A Study of the Self-Efficacy of English Teachers for Educational Technology Standards

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Abstract. The aim of this study is to determine the efficacy of English teachers regarding the use of technology in education on the use of technology in all areas of our lives in order to provide a more effective and fun lesson environment. In this study, survey research method was used which is one of the quantitative research. To analyze the data, the mean and standard deviation values were examined in order to determine the technology competence of English teachers. In addition, teachers' competencies of using educational technology according to gender, seniority and school types were evaluated. The results of this study show that English teachers' self-efficacy is low according to technology standards. According to the findings of the study, it can be said that the technology self-efficacy of English teachers does not differ significantly according to gender, years of seniority and the school they work in.

Keywords. Technology, self-efficacy, English teachers.

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The process of development and renewal, which started with the discovery of fire, which is considered a turning point in human history, and has not stopped for centuries, brings different innovations in the field of science and technology with each passing day. These innovations in almost all areas make human life significantly easier. However, in addition to this, it creates different needs and training areas. These changes in the field of science and technology reveal the need for renewal in the field of education. Technology should be integrated especially in lessons for generation Z who born in the age of technology. It can be stated that the generation Z is a generation that can easily access information, deal with many different jobs at the same time and use communication tools effectively. This generation, which can quickly access the opportunities of the period and use them effectively, is also the bridge of the social habitat it lives in to the future (Sarıbaş et al., 2016). Considering that the vast majority of students who are studying today are the children of the generation Z who open their eyes to the world of technology, the place of technology in education becomes even more important. In this context, the biggest task falls to the teachers. Teachers are expected to keep up with developing and constantly renewed technological developments. For this purpose, the study investigated English teachers' self-efficacy beliefs about technology use skills.

Educational Technology is a set of systems that puts the data of different sciences into practice in wide areas of education such as special methods, tools, equipment, measurement and evaluation, and provides the best use of human power in appropriate material and spiritual environments, solving educational problems, increasing quality and increasing efficiency (Riza, 2000). As in the definition of Educational Technology, today's education system can be more effective; it is necessary to follow the innovations in the fields of science, art and technology, and to increase the quality of education by using the materials we have at the most efficient level. Solomon and Schrum (2007) state that the education world should be familiar with technological innovations and changes in order to prepare students for new situations. The use of Information and Communication Technology (ICT) increases students' motivation and self-confidence by focusing on the learning process and supports their cognitive development (Heafner, 2004). Blurton (2002) states that ICT is a broad term that includes a wide variety of technologies for obtaining, organizing, storing and sharing information. For this reason, since students are more interested in the outside world than being in school and sitting in the classroom, instructors should find solutions that attract the attention and interest of their students. In order to increase students' motivation and facilitate learning, instructors should develop new methods suitable for the digital world, taking into account the interests and needs of their students, and work together to make the most appropriate decisions and save time in this process.

In order to support the use of technology in education in Turkey the Increase Opportunities, Technology Improvement Movement (FATİH) project has been implemented. Interactive boards, which started to be distributed in the 2012-2013 academic year with the FATİH project, reached 22 938 schools as of 2020 and a total of 448 951 interactive boards were installed, and 700 thousand tablets were distributed to students (MEB, 2020). With the FATİH project, it is aimed to facilitate the access of students at primary, secondary and high school levels to information, to make learning more enjoyable and permanent in line with the enrichment of the audio-visual tools used in lessons, and to make students more active in the lesson by developing their collaboration and collaboration skills. The use of ICT in the FATİH project is to improve the technology in schools and to appeal to more senses in the learning and teaching process, to ensure effectiveness in lessons and equal opportunities in education. In addition, students are provided with 21st century technology usage, effective communication, analytical thinking and problem solving skills (MEB, 2020). By integrating technology into the lesson, the active participation of the student in the lesson is ensured and the student contributes to the development of a positive attitude towards the lesson by being motivated. In a digital age where children learn to use technology at a simple level before learning to read and write, the use of technology in lessons gives students the chance to slow down lessons and new concepts and return to the concept when necessary (Arslan & Bilgin, 2020).

The use of ICT in second language education is a popular tool today. The rapid development in educational technologies has brought the use of technology in language education. According to Warschauer (1996), computer and communication technologies have a significant effect on second language education in terms of helping teachers. The use of ICT provides advantages for both teachers and students. Technological tools in teaching and learning English; The teaching process is considered to be one of the most important components of learning environments because it appeals to many sensory organs, helps students meet their individual needs, contributes to the structuring of students in a way that draws their attention, facilitates remembering, saves time, and materializes abstract concepts (Gunuç & Babacan, 2018). Context and interaction are very important in foreign language teaching and technology enriches learning experiences and interaction (Taşkıran, Koral, & Bozkurt, 2015). Thanks to technology and the internet, new learning areas have emerged in the language. Sociocultural theory, which defends the necessity of exposing students to the target language and culture in foreign language teaching, emphasizes the importance of personal, situational, cultural and social factors that language learning and production should be in natural environments (Qing Ma, 2017). With language learning programs created with computer and mobile

technologies, students can easily access multimedia that includes video, audio, graphics and text that allow them to be exposed to the target language and culture, so that what is learned can be easily interpreted (Taş & Uğurlu, 2019). Thanks to the integration of technology into foreign language education, students can learn the language by practicing and having fun without memorizing, and can develop four basic language skills such as reading, writing, listening and speaking through a variety of technology-supported software that are easily accessible at school or outside of school.

With the increase in the use of technology in education, the International Association for Educational Technologies (ISTE) has established a set of standards that teachers should have according to these standards, teachers can use technology and thus contribute to students' learning and encourage them to creativity, keep up with the current digital age, They are leaders who can design and develop assessment activities accordingly, set an example in working and learning issues and train individuals who will contribute to this digital world, work in cooperation with educators and learners, and take responsibility for their professional development (ISTE, 2021). Self-efficacy is the basic concept of Social Learning Theory developed by Bandura. According to Bandura, self-efficacy is the belief that a person has the necessary skills to do a job. The key concepts that determine the self-efficacy belief in human movements are the motivation level of people, effective situations, activities based on what people believe rather than what the truth is (Bandura, 1977; as cited in Akkoyunlu & Kurbanoğlu, 2003).

With this study, the researchers investigated English teachers' perceptions of technology competence in education on the use of technology in all areas of our lives in order to provide a more effective and enjoyable course environment. For this purpose, answers will be sought for the following problems.

What is the level of self-efficacy of English teachers for educational technology standards?

a) Do the technology competencies of English teachers vary by gender?

b) Do the technology competencies of English teachers vary according to the year of seniority?

c) Do the technology competencies of English teachers vary according to the type of school they work?

Method

In this study, survey research method was used which is one of the quantitative researches. Survey research is one of the research approaches that explain the interaction between situations, taking into account the relationships of current events with previous events and conditions (Kaptan, 1998). General survey models are the scanning arrangements made on the whole of the universe or a group or sample taken from it in order to make a general judgment about the universe in a universe consisting of many elements (Karasar, 2003).

Study Group

The universe of the study consists of English teachers working in primary, secondary and high schools in Turkey. In cases where it is difficult to reach the whole universe, instead of working on the whole universe, choosing a sample with a high percentage of representation of the relevant universe and continuing to work on this sample provides great convenience for researchers (Ural & Kılıç, 2010). The sample of the study was selected on a voluntary basis by using convenient sampling method. Convenience sampling method is to select the sample from easily accessible and applicable units due to the limitations in terms of time, money and labor (Büyüköztürk et al., 2011). For this reason, the sample group of the researchers reached 203 English teachers working in different schools and levels. The distributions regarding the demographic characteristics of the sample group are given in Table 1.

Table 1.

Distributions Regarding the Demographic Characteristics of English Teachers

Demographic Characteristics		n	%	Total
Gender	Male	44	21.7	203
	Female	159	78.3	
Teaching Experience	0-5 years	29	14.3	
	6-10 years	68	33.5	
	11-15 years	54	26.6	203
	16-20 years	36	17.7	
	21 years	16	7.9	
School Stage	Primary School	45	22.2	
	Secondary School	121	59.6	203
	High School	37	18.2	

Data Collection Tools

The Self-Efficacy Scale for Educational Technology Standards (ETSSE) developed by Şimşek and Yazar (2016) was used as a data collection tool to determine English teachers' perceptions of technology competence. The scale is a 5-point Likert type scale and consists of 40 items. The reliability coefficients of the sub-dimensions of the scale vary between 0.77 and 0.87 for the original scala. The lowest score that can be obtained from the scale is 40, and the highest score is 200. In this study, the Cronbach Alpha value of the scale was found to be 0.977 for the total scala, and the Cronbach Alpha value is between 0.70 and 0.90 for the sub-dimensions.

The scale was transformed into a questionnaire in 2 parts over Google Forms, sent to the participants via e-mail, and the data were collected online. First part; It was prepared as a "Teacher Information Form" containing information on the participants' gender, year of seniority and the type of school they worked at, and the second part was prepared to include scale items. It was stated that participation in the survey was voluntary and no private information was requested, and the participants were informed. As a result of the study, 203 English teachers were reached.

Data Analysis

SPSS 25 statistical program was used for data analysis. In the light of the data, the mean and standard deviation values were examined in order to determine English teachers' perceptions of technology competence. In addition, teachers' competencies of using educational technology according to gender, seniority and school types were evaluated. In order to test whether the data showed a normal distribution, skewness and kurtosis values were checked. It was determined that the skewness and kurtosis values showed normal distribution. Independent sampling t-test for two groups was applied, and one-way ANOVA tests were applied for three or more groups.

Results

The average and standard deviation values for each sub-dimension and total score of the data collected as an answer to the question of "How are English teachers' self-efficacy towards educational technology standards?", which is the main problem of our study, are presented in Table 2.

Table 2.

Arithmetic Mean, Standard Deviation and Standard Error Values of the Sub-Dimensions of the Scale of Self-Efficacy of English Teachers for Educational Technology Standards

Dimensions	N	$\bar{x}$	ss	$Sh_{\bar{x}}$	Skewness	Kurtosis
(1) Facilitating and inspiring student learning and creativity	203	14.71	4.72	.33	.404	-.322
(2) Designing and developing digital age learning experiences and assessments	203	18.55	6.572	.46	.300	-.581
(3) Modelling digital age work and learning	203	8.90	3.13	.22	.473	-.275
(4) Promoting and modelling digital citizenship and responsibility	203	12.58	3.86	.27	.408	-.075
(5) Engaging in professional growth and leadership	203	14.99	4.90	.34	.527	-.099
Total Score	203	69.74	20.69	1.45	.331	-.309

When Table 2 is examined, it is seen that the average of the total score was 69.74 and the standard deviation was 20.69 in this study, in which 203 people participated. In this case, it is seen that English teachers' perceptions of technology competence are below the mean.

In Table 3, independent group t test results are given to determine whether the self-efficacy scale scores of English teachers for educational technology standards differ according to the gender variable.

Table 3.

Independent Group t Test Results Conducted to Determine Whether Self-Efficacy Scale Scores of English Teachers for Educational Technology Standards Differ According to the Gender Variable

Score	Groups	N	$\bar{x}$	ss	$Sh_{\bar{x}}$	*t* Test		
						t	*Sd*	*p*
(1) Facilitating and inspiring student learning and creativity	Female	159	14.61	4.46	.35	.421	201	.640
	Male	44	15.05	5.58	.84			
(2) Designing and developing digital age learning experiences and assessments	Female	159	18.87	6.21	.49	-.533	59.27	.595
	Male	44	17.41	7.72	1.16			

(3) Modelling digital age work and learning	Female	159	9.10	2.99	.24	1.730	201	.085
	Male	44	8.18	3.55	.54			
(4) Promoting and modelling digital citizenship and responsibility	Female	159	12.43	3.53	.28	-.866	56.19	.390
	Male	44	13.11	4.86	.73			
(5) Engaging in professional growth and leadership	Female	159	15.19	4.73	.38	547	201	.585
	Male	44	14.64	5.52	.83			
Total Score	Female	159	70.11	19.32	1.53	.421	201	.675
	Male	44	68.38	25.26	3.81			

According to the statistical results obtained when Table 3 is examined, English teachers' perceptions of technology competence towards educational technology standards is sub-dimension 1 ($t_{(2, 201)} =. 421$; $p> 0.05$), 2 ($t_{(2, 201)} = -. 553$; $p > 0.05$), 3 ($t_{(2, 201)} = 1.730$; $p> 0.05$), 4 ($t_{(2, 201)} = -. 866$; $p> 0.05$), 5 ($t_{(2, 201)} =. 547$; $p> 0.05$) subscales and total score ($t_{(2, 201)} =. 421$ $p> 0.05$), there was no significant difference in terms of the gender variable in the self-efficacy levels of English teachers towards educational technology standards [p>.05].

In Table 4, one-way analysis of variance (ANOVA) results are given to determine whether the self-efficacy scale scores of English teachers for educational technology standards differ according to the variable of professional seniority year.

Table 4.

One-Way Analysis of Variance (ANOVA) Results of English Teachers' Self-Efficacy Subscale Scores for Educational Technology Standards to Vocational Seniority Year Variable

f, $\overline{x}$ ve ss Values					ANOVA Results					
Score	Group	N	$\overline{x}$	ss	Source of Variation	KT	Sd	KO	F	p
(1) Facilitating and inspiring student learning and creativity	5 years and below	29	15.62	4.22	Between Groups	55.894	4	13.974	.623	.646
	6-10 years	68	14.66	4.48	Within Groups	4437.958	198	22.414		
	11-15 years	54	14.77	5.32	Total	4493.852	202			
	16-20 years	36	13.80	4.31						
	21 years and above	16	15.06	5.40						

		N	Mean	SD		SS	df	MS	F	p
(2) Designing and developing digital age learning experiences and assessments	5 years and below	29	18.44	5.21	Between Groups	129.422	4	32.355	.745	.562
	6-10 years	68	19.15	6.15	Within Groups	8596.785	198	43.418		
	11-15 years	54	19.11	7.88	Total	8726.207	202			
	16-20 years	36	17.25	6.11						
	21 years and above	16	17.25	6.87						
(3) Modelling digital age work and learning	5 years and below	29	8.76	3.10	Between Groups	8.790	4	2.198	.221	.927
	6-10 years	68	9.12	2.63	Within Groups	1973.240	198	9.966		
	11-15 years	54	8.81	3.53	Total	1982.030	202			
	16-20 years	36	8.97	3.38						
	21 years and above	16	8.38	3.46						
(4) Promoting and modelling digital citizenship and responsibility	5 years and below	29	12.79	3.91	Between Groups	55.695	4	13.924	.933	.446
	6-10 years	68	13.15	3.91	Within Groups	2953.714	198	14.918		
	11-15 years	54	12.46	4.50	Total	3009.409	202			
	16-20 years	36	11.67	3.49						
	21 years and above	16	12.25	3.92						
(5) Engaging in professional growth and leadership	5 years and below	29	13.37	4.93	Between Groups	36.984	4	9.246	.380	.823
	6-10 years	68	15.46	4.65	Within Groups	4818.011	198	24.333		
	11-15 years	54	14.39	5.24	Total	4854.995	202			
	16-20 years	36	14.83	4.59						
	21 years and above	16	15.00	5.74						
Total Score	5 years and below	29	70.86	18.97	Between Groups	679.530	4	169.883	.392	.814
	6-10 years	68	71.53	18.80	Within Groups	85777.633	198	433.220		
	11-15 years	54	69.56	24.02	Total	86457.163	202			
	16-20 years	36	66.53	19.89						
	21 years and above	16	67.93	22.52						

According to the statistical results obtained, English teachers' self-efficacy towards educational technology standards Sub-dimension 1 ($F_{(4,198)}$ = .623, p> 0.05), Sub-dimension 2 ($F_{(4,198)}$ = .745, *p*> 0.05), Sub-dimension 3 ($F_{(4,198)}$ = .221, *p*> 0.05), Sub-dimension 4 ($F_{(4,198)}$ = .933, *p*> 0.05), Sub-dimension 5 ($F_{(4,198)}$ = .380, *p*> 0.05), there was no significant difference in the scales and total score ($F_{(4,198)}$ = .392, *p*> 0.05) according to the professional seniority year.

In Table 5, one-way analysis of variance (ANOVA) results are given to determine whether the self-efficacy scale scores of English teachers for educational technology standards differ according to the variable of the type of school they work in.

Table 5.

One-way analysis of variance (ANOVA) Results of the School Type Variable Based on the Self-Efficacy Subscale Scores of English Teachers towards Educational Technology Standards

f, $\bar{x}$ ve ss Values					ANOVA Results					
Score	**Group**	*N*	$\bar{x}$	*ss*	**Source of Variation**	*KT*	*Sd*	*KO*	*F*	*p*
(1) Facilitating and inspiring student learning and creativity	Primary School	45	14.98	4.56	Between Groups	10.519	2	5.260	.235	.791
	Secondary School	121	14.74	4.92	Within Groups	4483.333	200	22.417		
	High School	37	14.27	4.30	Total	4493.852	202			
(2) Designing and developing digital age learning experiences and assessments	Primary School	45	18.71	6.22	Between Groups	12.568	2	6.284	.144	.866
	Secondary School	121	18.65	6.76	Within Groups	8713.639	200	43.568		
	High School	37	28.03	6.41	Total	8726.207	202			
(3) Modelling digital age work and learning	Primary School	45	9.53	3.44	Between Groups	23.143	2	11.571	1.181	.309
	Secondary School	121	8.71	3.02	Within Groups	1958.887	200	9.794		
	High school	37	8.76	3.08	Total	1982.030	202			
(4) Promoting and modelling digital citizenship and responsibility	Primary Sch	45	12.51	4.12	Between Groups	3.642	2	1.821	.121	.886
	Secondary School	121	12.52	3.74	Within Groups	3005.767	200	15.029		
	High School	37	12.86	4.02	Total	3009.409	202			
(5) Engaging in professional	Primary School	45	15.69	5.04	Between Groups	58.531	2	29.265	1.220	.297

		N	Mean	SD		Sum of Squares	df	Mean Square	F	p
growth and leadership	Secondary School	121	14.55	4.71	Within Groups	4796.464	200	23.982		
	High School	37	15.59	5.31	Total	4854.995	202			
Total Score	Primary School	45	71.42	21.52	Between Groups	166.942	2	83.471	.193	.824
	Secondary School	121	69.18	20.29	Within Groups	86290.221	200	431.451		
	High School	37	69.51	21.43	Total	86457.163	202			

According to the statistical results obtained, English teachers' self-efficacy towards educational technology standards Sub-dimension 1 ($F_{(2,200)} = .235$, $p > 0.05$), Sub-dimension 2 ($F_{(2,200)} = .144$, $p > 0.05$), Sub-dimension 3 ($F_{(2,200)} = 1.181$, $p > 0.05$), Sub-dimension 4 ($F_{(2,200)} = .121$, $p > 0.05$), Sub-dimension 5 ($F_{(2,200)} = 1.220$, $p > 0.05$), in subscales and In the total score ($F_{(2,200)} = .193$, $p > 0.05$), there was no significant difference according to the type of school they worked.

Discussion and Conclusion

With this study, English teachers' perceptions of technology competence in education was investigated. According to the results of our research, it was found that English teachers' self-efficacy is low (under the mean) according to technology standards. Different from this result, Orhan and Tekin (2018) found in their study that English lecturers consider themselves competent in using technology.

Özçiftçi and Çakır (2015) found that classroom teachers have high self-efficacy regarding educational technology standards. Literature shows that technology-supported education is greatly beneficial in improving the quality of education, but the proficiency of participated English teachers in this area is not at the desired level. The reason why the teachers' perception of educational technology self-efficacy values were low may be related to the ineffective use of technology in their lives and classroom. The teachers' perception of educational technology self-efficacy values is important issue for teachers to use technology more effectively and efficiently in the field of education.

According to the findings of the study, it can be said that English teachers' perceptions of technology competence do not differ significantly according to gender, years of seniority and the school they work in. Similarly, Özçiftçi and Çakır (2015) stated that there is no significant difference according to the gender variable of participated teachers according to the self-efficacy of educational

technology standards. Durak, Sarıtepe, and Durak (2017), on the other hand, did not reveal a significant difference in the comparison of teacher candidates' educational technology self-efficacy in line with the gender variable. Küçükali and Görgülü (2017) found that teachers' self-efficacy in educational technology standards did not change depending on gender, but they found a significant difference according to the variable of professional seniority year. According to similar studies conducted abroad, it was stated that men have a higher level of technological self-efficacy than women (Cassidy & Eachus, 2002; Kay, 2006; Shapka & Ferrari, 2003; Rosen & Veil, 1995). According to Scherer and Siddiq (2015), male teachers have higher self-efficacy than female teachers in basic and advanced processing skills, but there are no significant differences between women and men in the use of technology for educational purposes.

The results show that English teachers' perceptions of technology competence do not differ significantly according to years of seniority. Scherer and Siddiq (2015) emphasized the importance of quality, not quantity, of experience, which is a critical factor in determining technological self-efficacy beliefs (Cassidy & Eachus, 2002). According to Paraskeva, Bouta, and Papagianni (2008), teachers' previous experiences in using technology affect their views on their own competences, that is, their self-efficacy. Ertmer et al. (2006) found that teachers with more experience tend to perceive more factors as highly effective than teachers with less experience, so more experienced teachers using technology have significantly higher trust, time and technology support than those with less experience.

The results show that English teachers' perceptions of technology competence do not differ significantly according to the school they work in. Şimşek and Yazar (2016) stated that in respect of the average values of teachers' scores in educational technology standards self-efficacy (ETSSE) and its sub-dimensions, no significant difference was found in terms of whether or not they serve in a school of secondary or high school level. In addition to this, in the study of Çakır and Oktay (2013), no significant difference was found between primary and secondary school teachers' levels of technology use in education.

Recommendations

In this direction, the following recommendations have been made.

1. Teacher training programmes lack the knowledge, skills and pedagogy related to technology to teacher candidates, and accordingly, more courses should be included in technology use in education faculties.

2. Teachers should follow the developments in the field of technology while they are on duty and more places should be given to in-service trainings.

3. The use of technology should be integrated into the renewed education programs and teachers should be encouraged to develop themselves more in this field.

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Conflict of Interest

It has been reported by the authors that there is no conflict of interest.

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Ethical Standards

The authors have carried out the research within the framework of the Helsinki Declaration.

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