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THE MEDIATION ROLE OF PRE-SERVICE TEACHERS' TECHNOLOGY PERCEPTIONS IN THE RELATIONSHIP BETWEEN PROFESSIONAL INTEREST, PROFESSIONAL APTITUDE, AND CONSTRUCTING KNOWLEDGE

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ABSTRACT

This study aims to investigate whether 'getting computer technologies used' has a mediating role in the relationship between professional interest, professional aptitude, and constructing knowledge in line with individual differences. The study group consists of 943 pre-services teachers. Mediation analysis was used to test the hypothesis. The result is that 'getting computer technologies used' maintains a mediator role in the relationship between the pre-service teachers' construction of knowledge according to individual differences and the professional interest.

Key Words: Mediation, Technology Perception, Teachers

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INTRODUCTION

Teaching is accepted today as a profession that makes it easier for students to access and construct knowledge supported by the undeniable power of technology in this era. Just like other professions, the professional training of teachers has an important place in the performance of the teaching. For this reason, the education faculties aim to provide education in a way that increases and supports the professional sensitivity of prospective teachers with the mission it carries in the process of teacher training. Thus, the success of educational change inevitably depends on the quality and performance of teachers (Balyer, 2014). Teachers are often considered the backbone of schools; without them, there would be no school, and understanding teachers' roles is key to understanding the educational system (Ingersoll and Perda, 2008). Teachers, schools, and teacher education institutions struggle to meet the challenges of conflicting needs, expectations, and accountability in the dynamic global village and educators can no longer rely on replicating what they remember of their school experience in designing and implementing instruction (Kissock and Richardson, 2010). Thus, the professional sensitiveness of pre-service teachers is one of the elements that will form the basis for developing and using the functional professional skills required by teaching.

Profession is explained as a type of job that needs special training or skill, especially one that needs a high level of education (Oxford Dictionary, 2020). Teachers possess highly-specialized knowledge that continually transforms as new knowledge emerges from practice and research or is shared through professional communities (Guerriero and Deligiannidi, 2017). As teachers are socialized into the norms of the profession, their beliefs, attitudes, and actions are expected to evidence a strong sense of accountability to the shared mission of service to students and their families (Tschannen-Moran, 2009). On the most basic level, the definition of "professional teacher" refers to the status of a person who is paid to teach. It can also, on a higher level, refer to teachers who represent the best in the profession and set the highest standard for best practice (Tichenor and Tichenor, 2005). Teachers' proficiency depends on the attitude she possesses for the profession. The positive attitude helps teacher to develop a conducive learner-friendly environment in the classroom, which also casts a fruitful effect on the learning of the students (Bhargava, 2014).

As can be understood from the definitions above, teaching is a devotional profession. And in this dedication, sensitivity to the profession is one of the important factors. According to Uygun, Şahin, and Okur (2010) if the individuals who properly recognize themselves, it could be argued that they have professional sensitivity which refers to aptitude to the profession and aptitude can be explained by such notions as interest in the profession, eagerness, and professional prestige. However, pedagogical belief system and technology integration self-efficacy perceptions of the teachers may direct the aptitudes constructing the teaching professional sensitivity. Although there is an interconnection, there is also a difference between subject matter and pedagogy, between what is taught and how it is taught (Buijs, 2005). Today beliefs about what preparation teachers need for teaching have significantly changed. Yes, the teachers need to know the content they are to teach, but they must also have knowledge of teaching and learning that content, the pedagogy of teaching (Niess, 2008). Therefore, the pedagogical beliefs that prospective teachers will acquire in the education faculty will play an important role in their profession. Otherwise, if a pre-service teacher has a pedagogical belief that knowledge is transferred from more to less knowledge, his in-class teaching practices will be a direct presentation of content to the students and, in addition, these beliefs will affect not only the

classroom decision-making and action-taking processes of the teacher, but also a wide range of educational activities (Soysal, Radmard, and Kutluca, 2018).

Considering that especially the students of the Z generation are in the school desks, the teacher candidates should not only use the technology effectively in their educational activities, but they should do this with a professional sensitivity and enhance their pedagogical beliefs. As a result, one of the important elements in the regulation of the relationship between pre-service teachers' professional sensitivity and pedagogical beliefs is their ability to use technology. Ertmer (2005) states that skills of using technology are unlikely to be used unless they fit with teachers' existing pedagogical beliefs, and it is imperative that educators increase their understanding of and ability to address teacher beliefs as part of their efforts to increase teachers' technology skills and uses.

For the structural equation modelling study, a theoretical model was developed, in which the relationships were examined by taking the literature reviews into consideration. 'Using computer technologies and getting them used' are the sub-dimensions of technology utilization processes of pre-service teachers. In this theoretical model, many studies examining the relationship between teachers' pedagogical beliefs and their technology utilization in education (Liu, 2011; Tondeur, J., van Braak, J., Ertmer, P. A. et al., 2017; Chai, C. S., Chin, C. K., Koh, J. H. L. et al., 2013; Ertmer, P. A. et al., (2012); Lim and Chai, 2008; Deng, 2014; Petko, 2012; Woodrow, J. E. J., Mayer-Smith, J. A. and Pedretti, E. G., 1996) were reviewed and, thereby, this relational construct of the model was theorized. Studies examining the relationship between professional sensitivity and teachers' use of technology in education were taken into consideration to establish another relational construct emphasized in the theoretical model (Myers and Halpin, 2002; Usta and Korkmaz, 2010; Tuncer and Bahadır, 2016; Al-Zaidiyeen, 2010; Chen and Chen, 2006; Taylor and White, 1991; Mark S. Schlager and Judith Fusco, 2003; Klieger, A., Ben-Hur, Y. and Bar-Yossef, N., 2010; Kopcha, 2012; Thang, S. M., 2010; Schrum, 1999). In this review process, sensitivity to the teaching profession is addressed in "professional aptitude", "professional interest", and "professional prestige" dimensions and, in the meantime, the sub-dimensions determined by Uygun (2016), one of the researchers who developed the scale, are also stated to evoke concepts such as positive attitude towards teaching profession and self-efficacy. Another relation tie of the theoretical model explored in the literature is the relationship between the sensitivity to teaching profession and pedagogical belief. In this context, the model was established based on the existing research in the literature (Li et al., 2018; Zapata and Gallard, 2007; Ernest, 1989; Richardson, 1996; McGinnis et al., 2002). When establishing the model, the items in the sub-factors of the measurement tool utilized in the study were examined. Besides, the mediating role of using computer technologies and getting them used dimensions were examined in the relationship between professional interest, professional aptitude, and constructing knowledge according to individual differences. These factors, planned to be included in the modelling, are explained by exemplifying with items belonging to the factors under the heading of data collection tools. Since no comprehensive relationship analysis between these variables has been conducted according to the literature review above, it is important to study the direct-indirect relationships between the variables that will be considered within the scope of the study based on the structural equation modelling, and it will contribute to discovering possible casual relationships for the theoretical framework. In addition, as the constructivist approach requires teachers to construct knowledge according to individual differences in education climate today, this variable is investigated as a dependent variable in the model. Although students are the main

focus in the constructivist approach, teachers are the main agents in implementing this approach in the classroom, whereby the researchers thought that professional interest and aptitude of teachers are effective and important independent variables in the construction of knowledge, factors which are also supported in the literature. Investigating the mediating role of instructional technologies, which have particularly influenced the educational systems in the last 30 years and are actively being used by teachers and students, between these two variables is also envisaged to contribute to the field. The mediating role of instructional technologies in professional interest, professional aptitude, and construction of knowledge according to individual differences is considered a key factor in effective implementation of constructivism as a learning approach in contemporary education systems. In other words, the study was carried out as innovative research, as it aimed to highlight the importance of instructional technologies' mediation role in the relational model of professional interest and aptitude so that pre-service teachers could construct knowledge considering individual differences as the constructivist theory require.

Relationships between the three basic variables described above were addressed through mediation tests. Hence, the aim was to examine and identify direct and indirect relationships between dependent and independent variables. This study aims to investigate whether 'getting computer technologies used' has a mediating role in the relationship between professional interest, professional aptitude, and constructing knowledge in line with individual differences. As given in Figure 1, the theoretical model, making up the basis of the current study, is designed to be tested and to explain the mediating role of pre-service teachers' perceptions towards technology integration in the relationship between pedagogical belief systems and sensitivity to the teaching profession.

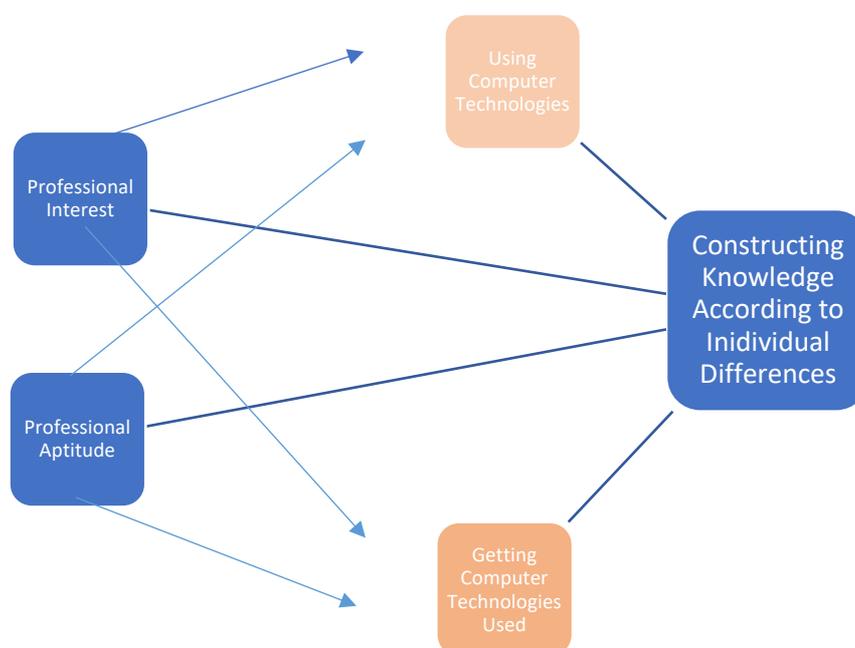


Figure 1. Theoretical Model

Hypotheses regarding the principle relationships that will be tested are formed as in the following.

- Hypothesis 1: there is a significant and positive relationship between professional interest in teaching and constructing knowledge according to individual differences.
- Hypothesis 2: there is a significant and positive relationship between professional aptitude in teaching and constructing knowledge according to individual differences.
- Hypothesis 3: there is a significant and positive relationship between professional interest in teaching and using computer technologies.
- Hypothesis 4: there is a significant and positive relationship between professional aptitude in teaching and using computer technologies.
- Hypothesis 5: there is a significant and positive relationship between professional interest in teaching and getting computer technologies used.
- Hypothesis 6: there is a significant and positive relationship between professional aptitude in teaching and getting computer technologies used.
- Hypothesis 7: there is a significant and positive relationship between using computer technologies and constructing knowledge according to individual differences.
- Hypothesis 8: there is a significant and positive relationship between getting computer technologies used and constructing knowledge according to individual differences.

Mediation hypotheses constituting the basis of the study are:

- Hypothesis 9: using computer technologies has a mediation effect in the relationship between professional interest in teaching and constructing knowledge according to individual differences.
- Hypothesis 10: using computer technologies has a mediation effect in the relationship between professional aptitude in teaching and constructing knowledge according to individual differences.
- Hypothesis 11: getting computer technologies used has a mediation effect in the relationship between professional interest in teaching and constructing knowledge according to individual differences.
- Hypothesis 12: getting computer technologies used has a mediation effect in the relationship between professional aptitude in teaching and constructing knowledge according to individual differences.

According to the main hypotheses defined in Figure 1, the main problem statement of the research is as follows:

Does self-efficacy in technology integration have a mediation effect on the relationship between professional interest in teaching and constructing knowledge according to individual differences?

METHOD

This correlational (relational) study aims to describe and explain the relationship between pre-service teachers' "constructing knowledge according to individual differences" in pedagogical belief systems, "professional interest" and "professional aptitude" of sub-dimensions of Sensitivity Scale for Teaching Profession, and the self-efficacy perception of technology integration (using and getting it used). Relational research investigates if there is a relationship between two or more variables. However, the researcher does not intervene when evaluating these relationships. Relational studies are not studies of cause and effect, but they offer clues to cause and effect between dependent and independent variables (Fraenkel and Wallen, 2011).

Study Group

The study group consists of 943 pre-services teachers in Mersin province in the 2018-2019 academic year. One of the main assumptions that should be satisfied for SEM in the research is the sample size. Considering SEM and sample size recommendations in the literature, the study group in the study was suitable for the SEM (Comrey and Lee, 1992; Kline; 2016).

Data Collection Tools

Sensitivity Scale for Teaching Profession: is a 5-point Likert type scale of 17 items developed by Uygun, Şahin, and Okur (2010). The KMO value of this scale was 0.90, and the Cronbach Alpha value was 0.88. As a result of factor analysis, the scale is reported to be of three sub-dimensions, accounting for 54.34% of the variance. These dimensions include Professional Aptitude, Professional Interest, and Professional Prestige, respectively. Some of the items used in the study that constitute the Professional Interest dimension are as follows; “My biggest ideal is to become a teacher”, “Teaching is a profession of love”, and “Teaching requires being an idealist.”

Pedagogical Belief Systems Scale: the scale was originally developed by Chan (2001) and finalized being factor analyzed by Chan, Tan, and Khoo (2007). Adaptation of the scale to the Turkish culture was carried out by Sosyal, Radmard, and Kutluca (2018). The adaptation study suggested that the scale consists of three sub-dimensions and 26 items, which accounts for 57.43% of the total variance. The sub-dimensions include Constructing Knowledge According to Individual Differences, Traditional Construct of In-Class Social and Epistemic Authority, and Diffusion of Knowledge from More to Less Cognizant, respectively. The Cronbach’s Alpha internal consistency coefficient for the overall scale was determined as 0.77. This study used the sub-dimension of Constructing Knowledge According to Individual Differences. Some of the items related to this sub-dimension are; “The overall purpose of teaching is to help students reconstruct knowledge from their learning experiences rather than transferring knowledge”, “Instruction should be flexible enough to observe individual differences between students”, and “The ideas of students are important and should be carefully considered by teachers.”

Self-Efficacy Perception Scale for Technology Integration: the original form is a five-point Likert type scale prepared by Wang (2004) to determine the self-efficacy perceptions of prospective teachers about technology integration. Then, it was adapted to Turkish culture by Ünal (2013). As a result of adaptation, it was revealed that the scale consists of 19 items and two sub-dimensions. The Cronbach’s Alpha Internal Consistency coefficient calculated for the entire scale was 0.936. The sub-dimensions of the scale are Using Computer Technologies and Getting Computer Technologies Used. These sub-dimensions account for 55.36% of the total variance. This study used the sub-dimension of Getting Computer Technologies Used. Some of the items related to this sub-dimension are as follows; “I believe I can give individual feedback to my students as they use technology” and “I believe I can give individual feedback to my students while they are using the technology.”

The reliability and validity findings regarding the sub-dimensions used in this study are elaborated in the section where the measurement models are tested under the data analysis techniques.

Data Analysis Techniques

Before investigating the prerequisite assumptions for the mediation study and employing the relevant analyses within the scope of this study, the data obtained through data collection tools were examined and observations that did not complete at least one of the scales, observations with most incomplete data, observations that created patterns, and observations with the same response given to all items in the scales were not included in the analyses. Each scale used in the mediation study was tallied with the same sequence numbers (to be combined in a single analysis file later on), and the assumptions of multivariate statistics were separately scrutinized for each one of them.

In this context, univariate ($-4 \geq z \geq 4$) and multivariate outliers were examined (by comparing the Mahalanobis distances with the corresponding degree of freedom and $p < 0.001$ value table; Hair et al., 1995; Tabachnick, 2012), where two univariate and 32 ($\chi^2_{17, 0.001} = 40.79$) multivariate outliers for the sensitivity scale to teaching profession, four univariate and 25 ($\chi^2_{30, 0.001} = 59.70$) multivariate outliers for pedagogical belief system scale, and 31 ($\chi^2_{30, 0.001} = 43.82$) multivariate outliers for self-efficacy perception scale for technology integration were removed. The sequence numbers were then tallied for three scales and 12 observations were not included in the mediation analyses due to the absence of the same observation-related responses in at least one of the scales, although they met the assumptions because of incomplete sequence numbers.

As another significant assumption of multivariate statistics, the presence of multicollinearity problem was investigated taking the Tolerance and Variance Inflation Factor (VIF) into consideration. Considering the reviews of literature (Tabachnick, 2012), the Tolerance values were above 0.20 and VIF values under 5 in all separate investigations made for the whole items in the three scale. Tolerance values of 0.307-0.806 and VIF values of 1.241-3.256 were obtained for the “sensitivity scale for teaching profession”, Tolerance values of 0.401-0.734 and VIF values of 1.363-2.492 for the pedagogical belief system scale, and Tolerance values of 0.332-0.554 and VIF values of 1.805-3.013 for the self-efficacy perception scale for technology integration. In the wake of these findings, there was no multicollinearity problem between the items of the measurement tools that make the basis of the analysis.

Of prerequisites of the mediation studies, the relationships between latent variables to be used in the study in the light of the theoretical framework were calculated with Pearson correlation coefficients, and the significance of hypotheses established within the scope of the study was examined. The modeling performed based on mediation studies is considered as part of casual relationships between two variables (McKinnon, Fairchild, Fritz, 2010). Based on these calculations, measurement models of a two-stage approach were tested based on variables that are meaningful in the theoretical framework and satisfy the prerequisites in relational terms (Anderson and Gerbing, 1988), and then Structural Equations Models (SEM) were tested to reveal direct and indirect effects and to generate evidence as regards mediation.

Pair-wise relationship analyses between dependent-independent and mediating variables, whose hypotheses are presented within the scope of latent variables and that are investigated as prerequisites in mediation modelling, are given in Table 1.

Table 1. Path Analysis of Pair-Wise Relationships between Latent Variables

Hypotheses	Relationships	Std. Factor Loading	T Values	<i>p</i>	R ²	Result
H1	Professional Interest in Teaching - Constructing Knowledge According to Individual Differences	0.26	2.17	<0.05		Accepted
H2	Professional Aptitude in Teaching - Constructing Knowledge According to Individual Differences	0.47	3.73	<0.05		Accepted
H3	Professional Interest in Teaching - Using Computer Technologies	0.14	0.28	>0.05		Rejected
H4	Professional Aptitude in Teaching - Using Computer Technologies	0.15	1.61	>0.05		Rejected
H5	Professional Interest in Teaching - Getting Computer Technologies Used	0.26	1.99	<0.05		Accepted
H6	Professional Aptitude in Teaching - Getting Computer Technologies Used	0.18	1.32	>0.05		Rejected
H7	Using Computer Technologies - Constructing Knowledge According to Individual Differences	0.20	2.33	<0.05		Accepted
H8	Getting Computer Technologies Used - Constructing Knowledge According to Individual Differences	0,64	6.83	<0.05		Accepted

According to the correlation analysis results in Table 1, the findings show that the variables tested in H3, H4, H6 hypotheses, rejected at $p < 0.05$ level, cannot be included in the mediation modelling. When the hypotheses are considered holistically, the professional interest and professional aptitude variables, which are designed as independent variables, have significant and positive relationships with the dependent variable of constructing knowledge according to individual differences. However, hypotheses (H3 and H4) regarding the existence of relationships between the two independent variables and the use of computer technologies, which was expected to be positioned as a mediator variable, were rejected. Therefore, it was decided not to include the variable of using computer technologies in modelling. On the other hand, the professional aptitude, one of the independent variables, was also excluded for not satisfying the prerequisites in the modelling, as it did not show a significant relationship with the second mediator variable, i.e. getting computer technologies used (H6). In this context, of main variables examined, “professional interest” was considered as an independent variable, “getting computer technologies used” as a mediator variable, and “constructing knowledge according to individual differences” as a dependent variable in structural equation modelling. Considering the results of Pearson Moments Multiplication correlation coefficient for the hypotheses (H1, H5, and H8), which will be analysed in the study, there is a positive and weak relationship between Professional

Interest in Teaching and Constructing Knowledge According to Individual Differences ($r = 0.26$, $p < 0.000$), a positive and weak relationship between Professional Interest in Teaching and Getting Computer Technologies Used ($r = 0.26$, $p < 0.000$), while there was a positive and moderate relationship between Getting Computer Technologies Used and Constructing Knowledge According to Individual Differences ($r = 0.64$, $p < 0.000$). As such, the main hypothesis to be analysed in terms of mediation is: “Getting Computer Technologies Used” has a mediation effect in the relationship between Professional Interest in Teaching and Constructing Knowledge According to Individual Differences” (H 11). As a result of the correlation analysis, the measurement models, and the models upon which the mediation studies will be carried out are given in Figure 2.

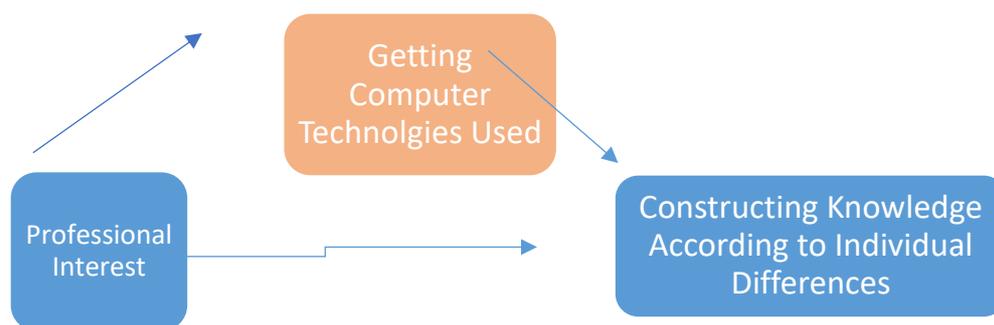


Figure2. The theoretical model to be tested

Using path analysis instead of regression analysis to test the effect of mediating role provides more reliable results (Meydan and Şeşen, 2011). SEM can be defined as a statistical technique that generally covers theory confirmation techniques, seeking evidence for the validity of existing models, investigating latent constructs through observed variables, and/or testing hypotheses about the existing relationships between latent and observed variables (Kline, 2016, Hoyle, 1995, Jöreskog and Sorbom, 1993). Testing measurement models in the SEM analysis is a notable assumption of SEM analysis (Çokluk and Şekercioğlu, 2016). Kline (2016) suggests reporting at least RMSEA and 90% confidence interval, χ^2 , degree of freedom and significance value, as well as CFI and SRMR values in studies where CFA is performed. Measurement models were evaluated according to fit indices, and latent variables, other than those accepted, were not included in the mediation analyses. Lastly, direct, indirect, and total effect values between the latent variables were calculated. SPSS-20 and LISREL 8.70 statistical analysis programs were used in data analysis.

Of other prerequisites of mediation studies, the measurement model fit for the variables in the role of dependent, independent, and mediator variables in study are given in Table 2. The model-data fit was evaluated considering perfect and acceptable fit criteria in the relevant literature (Byrne, 1998; Hu and Bentler, 1999; Hooper et al., 2008; Kline, 2016). In addition, the Cronbach's Alpha (CA) and construct reliability values (CR) of latent variables used in the study are given in the same table for the reliability of results obtained from the modeling built in the mediation tests. In addition to Cronbach's Alpha coefficient, the Construct Reliability (CR) value is also recommended in SEM and CFA studies (Hair et al., 2009, p.708-710; see Table 2).

Table 2. Results for Reliability (CA-CR) and Measurement Model

Variables	X^2 / df	RMSEA	SRMR	CFI	NFI	NNFI	
Professional Interest in Teaching	CA=0,89 CR=0,87	5,37	.089	.045	.97	.96	.86
Constructing Knowledge According to Individual Differences	CA=0,87 CR=0,89	2,64	.054	.035	.98	.97	.98
Getting Computer Technologies Used	CA=0,92 CR=0,93	5	.08	.039	.98	.97	.98
Perfect Fit	≤ 3	$\leq .05$	$\leq .05$	$\geq .95$	$\geq .95$	$\geq .95$	
Good Fit	$\leq 3x^2 / df \leq 5$	$.05 \leq RMSEA \leq .08$	$.05 \leq SRMR \leq .10$	$.90 \leq CFI < .95$	$90 \leq NFI < .95$	$90 \leq NNFI < .95$	

Considering the reliability values in Table 2, the CA reliability coefficients for the sub-dimensions used in the study were 0.89, 0.87, and 0.92 respectively. According to this finding, the measurement tool employed could be argued to offer reliable measurements for this study group. CR values calculated under the CFA were examined based on the criteria of Hair et al. (2009). They emphasize that calculated values for CR should be above 0.50. As such, CR values for all sub-dimensions in the study satisfy the stated criteria.

As the goodness-of-fit statistics in Table 2 indicate, the measurement models tested on “Getting Computer Technologies Used” sub-dimension of “pre-service teachers’ self-efficacy perception scale for technology integration” used in the mediation role and “Constructing Knowledge According to Individual Differences” sub-dimensions of “Pedagogical Belief Systems Scale” in the dependent variable position has coincided with perfect and good fit indicators. However, RMSEA, one of the statistical measures related to x^2/df and its model error obtained from the measurement model for “professional interest” sub-dimension of “sensitivity scale for teaching profession” scale which is considered as a dependent variable in the study, produced values that are beyond the fit indices suggested in the literature. However, this value was ignored, as x^2/df is not considered a good criterion for its dependence on sample size and decision on model fit can be usually made according to other fit indexes (Wheaton, 1987; Brown, 2015; Kline, 2016). In other words, RMSEA was interpreted along with SRMR value as suggested in the literature (Kline, 2016), and the measurement model for this latent variable proved to match the acceptable criteria, as other goodness-of-fit criteria also matched the perfect fit indicators and, thus, the researchers proceeded with the mediation tests.

Three different relationships are predicted in established models to determine the mediation effect (Baron and Kenny, 1986: 116), that is, the relationship between independent and mediator variables, the relationship between the mediator and dependent variables, and the relationship between independent and dependent variables. Assessment of the mediation evidence within this relationship is grounded on the relationship between independent and mediator variables as well as the relationship between the mediator and dependent variables (MacKinnon, 2008). In other words, owing to mediation studies, the indirect effects that are not initially noticed in the relationship between dependent and independent variables are investigated. The mediator variable may reveal all or only part of the observed relationship between the dependent and independent variables. In case of full mediation, when the mediator variable is added to the analysis, the

relationship between dependent or independent variables is expected to get statistically insignificant and, in case of partial mediation, a decrease in the relationship between the dependent and independent variables is expected to occur (Burmaoğlu, Polat, and Meydan, 2013; McKinnon, Fairchild, and Fritz, 2010).

FINDINGS

In the mediation test below, first, the model between independent and dependent variables is given, followed by the modelling that includes the mediation variable. The results of the structural model established are given in Figure 3, and the goodness-of-fit findings of the model in Table 3.

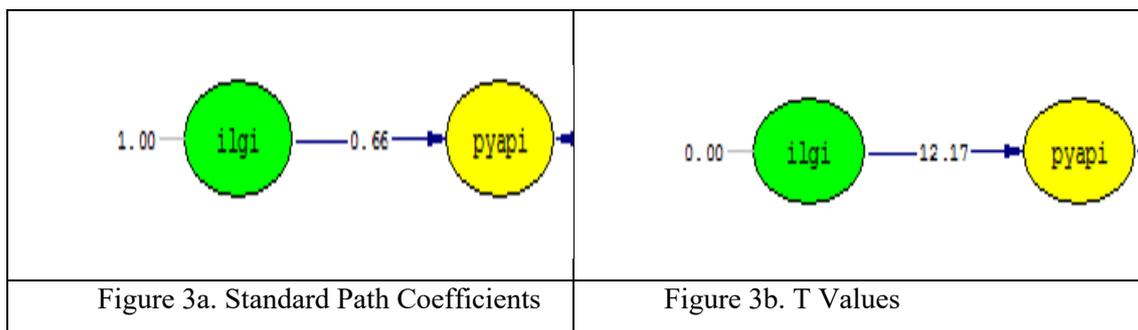


Figure 3a shows that the scores obtained from professional interest have a significant effect on constructing knowledge according to individual differences ($\beta = 0.66, p < 0.01$). In addition, the t value in Figure 3b is given as additional evidence for the significance of this relationship ($t = 12.17, p < 0.01$).

Table 3. Model Fit Values for the Professional Interest and Constructing Knowledge according to Individual Differences

	χ^2 / df	RMSEA	SRMR	CFI	NFI	NNFI
MODEL	627.17/251= 2.49	.052	.045	.98	.96	.98
Perfect Fit	≤ 3	$\leq .05$	$\leq .05$	$\geq .95$	$\geq .95$	$\geq .95$
Good Fit	$\leq 3x^2 / df \leq 5$	$.05 \leq RMSEA \leq .08$	$.05 \leq SRMR \leq .10$	$.90 \leq CFI < .95$	$90 \leq NFI < .95$	$90 \leq NFI < .95$

According to the goodness-of-fit criteria in Table 3, the fit values of the model established between the independent variable, professional interest, and the dependent variable, constructing knowledge according to individual differences, coincided with the perfect fit criteria. In the second stage, Figures 4a and 4b were obtained by adding the mediator variable, “getting computer technologies utilized” dimension, to the model.

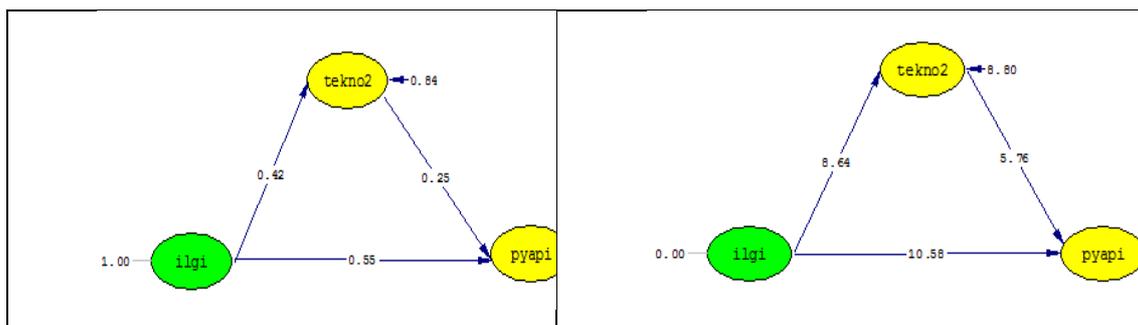


Figure 4a. Standard Path Coefficients	Figure 4b. T Values
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In the second stage, when ‘getting computer technologies used’ was integrated into the model as a whole, the relationship between professional interest and constructing knowledge according to individual differences relatively shrunk compared to the relationship computed in the first model, but remained significant ($\beta = 0.55, p < 0.01$). Besides, the relationship between independent and mediator variables was significant and moderate ($\beta = 0.42, p < 0.01$), whereas the relationship between mediator and dependent variables was weak and significant ($\beta = 0.25, p < 0.01$). Findings on the t values, computed between the variables, are given in Figure 4b. Baron and Keny (1986) argue that if the relationship between independent and dependent variables cease to exist or diminish with the inclusion of the mediator variable, the mediation is then a matter of discussion. The findings in Figure 4 indicate that the expectation regarding the path coefficients is satisfied to decide on the mediation effect. Considering the significance of related relationships, getting computer technologies used could be argued to play a partial mediator role in the model. If the mediator effect still maintains its significance, it may indicate that there are multiple mediator factors in addition to partial mediation (Baron and Keny, 1986). Table 4 presents the goodness-of-fit values for this modelling.

Table 4. Model Fit Values for the Mediator Role of ‘Getting Computer Technologies Used’ in the ‘Professional Interest and Constructing Knowledge According to Individual Differences’

	χ^2 / df	RMSEA	SRMR	CFI	NFI	NNFI
MODEL	1325.88/626=2.11	.045	.042	.98	.97	.98
Perfect Fit	≤ 3	$\leq .05$	$\leq .05$	$\geq .95$	$\geq .95$	$\geq .95$
Good Fit	$\leq 3\chi^2 / df \leq 5$	$.05 \leq \text{RMSEA} \leq .08$	$.05 \leq \text{SRMR} \leq .10$	$.90 \leq \text{CFI} < .95$	$90 \leq \text{NFI} < .95$	$90 \leq \text{NNFI} < .95$

As shown in Table 4, the model was of perfect fit indicators when the goodness-of-fit values obtained by adding the mediator variable in the model were compared with the fit criteria.

According to the goodness-of-fit measures in Table 4 and the values obtained from the given structural model in Figure 4, the professional interest in teaching directly accounted for constructing knowledge according to individual differences while some of that was accounted for by the mediation of self-efficacy perceptions of getting computer technologies used.

DISCUSSION AND CONCLUSION

This study determined that ‘getting computer technologies used’ maintains a mediator role in the relationship between the pre-service teachers’ construction of knowledge according to individual differences, a sub-dimension of pedagogical beliefs, and the professional interest, a sub-dimension of professional sensitivity. In other words, as there is a relationship between the professional interest in teaching and constructing knowledge according to individual differences, there is also a relationship between constructing knowledge according to individual differences and self-efficacy perceptions of ‘getting computer technologies used’, which holds a mediator role. As such, the results conform to the constructivist approach, which is an educational approach applied today that considers individual differences important. Moreover, it was concluded that the professional interest of pre-service teachers is also related to their understanding of education. The mediator role of getting the technology used in this relationship could be interpreted that pre-service teachers are aware of the importance of educational technologies suited to modern-day

conditions. In this respect, it is possible to say that technology integration has a remarkable place in prospective education system.

Similar findings are found when studies in the literature are reviewed. Kim et al. (2013) found a relationship between technology integration and the sub-dimensions of teaching beliefs. They found a positive and moderate relationship between technology integration and teacher role ($r = 0.673$), a positive and strong relationship between technology integration and lesson design ($r = 0.826$), and a positive and strong relationship between technology integration and lesson implementation ($r = 0.843$). Similarly, Liu (2011) concluded that teachers who adopt a student-centered teaching approach are more technology-oriented. Nathan (2009) and Abbitt (2010), in their studies, found that self-efficacy perceptions of pre-service teachers towards technology integration were high. Looking at these results in terms of the relationship between education and technology, teachers of next generations may view technology utilization in education as an important skill of their profession. This point could be interpreted not only as the integration of education and technology but also as integration of teaching profession with technology. Explaining the transformation in the teaching profession with technological integration alone is not enough. Changes in society also cause teachers to change. MacBeath (2012) argues that even if there is no change in the content of knowledge, changes in the nature of pedagogy, the technologies of teaching and learning, new learning contexts, the social world of the child, the occupational and economic structure also affect teaching. Similarly, Jakobiene et al. (2010) found that teachers share alternative teaching methods, try these methods, and their beliefs about teaching significantly change. Schleicher (2011) listed six most preferred strategies by teachers nowadays:

- Individual and collaborative research
- Qualification programmes
- Reading professional literature
- Courses and workshops
- Professional development networks
- Mentoring and peer observation

When such changes in teaching are considered together with technological changes, the teaching profession could be argued to have undergone a structural transformation in educating next generations. In view of similar findings in this study, the pre-service teachers could be argued to have integrated technological developments into their professions as well as to have made future-oriented changes in the nature of their professions.

At this point, the professional interests of pre-service teachers are also noteworthy. As the source of this interest, factors that are important in choosing the teaching profession may affect the attitudes and behaviors during teaching. Individuals who select the most suitable job for themselves are known to be more satisfied in their professional lives. Besides, it is argued that individuals should be interested in this profession to be a good teacher (Karadağ, 2011). Investigation of factors guiding pre-service teachers towards teaching profession has yielded various findings. Çermik, Doğan, and Şahin (2010) divided the sources of motivation to become teachers into two basic categories of intrinsic and extrinsic. Sources of intrinsic motivation include job security, university admission scores, and lengthy vacation opportunities of the profession. Sources of intrinsic motivation consist of being a dream job, serving the society, love for children, and interest in teaching. Of pre-service teachers who participated in the study, 60%

of them stated that they were motivated by extrinsic sources to become teachers. Karadağ (2011) stated that factors such as teaching being a sacred job, loving teaching profession very much, and wanting to educate individuals are prominent when pre-service teachers choose a teaching career. Çakır and Akkaya (2017) argue that the reasons behind why pre-service teachers choose the teaching profession are sanctity, interest, working conditions, and guidance. Similarly, Tataroğlu, Özgen, and Alkan (2011) listed the pre-service teachers' motives for becoming teachers rather than enrolling other departments as interest in the field, considering teaching as a suitable job and being unable to enrol to other departments. Similarly, in studies abroad, the intrinsic and extrinsic factors such as considering teaching as a valued profession in the community, moving the community forward, loving to teach children something, and being interested in the field chosen to become a teacher are among the reasons for choosing teaching profession (Azman, 2013; Bastick 2000; Jungert, Alm and Thornberg, 2013; Struyven, Jacobs, and Dochy 2013). Intrinsic and extrinsic motivations appear together when the motivation factors that are the starting point of interest in teaching are examined. Since it is known that teachers with high interest in the profession are more successful, enhancing intrinsic motivation sources of the pre-service teachers will make them more successful in their future teaching lives.

An important task of teachers, who take on the responsibility of preparing the future generations, is constructing the knowledge that comes with the constructivist approach. In a classic understanding of education, the student passively tries to memorize the given knowledge. However, what students are expected to do today are to participate actively in the course, to connect their previous knowledge and experience with the new situation they are currently in, and to use various ways of reasoning to come up with new knowledge. So doing, they can actively construct new knowledge in their minds. As such, the constructivist approach aims to create a human model that knows when and how to use the new knowledge, how to learn by herself and perform effective learning, and how to use her previous knowledge to produce new knowledge. Thus, important responsibilities fall to the teachers as well. The responsibility of teachers in the constructivist approach is to facilitate students' learning processes, to guide, and to help students to gain cognitive skills by encouraging them. Besides, their responsibility is also to ensure mental interaction with a variety of questions in the classroom and, in the meantime, to guide them towards thinking and inquiring. These responsibilities pave the way for teachers to be more active than before, to prepare activities, and to perform different practices in the classroom (Fidan and Duman, 2014; Gömleksiz and Elaldı, 2011; Yurdakul, 2008).

To be more effective, teachers, whose job description has changed with the constructivist approach, are supposed to adapt to modern technology and apply a student-centered educational approach besides being interested in their professions. The results of this study also reveal the relationship between these variables. The relationship between the professional interest and knowledge construction and the mediator role of getting technology utilized in this relationship could be attributed to pre-service teachers' awareness of the variables in question.

To conclude, change is inevitable in today's teaching profession, where societies are changing rapidly. Depending on these changes, in today's world, where the 21st Century skills are tried to be taught to each individual, teaching profession cannot be considered independent of technology and changing social expectations. Ertmer et al. (2012) assert that many educational institutions around the world have reorganized themselves according to this understanding. Contemplations could be made that prospective teachers may have integrated technology and the

characteristics required by the changing society into their professions, and, thus, a change has taken place in the teaching profession per the requirements of this era.

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