



Factors Affecting the Behaviors of Teachers Towards Technology Integration Teaching via Distance Education During COVID-19 Pandemic: A Path Analysis

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Abstract

In the current study, path analysis technique was applied to explain the possible causal relations between attitude towards distance education, interest in educational technologies, instructional technologies outcome expectation, intention to use educational technologies and technology integration self-efficacy variables. According to the data obtained, it was determined that attitude towards distance education variable suggested by the researcher did not contribute to the modified version of Social Cognitive Career Theory by Şahin (2008), which was determined to be a relatively better model in the current study. It is seen that the correlations of the variables in the research model vary between 0.103 and 0.773, and all of them are statistically significant and positive. In the current study, that technology integration self-efficacy variable interpreted 38% of the change in instructional technologies outcome expectation variable; 11% of the change in interest in educational technologies variable is explained by technology integration self-efficacy and instructional technology outcome expectation variables; intention to use educational technologies variable is both directly and indirectly affected by interest in educational technologies, instructional technologies outcome expectation and technology integration self-efficacy variables were also determined.

Keywords: technology integration, intention, interest, outcome expectation, self-efficacy, attitude

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1. Introduction

To reduce the impact of the COVID-19 pandemic, emerged in Wuhan, China on December 31, 2019, and spread all over the world, and to slow down its viral distribution, places where human-to-human contact may occur were closed, and educational institutions were also closed in this scope (Bozkurt, 2020). 1.6 billion students in 191 countries and approximately 25 million students in Turkey were affected as educational institutions were closed temporarily. (UNESCO, 2020). The necessity of not interrupting education, having important functions such as transferring culture in society, realizing economic development, socialization and innovation, for a long time necessitated distance education. Thus, this pandemic has been a catalyst for wider utilization of digital devices, resources being online, technology in social media and online learning (Mulenga & Marban, 2020). The Ministry of National Education (MNE) of Turkey decided that the education, having been interrupted on March 16, 2020, would continue with the broadcasts made on the Education Information Network (EIN) and TRT e-school as of April 30, 2020, due to the continuing effects of the pandemic (MEB, 2020). Thus, every educator and student, experienced or not, was suddenly exposed to distance education. For Bozkurt and Sharma (2020), the perspective and interpretation of education, which has been greatly affected by the pandemic, has changed; it has been stated that there is a need for radical reforms and strategic planning in education in Turkey (Bozkurt, 2020) and that the open and distance education should be supported in terms of access, infrastructure, content, security, implementation, design, legislation quality, and pedagogy (Can, 2020). This situation necessitated the examination of teachers' behaviors towards technology integration in education and their attitudes towards distance education.

1.1. Behaviors towards technology integration in education

Examining behavioral or cognitive responses of individuals towards technology in education and the factors affecting the responses of them, in other words, behaviors towards technology integration into education, is an important issue in the technology utilization literature (Compeau et al., 1999; Şahin & Thompson, 2006; Wang, Ertmer & Newby, 2004). Technology integration was defined by Hew and Brush (2007) as using computer communication technology (ICT) tools such as personal, handheld and laptop computers, software, and internet in schools for instructional aims. Technology integration refers both to the placement of technology in classrooms and its utilization in teaching and learning process (Earle, 2002). Individuals' interests and intentions towards educational technologies, technology integration self-efficacy perceptions and instructional technology outcome expectations are explained through theories that deal with technology acceptance and utilization and are based on behavioral theories and models in psychology. Those studies have been using various frameworks such as Social-

Cognitive Theory (SCT) (Bandura, 1986) to identify the complicated process between dimensions of educational technology utilization. SCT provides an agency conceptual framework for analyzing the psychosocial mechanisms and determinants by which human thought, influence, and action are influenced by symbolic communication (Bandura, 2001, p. 265). Social Cognitive Career Theory (SCCT), being taken as the basis of the current research, was put forward by Lent et al. (1994) in order to elaborate Bandura's (1986) SCT, which tries to explain human behavior, in educational and professional behavior context. SCCT is a theoretical framework that explains how individuals' academic and career interests develop, choices are made, and goals are achieved (Wu, 2009). In fact, SCCT is the adaptation of social-cognitive theory principles to career development field. It puts forward a wide conceptual framework to understand career-related and academic behaviors (Davis, 1989; Schaub & Tokar, 2005). In the current study, the basic elements of SCCT used are outcome expectation, interest, self-efficacy, and intention (Lent et al., 1994, 2002). The relation between these variables is shown in Figure 1. Individuals' professional expectations and interests towards the profession are affected by their professional self-efficacy; behavioral intentions are affected by self-efficacy, expectation, and interest levels (Lent et al., 1994; Şahin, 2008). While giving importance to the interests, abilities, and values of the individual during his career development, the influence of environment such as the thought that these can change over time, competence expectation, result expectation and social support are also taken into account (Işık, 2010, pp. 13-14). Since SCCT explains how individuals' academic and interests in career develop, how choices are made, and how they reach their goals, this theory is thought to be an important construct to explain teachers' behavior towards technology integration in education who teach via distance education during the pandemic.

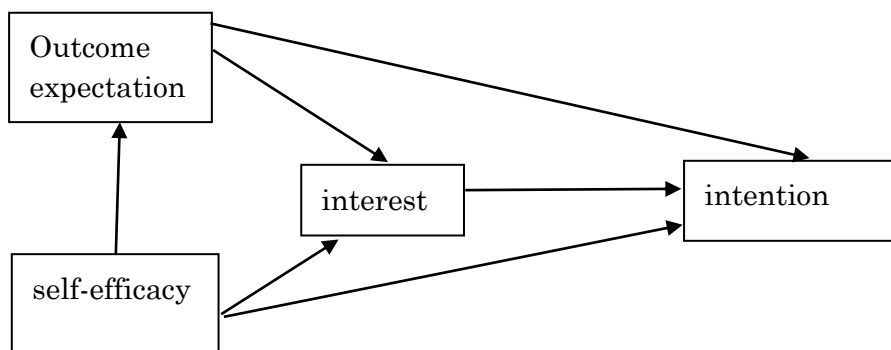


Figure 1. Conceptual structure in the SCCT Model (Model 1)

In the model, being modified by Şahin (2008), path coefficient between self-efficacy and intention was found to be insignificant and it was excluded in the analysis. In Şahin's

model (Figure 2), structural equation modeling (SEM) was used for understanding the complicated relationships between the variables. The reduced model, which includes only significant paths, results in AGFI = 0.98, RMR = 0.01, and $\chi^2 = 0.628$ values ($p = 0.428$). The validity of the reduced model and the relationships between the variables in the model, including one extrinsic variable and three internal variables, are established by these indicators.

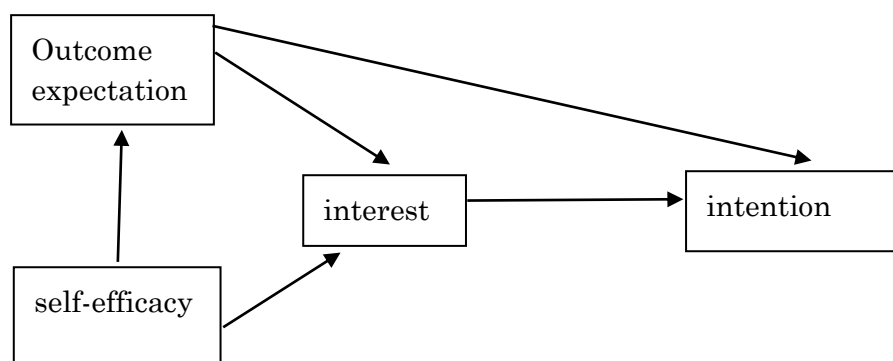


Figure 2. Şahin's modified SCCT Model (Model 2)

1.1.1. Interest in educational technologies

According to Strong (1943), interest is a person's reaction of liking, disliking or unresponsiveness towards a person, object, or activity (cted by Kuzgun, 2000). Academic interest is individuals' liking, disliking, or not being interested in activities related to a profession or career (Lent et al., 2002). Bandura (1986) and Lent et al. (1994) stated that individuals show interest in areas where they feel competent and expect more positive results. In other words, interest affects individuals' self-efficacy and outcome expectation. Our willingness to start an activity (for example interest) or the effort put forth for an activity depends on the value of the activity given by us or its results and our expectation to complete it in a successful way (Wigfield et al., 2008). Therefore, interest is an important motivation mechanism and a strong determinant of intentions in career psychology (Fouad & Smith, 1996; Şahin, 2008).

1.1.2. Technology integration self-efficacy

Nathan (2009) defined self-efficacy in technology integration, an important indicator of a successful technology integration process according to Oliver and Shapir (1993), as teachers' self-confidence in using technology effectively in learning environments. It is known that self-efficacy, being related to outcome expectation, interest, and intention variables (Lent et al., 1994), affects teachers' use of technology (Oral, 2008). Stewart (2012) and Lent et al. (2005) state that teachers' technology integration self-efficacy and instructional technology outcome expectations affect their interest in educational technologies. Self-efficacy of individuals paying attention and sparing time to use computers and technology in the process of education is also favorable (Rugayah et al.,

2004). Elmaaltı (2019) determined in his study that self-efficacy in computer is a significant agent in guessing intention for using technology and e-learning of instructors. That technology self-efficacy also predicts technology integration or integration intentions was determined in the studies done (Anderson & Maninger, 2007; Anderson et al., 2011; Chen, 2010; Littrell et al., 2005; Marakas et al., 2007; Teo, 2009). Perkmen (2008) stated that technology integration self-efficacy and instructional technology outcome expectation are useful in predicting technology integration performance and that these variables are interrelated. Wojcicki et al. (2009) determined that participants having high self-efficacy had high expectations for social outcomes. An important relation between technology integration self-efficacy and instructional technology outcome expectations was determined by Perkmen and Pamuk (2011).

1.1.3. Instructional technologies outcome expectation

Outcome expectation is the judgment of the possible outcome of an action (Bandura, 1986), the attitude of the individual related to his expectations about the findings of the behavior to be performed (Lent, 2005; cited in Işık, 2010). Instructional technology outcome expectation is defined by Niederhauser and Perkmen (2010) as the motivational power to help make use of technology in teaching and the expected results of using technology in the classroom. The basic question regarding this belief is “what will happen if I do this?” (Lent et al., 1994, p. 83). Individuals tend to do behaviors that they believe they can get positive results (Bandura, 1989; Niederhauser & Perkman, 2010); but if they are not persuaded that their actions will have outcomes that they prefer, they will not be likely to take those actions (Pajares, 2006). As the individual gets closer to his goals, the expectation of results increases, and as he gets closer, it decreases (Lent, 2005; cited in Işık, 2010). Therefore, outcome expectation is among the important factors affecting motivation (Niederhauser & Perkman, 2008). According to Şahin (2008), technology integration self-efficacy and instructional technology outcome expectation affect the interest in educational technologies directly. Kale and Akçaoğlu (2018) determined that thinking about technology’s connections to teaching in the future increased pre-service teachers’ interest in technology integration. As a result, teachers’ instructional technology outcome expectations affect their interest in educational technologies and their intention to use educational technologies.

1.1.4. Intention to use educational technologies

Intention, which is expressed as wanting to do something and thinking beforehand (Turkish Language Institution, 2015), is influenced by attitudes and subjective norms and then turns into behavior (Ajzen, 1991; Vallerand et al., 1992). In short, intentions determine behaviors. Intention to use educational technologies is expressed as the possibility of individuals to realize the behavior utilization of technology (Venkatesh et al., 2003), and all perceptions affect the behavior indirectly through the intention to use while explaining the behavior (Davis et al., 1989). Intention is also an aid

to foresee the future technology integration (Czerniak et al., 1999; Salleh & Albion, 2004; Shiue, 2007; Venkatesh et al., 2003). According to Teo (2011), teachers' intention to use technology is higher when its convenience and usefulness is perceived in teaching and learning. Baydaş and Yılmaz (2017) determined in their studies that performance expectation affects trainee teachers' behavioral intentions. In addition, it is stated that the technology integration self-efficacy levels of pre-service teachers affect their intention to integrate technology (Anderson et al., 2011; Hur et al., 2015; Joo et al., 2018; Niederhauser & Perkmén, 2008; Teo, 2009).

Continuous development and change and technology integration is an important reform in education (Jhurree, 2005; Polly et al., 2010). Technology integration should be considered as technology adaption at the institutional and individual levels and converting it into a culture, not a mechanical process (Tosuntaş et al., 2019). Moreover, knowing what the attitude of a person towards an object, event or stimulus is will help predict what the individual's behavior towards that stimulus is (Ajzen & Fishbein, 1980; Berkant, 2013; Kağıtçıbaşı, 1999; Ülgen, 1995: 12; Venkatesh & Bala). Therefore, during the Covid-19 pandemic, it is thought that teachers' attitudes towards distance education, their interests and intentions towards educational technologies, their perceptions of technological integration self-efficacy and instructional technology outcome expectations, in other words, by understanding their behaviors towards technology integration in education, the reasons that lead them to use technology in education or that keep them away from using technology, can be determined. Attitude of an individual towards doing the behavior affects his intention towards that behavior and his intention affects his actual behavior (Lee et al., 2007: 886; Arı et al., 2015: 388). Attitude towards technology utilization is a considerable decisive of behavioral intention to use educational technologies (Ajzen, 1991; Eksail & Afari, 2019; Kılınç et al., 2016; Teo, 2010, 2011; Webster & Hackley, 1997).

1.2. Attitude towards distance education

Attitude, seen as one of the significant reasons why technology is not used adequately in educational integration (Albion, 1999; Brinkerhoff, 2006; Ertmer et al., 2012; Francis, 1994; Sanders & Morrison-Shetlar, 2001), can be defined as the tendency regulating teachers and students' feelings, thoughts, and behaviors within the scope of distance education towards the realization of education and training through digital communication resources, independent of place and time. Even if all the components of the program are developed in a way to meet the standards in distance education environments, success depends on the attitudes of both learners (Arı et al., 2015: 387; Sanders & Morrison-Shetlar, 2001) and teachers (Ağır et al., 2008) towards this method. Therefore, it is considered that teachers' attitude towards distance education gains importance in keeping up with the distance education technology and accepting the

changes in their duties and roles in the Covid-19 pandemic. In the studies conducted, it was found that teachers were willing to use online course materials in the teaching process and had positive attitude (Bilgic, 2013), and their readiness and attitudes towards e-learning were at moderate (Üstün et al., 2020).

1.3. Importance of the research

Covid-19, affecting every area of life, has caused outcomes which require re-evaluation of the perspective towards education. Even Telli Yamamoto and Altun (2020) claimed that e-learning can turn into mainstream learning after the pandemic period. Thus, the technology used in distance education, which is used instead of formal education in the pandemic, has gained importance. Therefore, it is thought that determining teachers' behaviors towards integrating technology in distance education in the learning and teaching process, in other words, their intention to use educational technologies, interest in educational technologies, instructional technology outcome expectation and technology integration self-efficacy will contribute to predict this sudden change. In addition, knowing the attitudes of teachers towards distance education will also help to predict their behavior towards distance education. In addition, knowing teachers' attitudes towards distance education will also help to predict their behaviors towards technology integration into education. Within the scope of behaviors towards technology integration, it is hoped that the results of the structural equation models related to SCCT on the participants of the current research will also contribute to the field. Along with this study, it is thought that the effect of the attitude towards distance education variable, which is added by the researcher, on the behaviors towards technology integration in the developed model within the scope of SCCT will lead to important results and interpretations in the related field.

1.4. Purpose of the research

The aim of this study is to analyze path analysis results for the model established with the variables of interest towards educational technologies, attitude towards educational technology, technology integration self-efficacy and instructional technologies outcome expectation to predict the intentions of teachers teaching via distance education during Covid-19 pandemic and relationships between those variables as well. In line with the interactions in the literature, within the scope of this aim, answers to these research questions were sought within the framework of these five variables:

1. Are there significant relationships between the variables of intention to use educational technologies, interest in educational technologies, attitude towards educational technology, technology integration self-efficacy and instructional technology outcome expectation?

2. What are the results of structural equation models related to Social Cognitive Career Theory?

2 a. What is the model fit and error indexes of Social Cognitive Career Theory models?

2.b. Are the model's path coefficients with the best fit out of the three models statistically significant?

2.c. What is the mediation status of the interest variable and the direct and indirect effects of external variables for the best model?

2. Method

2.1. Model of the research

The present study, which examines the relation between teachers' attitudes towards distance education and the factors affecting their technology integration into education, is a relational study. According to Creswell (2012), relational research provides an opportunity to explain the relation between variables and to predict the results. In cases where the relationship is not considered sufficient, 'path analysis' is used to examine the existence of the effect of the external variable. With path analysis, a theoretical model describing how a set of variables is related is hypothesized, and then the theoretical model is tested experimentally (Christensen, Johnson & Turner, 2015). In this research, path analysis technique was used to explain possible causal relationships between a total of five variables (attitude towards distance education, interest in educational technologies, instructional technologies outcome expectation, intention to use educational technologies, technology integration self-efficacy). Path analyzes are done on three different models: The Social Cognitive Career Theory Model, having been developed based on Social Cognitive Theory, the reduced version of this SCCT by Şahin (2008) and the model created by adding the advantages and limitations of the Attitude Scale to Distance Education, added by the researcher, to Şahin's model. In the current study, considering that the attitude towards distance education may also contribute to this theory, the variable of attitude towards distance education was measured by the researcher and included in Şahin's modified theoretical model. In this context, the model examined by path analysis in the current study is given in Figure 3.

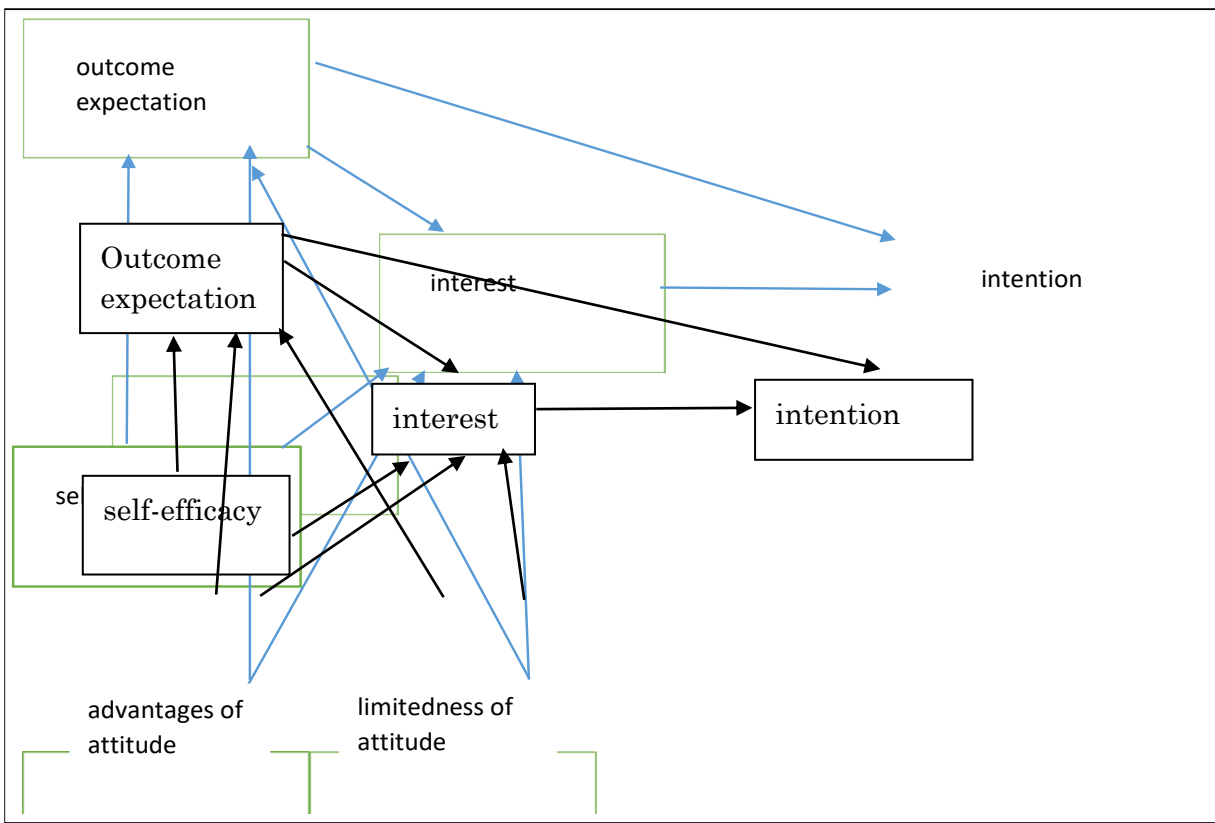


Figure 3. Model proposed by the researcher (Model 3)

2.2. The universe and sample

The universe is a total of 2086 teachers in primary, secondary, and high schools at Ministry of National Education in the central district of Bolu province; the sample consists of 409 teachers in this universe. Study sample was determined through snowball sampling method. According to Gerdts et al. (2017) and Pagano (1993), in this method, a reference person is found regarding the subject of the study and sample of the study is reached through that person. In the current study, the research sample was created as a chain first by contacting the school principals and meeting with the teachers with their help. The information of the sample group according to demographic characteristics is given in Table 1.

Table 1. Frequency distribution of the sample group according to demographic variables

Variable	Level	N	%
Gender	Female	261	63,8
	Male	148	36,2
	Total	409	100
Type of school	Primary	75	18,4
	Middle School	113	27,6
	High School	221	54
	Total	409	100
Receiving in-service training on educational technology	Yes	280	68,5
	No	129	31,5
	Total	409	100
Age	Between 22-32	48	11,7
	Between 33-43	212	51,8
	Between 44-54	135	33
	55 years and older	14	3,5
	Total	409	100
Seniority	Between 0-10	75	18,3
	Between 11-20	190	46,4
	Between 21-30	127	31,1
	31 years and above	17	4,2
	Total	409	100

According to Table 1, it is understood that the number of female teachers is nearly double that of male teachers (approximately 64%); half of the teachers study at high school, almost half of them are between 33-43 (52%) in terms of age, and almost half of them have 11-20 years of professional experience.

2.3. Data collection tools

Before the scales applied to the participants, information about the demographic characteristics of the participants (age, gender, professional seniority, in-service training about educational technology) was collected by personal information questionnaire developed by the researcher. Then, information was collected by using five different measurement tools (Attitude towards Distance Education Scale, Interest for Educational Technologies Scale, Instructional Technologies Outcome Expectation Scale, Intention to Use Educational Technologies Scale, Technology Integration Self-Efficacy Scale) to obtain the data used in path analysis within the scope of the research. These scales have been previously developed and their validity and reliability studies have been done. Therefore, since the scales used in this study are those with a specific theoretical or conceptual structure, confirmatory factor analysis (CFA) was done to test whether the data obtained

confirm the structures and to validate the results obtained from the measurement tools. Both acceptable limits defined by Çokluk et al. (2010: 271-272) and CFA results for all measurement tools are given in Table 2.

Table 2. GFI of the CFA results for the factor structure of the scales

GFI	Acceptable Limit Values	Attitude	Outcome expectancy	Self-efficacy	Interets	Intention
X ² /sd	<5 Medium level	430.99/182=	104,85/23	63,17/308	20,34/6=	4,07/2=
	<3 Good fit	2,37	4,55	3,51	3,39	2,04
GFI	>0,90	0,89	0,94	0,96	0,98	0,99
NNFI	>0,90	0,90	0,91	0,98	0,99	0,96
RMSEA	<0,08	0,058	0,093	0,078	0,077	0,050

2.3.1. Attitude towards distance education scale

The Attitude towards Distance Education Scale, developed by Ağır, Gür, and Okçu (2008), consists of 21 items. The Cronbach-alpha reliability coefficient of the scale, which consists of two factors, ‘advantages of distance education’ (14 items) and ‘limitations of distance education’ (7 items), is 0.835. The score an individual gets from the scale determines the level of his attitude towards distance education.

For this study, the CFA results of the scale, which were conducted to collect proof of construct validity, are given in Table 2 and the results show that the model data fit is at an acceptable level. The maximum likelihood technique was carried out in the estimation of the parameters in the CFA process. On the other hand, in order to prove the summability of the scores to be obtained from the two factors, a second order DFA analysis was performed by adding the attitude dimension, which affects the two sub-dimensions. The results obtained show an acceptable fit. The standardized path coefficients obtained for the items ranged from 0.789 to 0.937, and all path coefficients were statistically significant. Considering that the fit values of the CFA results were not too high, the Attitude towards Distance Education Scale was also subjected to Exploratory Factor Analysis (EFA). According to the EFA results, the two-dimensional structure was supported, item factor loads were seen to vary between 0.41 and 0.85, and the total variance explained by the two dimensions was 56 % (41.55 % for the first dimension and 9.93% for the second dimension) (KMO = 0.93; Bartlett's test = 5235.78, $p < 0.0001$). In addition, there is a positive, moderate (0.44) and statistically significant relationship between the sub-dimensions of the scale; it can be said that this value is the proof of the summability of the scores related to the dimensions. Finally, the Cronbach alpha coefficients calculated for the sub-dimensions were 0.94 for the ‘advantages of distance education’ dimension and 0.83 for the ‘limitations of distance education’

dimension; The Stratified Alpha coefficient calculated for the entire scale was calculated as 0.94. When the stratified alpha, CFA and EFA results are evaluated together, it can be said that the validity and reliability evidence for the Attitude towards Distance Education Scale are sufficient.

2.3.2. Instructional technologies outcome expectation scale

The 9-item Instructional Technology Outcome Expectation Scale, developed by Perkmen, Niederhauser, and Charania (2006) and adapted into Turkish by Şahin (2008), was used to measure teachers' technology integration outcome expectation levels. The Cronbach Alpha internal consistency coefficient of the scale calculated within the scope of this study was found to be 0.93. CFA was performed to examine the construct validity of the scale ($\chi^2/df=4.87$, RMSEA=0.07, SRMR=0.03, GFI=0.98, AGFI=0.95, CFI=0.99, TLI=0.98, NFI=0.99). Based on these data, that the scale was one-dimensional and compatible with the data set was decided.

Within the scope of this study, the CFA results for the Instructional Technologies Outcome Expectation Scale to collect proof of construct validity are given in Table 2 and the results show that the model-data fit is at a high level. The maximum likelihood technique was used in the estimation of the parameters in the DFA process. The standardized path coefficients obtained for the items ranged from 0.755 to 0.936, and all path coefficients were statistically significant. In order to ensure consistency with other analyses, the Instructional Technologies Outcome Expectation Scale was also subjected to EFA analysis, despite the fact that the concordance values regarding the CFA results were high. EFA results also supported the one-dimensional structure. It was observed that the item factor loads obtained by EFA analysis varied between 0.76 and 0.90, with only one factor with an eigenvalue above 1 and the variance explained was 71.87% (KMO= 0.94; Bartlett test = 3772.17; $p<0.0001$). Finally, the Cronbach alpha coefficient was calculated as 0.96 for the scale. When the Cronbach Alpha, CFA and EFA results are evaluated together, it can be said that the validity and reliability proofs for the Instructional Technologies Outcome Expectation Scale are adequately provided.

2.3.3. Technology integration self-efficacy scale

The Technology Integration Self-Efficacy Scale consisting of 8 items, developed by Wang, Ertmer, and Newby (2004) and adapted into Turkish by Şahin (2008), was used to evaluate teachers' self-efficacy for technology integration. The Cronbach Alpha internal consistency coefficient of the scale calculated within the scope of this study was found to be 0.96. CFA was performed to examine the construct validity of the scale ($\chi^2/df=2.35$, RMSEA=0.04, SRMR=0.01, GFI=0.99, AGFI=0.98, CFI=1.00, TLI=1.00, NFI=1.00) and it was decided that the scale was one-dimensional and compatible with the data set.

Within the scope of this study, the CFA results performed to collect the construct validity evidence for the scale are given in Table 2 and the results show that the model-

data fit is at a high level. The maximum likelihood technique was used in the estimation of the parameters in the CFA process. The standardized path coefficients obtained for the items ranged from 0.737 to 0.937, and all path coefficients were statistically significant. Although the fit values for the CFA results were high, the Technology Integration Self-Efficacy Scale was also subjected to the EFA analysis in order to ensure consistency with the other analyses. The EFA results also showed that the one-dimensional structure was supported. It was observed that the item factor loads obtained by EFA analysis ranged from 0.73 to 0.91, it was determined that it was the only factor with an eigenvalue above 1 and the variance it explained was 71.32% (KMO= 0.94; Bartlett test = 3132.73; $p < 0.0001$). Finally, the Cronbach alpha coefficient of the scale was found as 0.98. When Cronbach Alpha, CFA and EFA results are evaluated together, it can be said that the validity and reliability evidence for the Technology Integration Self-Efficacy Scale are adequately provided.

2.3.4. Interest in educational technologies scale

To find the level of teachers' interest in educational technologies, a 6-item Interest for Educational Technologies Scale was used, developed by Fouad and Smith (1996) and adapted into Turkish by Şahin (2008). The Cronbach Alpha internal consistency coefficient of the scale calculated within the scope of this study was found to be 0.93. Moreover, CFA was performed for the construct validity of the scale ($\chi^2/sd=3.35$, RMSEA=0.05, SRMR=0.01, GFI=0.99, AGFI=0.97, CFI=1.00, TLI=0.99, NFI=1.00). It was decided that the scale was one-dimensional and compatible with the data set.

The current CFA results of the scale are given in Table 2 and the results show that the model data fit is at a high level. The maximum likelihood technique was used in the estimation of the parameters in the CFA process. The standardized path coefficients obtained for the items ranged from 0.675 to 0.911, and all path coefficients were statistically significant. Although the concordance values of the CFA results were very high, the Interest for Educational Technologies Scale was also subjected to the EFA analysis, considering that it was compatible with other analyzes. The EFA results also showed that the one-dimensional structure was supported. It was observed that the item factor loads obtained by EFA analysis ranged from 0.73 to 0.89, it was determined that it was the only factor with an eigenvalue above 1 and the variance it explained was 70.24% (KMO = 0.90; Bartlett's test = 2039.19; $p < 0.0001$). Finally, the Cronbach alpha coefficient of the scale was found as 0.93. When the Cronbach Alpha, CFA and EFA results are evaluated together, it can be said that the validity and reliability proofs for the Interest in Educational Technologies Scale are adequately provided.

2.3.5. Intention to use educational technologies scale

In order to determine teachers' behavioral intentions towards using educational technologies and learning, a 4-item type of Intention to Use Educational Technologies

Scale developed by Şahin (2008) was used. The Cronbach Alpha internal consistency coefficient of the scale calculated within the scope of this study was found to be 0.87. Moreover, confirmatory factor analysis was performed to examine the construct validity of the scale ($\chi^2/sd=2.83$, RMSEA=0.05, SRMR=0.01, CFI=1.00, TLI=0.99, NFI=1.00). It was decided that the scale was one-dimensional and compatible with the data set.

Within the scope of this study, the CFA results performed to collect the construct validity evidence for the Intention to Use Educational Technologies Scale are given in Table 2 and the results show that the model data fit is at a high level. The maximum likelihood technique was used in the estimation of the parameters in the CFA process. The standardized path coefficients obtained for the items ranged from 0.855 to 0.896, and all path coefficients were statistically significant. Although the compliance values of the CFA results were very high, the Intention to Use Educational Technologies Scale was also subjected to the EFA analysis, considering that it was compatible with other analyzes. The EFA results also showed that the one-dimensional structure was supported. It was observed that the item factor loads obtained by EFA analysis varied between 0.85 and 0.89, it was determined that it was the only factor with an eigenvalue above 1 and the variance it explained was 76.37% (KMO= 0.86; Bartlett test = 1281.31; $p<0.0001$). Finally, the Cronbach alpha coefficient was calculated as 0.93. When the Cronbach Alpha, CFA and EFA results are evaluated together, it can be said that the validity and reliability proofs for the Intention to Use Educational Technologies Scale are adequately provided.

2.4. Data collection process and analysis of data

In the study, after obtaining Ethics Committee and Bolu Provincial Directorate of National Education permissions, scale links were sent online to the teachers working in the central district and thus data were obtained.

While analyzing the data, firstly, the frequency and percentage values of demographic characteristics were calculated to determine the structure of the sample. Then, before moving on to the analyzes that would answer the sub-problems, the construct validity study of the measurement tools was carried out with EFA and CFA. To find the internal consistency reliability of the measurement tools, Cronbach Alpha was calculated in unidimensional scales and for each dimension in multidimensional scales, Stratified Alpha value was calculated for the whole test.

In order to answer the first problem, the correlations between the total scores of the scales were calculated. For the second problem, the relations between the total scores of the scale were calculated as the Pearson correlation coefficient since the total scores distributed normally and were continuous variables. In interpreting the strength of Pearson Correlation coefficients, the limits that Kirk (2008, p.138) and Büyüköztürk (2011, p.32) stated are used frequently. Those limits stated are 'too high' if the

correlation coefficient is $r \geq 0.90$ in absolute value; 'high' if $r=0.70-0.89$; moderate if $r=0.69-0.30$ and 'weak' if r is ≤ 0.29 . A path analysis of latent variables was also done with the Structural Equation Model (SEM). Path analyzes were performed separately for the three models in Figure 1, Figure 2 and Figure 3. In the path analysis process of the latent variables, the Robust unweighted least squares (ULSMV-Robust unweighted least squares) estimation method was used to calculate the path coefficients, since the scale items were Likert type and ranking scale data, and the analyzes were made in the Mplus 7 package program. In the analyses, the mediating effect of the variable 'interest in educational technologies' was tested, and within this framework, the direct and indirect effects of external variables on the 'intention to use educational technologies' variable were calculated separately and their weights in the total effect were taken into account. When comparing models with each other, comparative fit indexes (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) and chi-square/degree of freedom values were used. In model comparison, it is stated that the change is significant if the CFI is 0.01 (Cheung & Rensvold, 2002; Vandenberg & Lance, 2000). Similarly, when the change is 0.01 in RMSEA, the change is interpreted as significant (Chen, 2007). If the chi-square/degree of freedom is small, the model is considered more fit.

3. Results

In this part, the findings are presented in the order of the research questions.

The first research question was 'Is there any significant relationship between the variables of intention to use educational technologies, interest in educational technologies, attitude towards educational technology, technology integration self-efficacy and instructional technology outcome expectation?'. The relationships between the variables included in the models examined in the study were calculated with the Pearson product-of-moment correlation and the results are presented in Table 3.

Table 3. Correlations between the variables included in the models examined in the study

Variables	1	2	3	4	5	6
1. Advantages of distance education	1					
2. Limitations of distance education	0,509**	1				
3. Ins. Tech. Outcome Expectation	0,349**	0,184**	1			
4. Tech. Integration Self-efficacy	0,258**	0,103*	0,324**	1		
5. Interest in Educational Technologies	0,280**	0,245**	0,368**	0,578**	1	
6. Intention to Use Edu. Technologies	0,294**	0,202**	0,402**	0,513**	0,773**	1
Mean	36,86	18,02	32,72	31,87	20,71	15,52
Standard deviation	12,79	6,91	9,95	6,81	6,43	3,97

** p<0,01 * p<0,05

According to Table 3, it is understood that all of the correlations between the variables included in the research models are positive and statistically significant. The correlations ranged from 0.103 (between the limitations of distance education and technological integration self-efficacy) to 0.773 (between interest in educational technologies and intention to use educational technologies), and exhibited strong and weak relations in absolute value. All correlations except the weakest correlation were determined to be statistically significant at 0.01 level. The fact that all correlations are positive indicates that the values of the variables tend to change in the same direction.

The first sub-problem of the second main question of the research was ‘What are the model fit and error indexes of Social Cognitive Career Theory models?’. In order to compare the models examined within the scope of the research, CFI, TLI, RMSEA and chi-square/sd values were obtained and presented in Table 4.

Table 4. GFI of Social Cognitive Career Theory model

Model Name	CFI	TLI	RMSEA [90% confidence interval], p-value	Chi-square/sd
Model 1	0.969	0.966	0.048 [0.042, 0.053] p>0.05	1.92
Model 2	0.970	0.967	0.047[0.041, 0.052] p>0.05	1.88
Model 3	0.844	0.836	0.066[0.063, 0.068] p<0.05	2.76

When the values given in Table 4 are examined to compare the models, it can be said that the CFI, TLI and RMSEA values for Model 1 and Model 2 are similar. Model 1 was found to be more congruent (smaller) than Model 2 in terms of chi-square/degree of freedom. Based on this result, it can be said that Model 1 and Model 2 meet the conditions of goodness of fit, but Model 2 is a relatively better model. When Model 1 and Model 3 are compared, it can be said that there are significant differences between CFI, TLI and RMSEA values (Chen, 2007; Cheung & Rensvold, 2002; Vandenberg & Lance, 2000). (In the model comparison, it is stated that if the CFI -the difference between the CFI values of the two models- is greater than 0.01, the difference between the models is significant. Similarly, in the RMSEA, it is stated that the difference between the models is significant if it is greater than 0.01.) Finally, when Model 2 and Model 3 are compared,

it can be said that there are significant differences between CFI, TLI and RMSEA values. When this information is evaluated together, it can be said that the fit of Model 3 is weak, and that Model 1 and Model 2 have similar and sufficient goodness of fit values. However, when deciding to choose one of these three models, Model 2 with the lowest RMSEA value and the highest goodness-of-fit values should be chosen as Model 2, although giving results close to Model 1, has better fit values and lower error values, albeit partially. For this reason, Model 2 was considered in the later stages and sub-problems of the study.

The second sub-problem of the second main question of the research was ‘Are the path coefficients of Model 2 with the best fit statistically significant?’. The unstandardized path coefficients for Model 2, which were determined to provide the best fit as a result of the comparison of fit and error values, are given in Table 5.

Table 5. Non-standardized path coefficients and breakpoints from the bootstrap 95% confidence interval

	M ₁			M ₂			Intention (Y)		
	β	Lower limit	ÜS	β	AS	Upper limit	β	AS	ÜS
Self-efficacy(X)	0.428	0.282	0.574	0.632	0.481	0.783	-	-	-
Outcome expectation(M ₁)				0.203	0.101	0.306	0.124	0.036	0.212
Interest(M ₂)							0.775	0.657	0.892
	R ² = 0.380			R ² = 0.110			R ² = 0.702		

**p<0.01, AS: Bootstrap 95% lower limit, EXP: Bootstrap 95% upper limit

The significance of both direct and indirect effect estimations in the mediation model was examined using bootstrap confidence intervals. Unstandardized path coefficients were interpreted as statistically significant if the bootstrap confidence interval did not contain a value of zero. When Table 5 is analyzed, it was found that the technology integration self-efficacy variable predicted the instructional technologies outcome expectation variable; based on the path coefficients and R2 values, it can be said that the path coefficient between the two variables is statistically significant, and the technology integration self-efficacy variable explains 38% of the change in the instructional technologies outcome expectation variable. The variable of intention to use educational Technologies is significantly predicted by the instructional technology outcome expectation and interest in educational echnologies variables, and these variables explain 70 % of the variance in the intention to use educational Technologies variable. The standardized path coefficients for Model 2 are given in Figure 4.

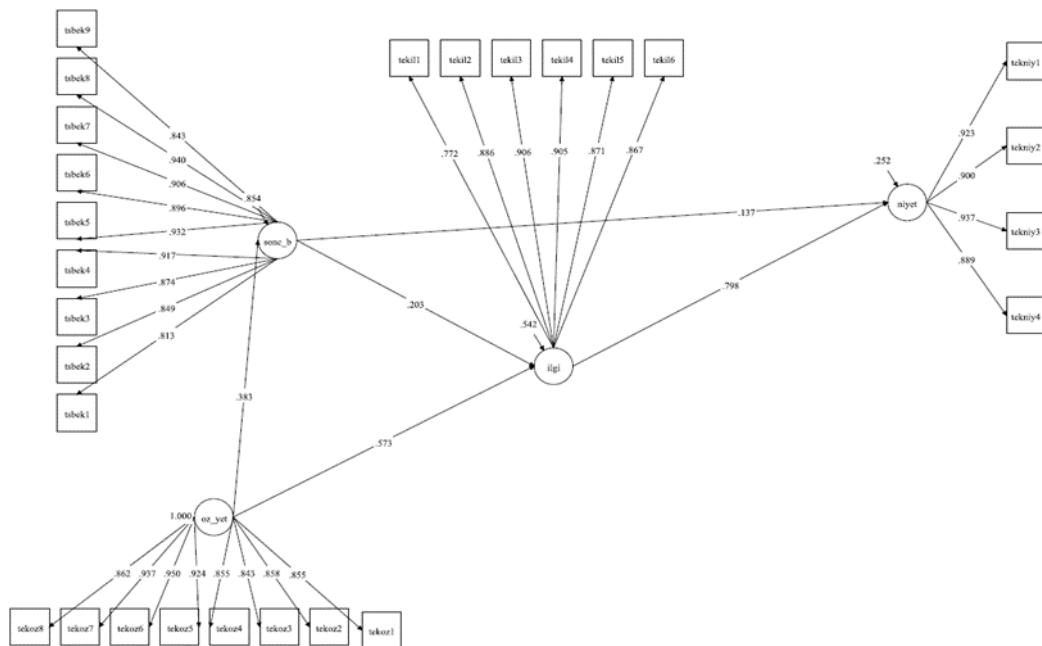


Figure 4. SEM and standardized path coefficients for Model 2

The third sub-problem of the second main question of the research was ‘What are the mediation status of the variable interest in education technologies for Model 2 and the direct and indirect effects of external variables?’. Table 6 presents the direct and indirect effects of those external variables.

Table 6. Direct and indirect effects of external variables and bootstrap 95% confidence intervals

	Not standardized		Standardized	
	β	Lower limit	Upper limit	
Self-efficacy → Intention				
Indirect effects: Outcome expectation (M1)	0.053	0.011	0.095	0.043
Indirect effects: Interest (M2)	0.489	0.365	0.614	0.399
Indirect effects: M1xM2	0.067	0.030	0.105	0.055
Total Impact	0.610	0.487	0.733	0.497
Outcome expectation → Intention				
Indirect effects: Interest (M2)	0.157	0.080	0.235	0.165
Total Impact	0.282	0.170	0.393	0.296

** $p < 0.01$, AS: Bootstrap 95% lower limit, EXP: Bootstrap 95% upper limit

As a result of structural equation modeling performed with mediator variables, technology integration indirectly affects the variable of intention to use educational technologies through the variables of self-efficacy, instructional technology outcome expectation and interest in educational technologies. When the indirect effects are examined, it can be said that the indirect effect of the technology integration self-efficacy variable on the intention to use educational technologies variable over the instructional technologies outcome expectation variable is statistically significant ($\beta = 0.043$, $p < 0.01$). Similarly, it can be said that the indirect effect of technology integration self-efficacy variable on the variable of intention to use educational technologies through the interest towards educational technologies variable was significant ($\beta = 0.399$, $p < 0.01$). The indirect effect of the technology integration self-efficacy variable on the intention to use educational technologies variable through the variables of instructional technology outcome expectation and interest in educational technologies was determined statistically significant ($\beta = 0.055$, $p < 0.01$). It can be stated that the variable of interest in educational technologies has a stronger effect. When the direct or indirect effects are analyzed in total, it can be said that the technology integration self-efficacy variable predicted statistically significantly ($\beta = 0.497$, $p < 0.01$). In addition, instructional technologies outcome expectation explains 11.55% ($0.043/0.497$) of the total effect of technology integration self-efficacy variable on intention to use educational technologies

variable. Similarly, the variable of interest in educational technologies explains 80.28% (0.399 / 0.497) of the total effect of technology integration self-efficacy variable on the variable of intention to use educational technologies.

As a result of SEM analysis used with mediator variables, it was observed that the variable of instructional technology outcome expectation had a direct effect on the variable of intention to use educational technologies ($\beta = 0.137$, $p < 0.01$). Accordingly, it can be said that the variable of interest in educational technologies has a partial mediating role in the effect of the variable of instructional technologies outcome expectation on the intention to use educational technologies variable. Instructional technologies outcome expectation variable indirectly affects the variable of intention to use educational technologies through the variable of interest towards educational technologies. When the indirect effects are examined, it can be said that the indirect effect of the variable of instructional technologies outcome expectation on the variable of intention to use educational technologies over the variable of interest in educational technologies is statistically significant ($\beta = 0.165$, $p < 0.01$). When the direct or indirect effects are examined in total, it can be said that the variable of instructional technology outcome expectation predicts the intention to use educational technologies variable (scores) at a statistically significant level ($\beta = 0.296$, $p < 0.01$). In addition, the variable of interest in educational technologies explains 55.74 % (0.138 / 0.264) of the total effect of the variable of instructional technology outcome expectation on the variable of intention to use educational technologies.

4. Discussion

In the current study, path analysis technique was applied to explain the possible causal relationships between the attitude towards distance education, interest in educational technologies, educational technologies outcome expectation, intention to use educational technologies, and technology integration self-efficacy variables. According to Chrsitensen et al. (2015), a theoretical model that explains how several variables are related to path analysis is hypothesized, and then the theoretical model is tested experimentally. In the current study, path analysis was carried out on over three different models: The SCCT model developed by Lent, Brown, and Hackett (1994) (Model 1), the modified version of this model by Şahin (2008) (Model 2), and the model created by adding the attitude towards distance education variable, which was measured by the researcher, to Şahin's model (Model 3). It is thought that it is possible for the attitude towards distance education to contribute to the modified version of Social Cognitive Career Theory modified by Şahin (2008). At the end of the research, CFI, TLI and RMSEA values for Model 1 and Model 2 were similar; Model 1 is more congruent (smaller) than Model 2 in terms of chi-square/degree of freedom; Model 1 and Model 2 met the conditions of goodness of fit, but Model 2 was a relatively better model; when

Model 3 and the other two models were compared, it was determined that there were significant differences between the CFI, TLI and RMSEA values, and the fit of Model 3 was weak. In other words, it was determined that the attitude towards distance education did not contribute to the modified version by Şahin (2008), which was determined to be a relatively better model in the current study. This finding of the present study does not coincide with the discourses in the relevant literature stating that knowing what a person's attitude towards an object, event or stimulus helps to predict what the individual's behavior is towards that stimulus (Ajzen & Fishbein, 1980; Berkant, 2013; Kağıtçıbaşı, 1999; Ülgen, 1995, p.12; Venkatesh & Bala, 2008); the individual's attitude towards doing the behavior affects his intention towards that behavior and his intention affects his real behavior (Lee et al., 2007; p. 886; Arı et al., 2015, p. 388) and that the attitude towards technology use is an important predictor of the behavioral intention to use educational technologies (Ajzen, 1991; Eksail & Afari, 2019; Kılınç et al., 2016; Teo, 2010, 2011; Webster & Hackley, 1997).

It is seen that the correlations between the variables in the research model vary between 0.103 and 0.773, and all these correlations are positive and statistically significant. The small correlation values being statistically significant may be due to the sample size. Considering that correlations in the range of 0.1–0.3 are considered low, correlations in the range of 0.3–0.5 are considered moderate, and correlations of 0.5 and above are considered high by Cohen (1988), it is seen that most of the correlations in the current study are low and moderate.

In the current study, it was also seen that the technology integration self-efficacy variable explained 38% of the change in the instructional technologies outcome expectation variable. Self-efficacy, which affects feeling, thinking, motivation and behavior according to Bandura (1993) is an important sign of a successful technology integration process (Oliver & Shapir, 1993). Perception of technology integration self-efficacy, defined as teachers' self-confidence in using technology effectively in learning environments (Nathan, 2009), is related to outcome expectation (Lent et al., 1994). Perkmen (2008) states that technology integration self-efficacy and instructional technology outcome expectation have a reciprocal relationship. Wojcicki et al. (2009) determined that participants with high self-efficacy had high expectations for social outcomes. Perkmen and Pamuk (2011) determined a significant relationship between technology integration self-efficacy and instructional technology outcome expectations. These findings in the relevant literature also support the findings of the present research.

In the present study, it was determined that 11 % of the change in the variable of interest towards educational technologies was explained by technology integration self-efficacy and instructional technology outcome expectation variables. Individuals tend to do behaviors that they believe they can get positive results (Bandura, 1989b;

Niederhauser & Perkman, 2010); but if they do not believe that their actions will have preferred outcomes, they will be less likely to take those actions (Pajares, 2006). Therefore, outcome expectation is among the important factors affecting motivation (Niederhauser & Perkman, 2008). According to Strong (1943), interest is a person's reaction of liking, disliking or indifference towards a person, object, or activity (cited in Kuzgun, 2000). Accordingly, moving away from an object as well as approaching an object is a sign of interest (Lent et al., 2002). In other words, the level of interest of individuals whose outcome expectations increase as they approach their goals also increases, or the interest of individuals whose outcome expectations decrease because they move away from their goals also decreases. Therefore, it is inevitable that instructional technology outcome expectation, which is defined as the motivational power to help use technology in teaching and the expected results of using instructional technology in the classroom by Niederhauser and Perkmen (2010), predicts the variable of interest towards educational technologies in the current research. This finding is supported by the studies conducted by Şahin (2008) and Kale and Akcaoğlu (2018) in the literature. In addition, in the current study, it was determined that the change in the variable of interest towards educational technologies was also explained by the technology integration self-efficacy variable. Bandura (1986) and Lent et al. (1994) stated that individuals show interest in areas where they feel competent and expect more positive results. Therefore, it is inevitable that teachers' technology integration self-efficacy, within the scope of the research, affected their interest in educational technologies.

As for the data of the current study, it was determined that intention to use educational technologies variable was both directly and indirectly affected by the variables of interest in educational technologies, outcome expectation of instructional technologies and technology integration self-efficacy. It was determined that technology integration self-efficacy variable indirectly affects the variable of intention to use educational technologies through the variable of interest towards educational technologies. Interest towards educational technologies variable explains 80.28% (0.399/0.497) of the technology integration self-efficacy variable on the intention to use educational technologies variable. Intention to use educational technologies (Venkatesh et al., 2003), which can be expressed as the probability of individuals to realize the use behavior of technology, is affected by individuals' self-efficacy, expectation, and interest levels (Lent et al., 1994; Şahin, 2008). Our willingness to start an activity (for example, interest) or the effort we put forth for an activity depends on how much we value the activity or its results and our expectation to complete it successfully (Wigfield et al., 2008). Therefore, interest is an important motivation mechanism and a strong determinant of intentions in career psychology (Fouad & Smith, 1996; Şahin, 2008). Self-efficacy is also related to the variable of intention (Lent et al., 1994). Elmaaltı (2019) determined that computer self-efficacy is an important factor in predicting instructors' intention to use technology and e-learning. Studies have shown that technology self-

efficacy also predicts technology integration or integration intentions (Anderson & Maninger, 2007; Anderson et al., 2011; Chen, 2010; Hur et al., 2015; Joo et al., 2018; Littrell et al., 2005; Marakas et al., 2007; Niederhauser & Perkmen, 2008; Teo, 2009). Teacher self-efficacy was seen as important in explaining teachers' technology utilization in the classroom (Albion, 2001). Individuals tend to do behaviors that they believe can get positive results (Bandura, 1989; Niederhauser & Perkman, 2010); but if they do not believe that their actions will have preferred outcomes, they will be less likely to take those actions (Pajares, 2006). In other words, instructional technology outcome expectation, which is defined by Niederhauser and Perkmen (2010) as the motivation power to help use technology in their teaching and the expected results of using instructional technology in the classroom, has an impact on individuals' intention to use educational technologies. In the relevant literature, the data of the study carried by Baydaş and Yılmaz (2017) in which it was determined that performance expectation and social impact factors affect pre-service teachers' behavioral intentions support the data of the current study.

As for the data of the current study, it was found that the technology integration self-efficacy variable explained 38 % of the change in the instructional technologies outcome expectation variable. According to Oliver and Shapir (1993), the perception of self-efficacy towards technology integration is an important indicator of a successful technology integration process. Self-efficacy is also related to the outcome expectation variable (Lent et al., 1994). This moderate effect being determined in the current study is also promoted by the findings from the literature that indicates technology self-efficacy predicts technology integration or integration intentions (Anderson & Maninger, 2007; Anderson et al., 2011; Chen, 2010; Littrell et al., 2005; Marakas et al., 2007; Teo, 2009). In addition, Elmaaltı (2019) determined that computer self-efficacy is an important factor in predicting instructors' intention to use technology and e-learning. In the research, it was determined that the technology integration self-efficacy variable also indirectly affected the variable of intention to use educational technologies through the variable of instructional technologies outcome expectation.

All in all, it was determined that attitude towards distance education did not contribute to the modified version by Şahin (2008), which was determined to be a relatively better model in the current study. In other words, teachers' attitude towards distance education, who teach via distance education during COVID-19 pandemic, did not interpret their technology integration self-efficacy, instructional technologies outcome expectations, interest in educational technologies and intention to use educational technologies levels. Furthermore, that teachers' integration self-efficacy levels affected their instructional technologies outcome expectations, interest in educational technologies. Moreover, that teachers' intention to use educational technologies is affected by interest in educational technologies, instructional technologies outcome expectation and technology integration self-efficacy levels were also determined.

4.1. Suggestions

In line with the data obtained in the research, it is thought that the following suggestions can be given:

The technology integration model in education tested in this study should be developed by adding different variables, considering the factors that teachers' intentions to use educational technologies may be affected.

The model tested in this study should also be tested on different samples to verify whether the model is specific to a particular group.

While determining the technologies that teachers will use in classroom activities, their self-efficacy levels for those technologies should be considered.

The current study was carried out with quantitative research methods. A similar study can be done using qualitative (observation, case study, interview, document analysis, etc.) or mixed research method.

The data of this research were collected during Covid-19 pandemic. The same research can also be done after the pandemic period.

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