Squares	Sd	Mean of Squares	F	P	Meaningful Difference
Inter-groups	17838,660	3	5946,220	13,594	.000	1-2, 1-3, 1-4
Intra-groups	259829,137	594	437,422			
Total	277667,797	597				

1: Less than 1 hour, 2: Between 1-4 hours, 3: Between 4-8 hours, 4: More than 8 hours

As a result of the variance analysis, we see that the difference between educational use of Internet self-efficacy beliefs levels is meaningful ($F(3-594)=13,594$; $p<0.01$). According to Bonferroni test conducted in order to identify which groups have meaningful difference, it is seen that educational use of Internet self-efficacy beliefs levels differs among teacher candidates using the Internet less than 1 hour a day, between 1-4 hours a day, 4-8 hours a day and more than 8 hours a day..

3.6. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to the Place They Get Online

The means related to teacher candidates' educational use of Internet self-efficacy beliefs according to the place they get online are presented in Table 10.

Table10 Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to the Place They Get Online

	The place they get online	N	\bar{x}	SS
1.	Home /Dormitory	540	97,42	21,22
2.	Cyber cafe	23	86,00	24,27
3.	School	11	97,88	15,70
	Total	574	96,98	21,34

According to Table 10, it is seen that educational use of Internet self-efficacy beliefs level are closer between the teacher candidates who get online at home/dormitory and at schools. On the other hand, most of the teacher

candidates get online where they stay. The results of variance analysis related to whether the difference between the means of teacher candidates' use of Internet self-efficacy beliefs are given in Table 11.

Table11. Findings of Variance Analysis of Teacher Candidates' Use of Internet Self-Efficacy Beliefs According to the Place They Get Online

Resource of the Variance	Sum of Squares	Sd	Mean of Squares	F	P	Meaningful Difference
Intergroups	2890,168	2	1445,084	3,196	,0426	1-3
Intragroups	258213,061	571	452,212			
Total	261103,229	573				

1: Home/Dormitory, 2: Cyber Cafe, 3: School

As a result of variance analysis, it is seen that the difference between candidates' use of internet self-efficacy beliefs levels according to the place they get online is meaningful ($F(2-571)=3,196$; $p<0.05$). According to the results of Bonferroni test conducted in order to see which groups have meaningful difference, there is a meaningful difference between teacher candidates who get online where they stay (home/dormitory) and teacher candidates who get online at school.

3.7. Findings about the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to Whether They Desire to Take Their Lessons Online

Findings about the change of teacher candidates' educational use of internet self-efficacy beliefs according to whether they desire to take their lessons online are presented in Table 12.

Table12. Findings About the Change of Teacher Candidates' Educational Use of Internet Self-Efficacy Beliefs According to Whether They Desire to Take Their Lessons Online

Desiring to Take The Lessons Online	N	\bar{x}	SS	sd	T	P
Educational Use of Internet Self-Efficacy Beliefs	Yes	320	100,60	20,82	592	4,10
	No	274	93,41	21,74		

When we analyze the Table 12, it is seen that there is a meaningful difference between teacher candidates' use of Internet self-efficacy beliefs according to desiring to take the lessons online ($t(2-592)=-4,10$; $p<0.01$). The teacher candidates who desire to take the lessons online having higher educational use of Internet self efficacy beliefs level than teacher candidates who do not desire.

4. Results and Discussion

It is seen that most of the teacher candidates have educational use of Internet self-efficacy beliefs and male teacher candidates have higher educational use of Internet self-efficacy beliefs. It is seen that the educational use of Internet self-efficacy beliefs of the students in the departments of Computer and Teaching Technologies and Science Teaching are high in a meaningful level. It is observed that when the duration of Internet increases, teacher candidates' Internet self-efficacy beliefs increase, too. On the other hand, teacher candidates who get online where they stay (home/dormitory) have a higher level of educational use of Internet self efficacy beliefs than teacher candidates getting online at school.

When the related literature is analyzed, it is possible to face similar results. In the researchers conducted on teacher candidates, it is seen that self-efficacy beliefs of male teacher candidates are higher than self-efficacy beliefs of female teacher candidates (Yenilmez et al., 2011; Kaya et al., 2014; Gündüz and Özdin., 2008).

Baş (2011) determined that primary school teachers have “quite sufficient” educational use of Internet self-efficacy beliefs. In another study, it was founded that physics teacher candidates have high levels of educational use of Internet self efficacy beliefs (Bozkurt et al., 2010). On the other hand, the students in the departments of Computer and Teaching Technologies and Science Teaching have higher educational use of Internet self-efficacy level than the students in other departments (Durmuş and Başarmak, 2014). On the contrary to the mentioned studies, Kaya et al., (2014) and Kılıç and Çakmak (2010) has founded the results that teacher candidates’ educational use of Internet self efficacy does not change according to their departments.

There is a meaningful difference among classroom teacher candidates’ educational use of Internet self efficacy according to type of learning, duration of Internet use, the classroom they take lessons, and the environment they get online (Tuncer and Özüt, 2012). Yenilmez et al., 2011, who finds a similar result, mention that educational use of Internet self efficacy of teacher candidates who use Internet much are higher.

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