Araştırma Makalesi/Research Article

Pamukkale Üniversitesi Eğitim Fakültesi Dergisi (*PAU Journal of Education*)50:333-352 [2020]
doi: 10.9779/pauefd.580041

Teacher Educators as Role Models for Technology: Pre-Service Teachers' Perceptions*

Öğretim Elemanlarının Teknoloji Rol Modelliği: Öğretmen Adaylarının Algısı

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• ***Geliş Tarihi:*** *19.06.2019* • ***Kabul Tarihi:*** *06.02.2020* • ***Çevrimiçi Yayın Tarihi:*** *10.03.2020*

Abstract

This study investigates pre-service teachers' taking teacher educators as role models in the application of technologies in education. Following the development of data collection tool, researchers implemented a pilot study with 206 senior pre-service teachers. Following the pilot study 1040 senior level pre-service teachers participated in the study during the spring semester of the 2012–2013 educational year. The research was implemented following a survey model. Factor analysis, descriptive analysis, t-test and ANOVA analyses were conducted. It was observed that pre-service teachers take teacher educators as role models regarding the application of technologies (Mean=3.89). In terms of the pre-service teachers and their tendency to view teacher educators as role models, there were no significant differences between universities and between genders. However, when viewed in terms of their separate departments, there were significant differences. The results of the study emphasize the importance of the fact that pre-service teachers take teacher educators as their role models.

Keywords: role model, teacher education, pre-service teacher, technology usage.

Cited:

Özüdoğru, G. & Çakır, H. (2020). Teacher educators as role models for technology: Pre-service teachers' perceptions. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, *50*,333-352.doi: 10.9779/pauefd.580041

* This study is prepared from first author's master thesis with second author's consultancy at Gazi University, Institute of Educational Sciences.

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Öz

Bu araştırma öğretmen adaylarının eğitimde teknoloji kullanımında öğretim elemanlarını rol model alma durumlarını incelemektedir. Veri toplama aracının geliştirilmesinin ardından araştırmacılar, 206 öğretmen adayı ile pilot çalışma yapmışlardır. Pilot çalışmanın ardından, 1040 son sınıf öğretmen adayı, 2012-2013 eğitim öğretim yılı bahar döneminde çalışmaya katılmıştır. Araştırma tarama modelinde gerçekleştirilmiştir. Faktör analizi, betimletici analizler, t-testi ve ANOVA yapılmıştır. Öğretmen adaylarının teknolojinin kullanımında öğretim elemanlarını rol model olarak gördükleri sonucuna ulaşılmıştır (Ortalama = 3.89). Öğretmen adaylarının öğretmen elemanlarını rol model alma durumlarında cinsiyete ve üniversiteye göre anlamlı farklılık görülmemiştir. Ancak bölüme göre anlamlı farklılık görülmüştür. Bu araştırmanın sonuçları öğretmen adaylarının öğretim elemanlarını rol model olarak görmelerinin önemini vurgulamaktadır.

Anahtar sözcükler: rol model, öğretmen eğitimi, öğretmen adayı, teknoloji kullanımı.

Atıf:

Özüdoğru, G. ve Çakır, H. (2020). Öğretim elemanlarının teknoloji rol modelliği: Öğretmen adaylarının algısı. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 50,* 333-352.doi:10.9779/pauefd.580041

Introduction

In the education of pre-service teachers, it is important for them to observe example applications of Information and Computer Technologies (ICT) utilization from the teacher educators who teach them in addition to receiving education regarding the utilization of ICT. According to the social learning theory, an individual shows tendency to replicate the behaviors of people in their environment and view them as role models. Although the learning process can take place directly, it is also realized in an indirect way such as through the observation of others (Schunk, 2011). It is not necessary for a person to learn everything directly, an individual can learn numerous things through the observation of others as well (Bandura, 1986). Akbulut (2016) found that role models do not have a direct impact on students' desires to major in information systems, but the impacts of the role model on students' academic selections are channeled indirectly through outcome expectations, interests, and self-efficacy. Clark, Byrnes and Sudweeks (2015) emphasized that vicarious experiences or social modelling are important for pre-service teachers. Teachers, parents and other adults in the near environment of children must first exhibit the behaviors that they want their children to replicate (Senemoğlu, 2012). Kabaklı Çimen (2019) concluded that the students of the faculty of education take the role models of their teachers and successful people in their profession. Sezer (2018) concluded that the positive attitudes and behaviors of the teachers encouraged the students to take role models. In another study, Topal (2008) concluded that the model displayed by instructors is effective in developing the orientation of students in their area of education. In another study, Shein and Chiou (2011) reported that the learning patterns of students are affected by their role models. However, as a dissimilar result, Saka (2019) concluded that a small number of teachers modeled the practice teacher during the school experience and teaching practice course during undergraduate education.

Teacher Educator as a Role Model for Utilizing Technology

Teacher educators contribute to the pre-service teachers' ICT utilization both directly and indirectly. Competency in ICT utilization of teacher educators is important since they undertake the education of teachers who are raising the citizens of the future (Suess, 2007). Pre-service teachers would like to perform educational activities in their professional lives in the way they observe from the teacher educators. In the institutions which educate teachers, if there are a high levels of ICT usage in teaching activities, these situations present great opportunities for pre-service teachers to replicate these activities in their own teachings. Oigara and Wallance (2012) claimed that pre-service teachers need to see how teacher educators establish a model for the integration of technology into the classroom so that they themselves can better comprehend the subject.

There are shortcomings in the effective preparation of teachers for technology usage (Hopson, 2010). To eliminate these shortcomings, teacher educators have an important mission. The technological competence of pre-service teachers should be developed during their training (Angeli, 2005). It is important that teacher educators become good role models to pre-service teachers about using and selecting the appropriate technology (Collier, Weinburgh, & Rivera 2004). It can be understood from this that pre-service teachers perceive how technology can be combined with the learning environment throughout the span of their own educational process.

Thus, pre-service teachers gain further knowledge about the application of technologies in their professional lives.

Tondeur et al. (2012) suggested developing a model regarding the capability of pre-service teachers in using technology in classrooms and throughout their professional life. This model is consisted of inter-related and inter-connected themes. Their study revealed major themes in the preparing of pre-service teachers to use and apply technology, one of which is their teacher educator being a role model for pre-service teachers. The amount and quality of teachers' technology-related experiences in their pre-service period are primary factors that determine the ability of young teachers to best adopt technology into their classrooms (Agyei & Voogt, 2011). Teachers need to have training about the usage of certain technologies or to observe the usage of these technologies from their educators so that they can apply it in their own educational environments. In numerous studies, the importance of the teacher educator's role model position in the application of technology in education has been greatly emphasized (Collier, Weinburgh, & Rivera, 2004; Oigara & Wallance, 2012; Semiz & İnce, 2012; Suess, 2007; Salentiny, 2012).

Technology usage should take place in universities teaching and learning as a feature of modern higher education (Selwyn, 2016). The application of ICT in educational purposes regarding college and university education contributes to supplying qualified teachers for the system because accurate and effective utilization of technology in these institutions will eventually raise the quality of education provided to the pre-service teachers. Thus, by applying ICT throughout the college and university education of students, it would be possible to educate and bring up pre-service teachers who can themselves to technological advancements and can integrate technology into their classrooms. Pre-service teachers need role models for technology integration (Cullen, 2006). Teacher educators will ensure that pre-service teachers observe the applications of professionals from this area by sharing their knowledge and experiences with these pre-service teachers. Effective ICT utilization by teacher educators is an important factor since they are role models for the teachers of future generations. The people in charge of raising and educating future professionals for all the different variety of occupations are teachers.

It was observed, according to a research of relevant literature, that there are only a limited number of studies regarding adoption of teacher educators as role models by the pre-service teachers in terms of ICT utilization. Providing example cases of technology utilization for pre-service teachers would help them to apply technologies in their professional life more efficiently. Hence, this contributes to establishing an integration of technology into educational environments. The fundamental educational theory of which this study was grounded on is the social learning theory. In this study, a pre-service teacher takes a role model; the teacher educator is adopted as the role model; and the adopted behavior is the utilization of ICT in education. This study investigates the adoption of teacher educators as role models by pre-service teachers in terms of the application of ICT in education. The lateral objective of the research is to determine whether there are differences among pre-service teachers regarding their role model preferences according to their gender, department and university. Because it is possible to observe differences among subjects according to their gender, department and university parameters regarding the utilization of technology in the teaching and learning process.

The purpose of this study is to investigate teacher educators as role models for pre-service teachers in the use of ICT for education.

For this purpose, the sub-problems are listed below:

1. What is the current circumstance surrounding pre-service teachers taking their teacher educators as role models for ICT utilization?
2. Does the event of pre-service teachers taking their teacher educators as role models for ICT utilization differ according to universities?
3. Does the event of pre-service teachers taking their teacher educators as role models for ICT utilization differ according to gender?
4. Does the event of pre-service teachers taking their teacher educators as role models for ICT utilization differ according to their field of study?

Method

This section includes the research model, participants, data collection tools, data collection and data analysis respectively.

Research Model

This study investigates the adoption of teacher educators as role models by the pre-service teachers in terms of ICT utilization in educational environment. Since an existing situation was investigated, a survey model was employed. These models are the ones appropriate to the researches which describe a status which existed in the past or which is still persisting based on its current condition. Whereas the dependent variable of the research is the status of taking as a role model, independent variables are gender, department, and university. This research investigates whether there are differences among pre-service teachers taking teacher educators as a role model regarding ICT utilization according to their gender, department, and university.

Participants

The participants of the study are 1040 pre-service teachers attending two public universities in the central Anatolia region of Turkey. These pre-service teachers are senior students who are attending their fourth and final year in the departments of primary education in their respective universities for the spring semester of the 2012-2013 educational year. The departments of the pre-service teachers are primary education departments (Science Education, Primary School Education, Primary Mathematics Education, Early Childhood Education, Social Sciences Education, Turkish Education, Computer Education and Instructional Technology). Since these students are in their fourth and final year of studies, they are about to start their professional life and they have more pre-service training experience than the other class levels. The two public universities were denoted as university A and university B in the study. University A is located in a larger and more developed city compared to university B. In addition, the number of teacher educators and students of university A is higher than university B. Gender distribution of participants was exhibited in Table 1.

Table 1. Distribution of Participants Based on Their Gender

Gender	f	%
Female	686	66.0
Male	317	30.5
Missing	37	3.6
Total	1040	100

According to Table 1, it was observed that while female pre-service teachers constitute 66.0% of total subjects, males constitute 30.5%, and 3.6% of the participants left did not state any answer for this question. The number of female pre-service teachers is higher than male pre-service teachers. Distribution of pre-service teachers based on their universities was exhibited in Table 2.

Table 2. Distribution of Participants Based on Their Universities

University	f	%
A	617	59.3
B	423	40.7
Total	1040	100

While pre-service teachers from university A constitute 59.3% of the overall pre-service teachers, pre-service teachers from university B constitute 40.7%. The number of pre-service teachers from university A is higher than those from university B. Distribution of pre-service teachers based on their departments was exhibited in Table 3.

Table 3. Distribution of Participants Based on Their Departments

Department	f	%
Turkish Education (Literacy)	196	18.8
Primary Mathematics Education	114	11.0
Science Education	180	17.3
Social Science Education	184	17.7
Primary School Education	186	17.9
Early childhood Education	90	8.7
Computer Education and Instructional Technology	90	8.7
Total	1040	100

According to Table 3, it was observed that 18.8% of pre-service teachers were from the department of Turkish Education, 11.0% were from the department of Primary Mathematics Education, 17.3% were from the department of Science Education, 17.7% were from the department of Social Sciences Education, 17.9% were from the department of Primary School Education, 8.7% were from the department of Early Childhood Education, and 8.7% were from the department of Computer Education and Instructional Technology.

Development Data Collection Tool

The data collection tool was developed by the researcher based on the Social Learning Theory. Following a local and foreign literature search, a pool of items was created for developing the data collection tool. Moreover, answers taken from pre-service teachers (98 pre-service teachers) were utilized while structuring these items by asking the pre-service teachers open-end questions. For content validity, five different specialists in the subject and two language professionals were consulted and after the feedbacks, corrections were made. A Five-degree Likert scale was utilized in answer forms between ‘Strongly Disagree = 1‘ and ‘Strongly Agree = 5’. First, a pilot study was conducted with 206 pre-service teachers attending the fourth grade

in an average-size public university which was not included in this research. Exploratory factor analysis of the scale was conducted. The Barlett sphericity test p value and Kaiser-Meyer-Olkin (KMO) values were determined. Furthermore, the Cronbach Alfa (α) reliability coefficient was calculated.

Before the pilot study, the scale of taking instructors as a role model for utilizing ICT consisted of 24 items. After the conduction of validity and reliability analysis, items with less than 3 item factors and items with a value lower than .45 were dismissed; and thus, the total number of items was reduced to 13. As a result of the factor analysis of the scale, it was observed to be composed of a single dimension. Based on the skewness and kurtosis values of the scale as a result of pilot and primary applications, it was concluded that it exhibited normal distribution. At the end of the pilot application, the exploratory factor analysis and reliability results of the scale were summarized in Table 4.

Table 4. Reliability and Factor Analysis

	Number of Items	Explanatoriness of the Factor	Reliability Coefficient (α)
Scale for taking teacher educators as a role model for utilizing ICT	13 (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)	52.968	.923
Kaiser-Meyer-Olkin Scale Validity			.945
Bartlett's Sphericity Test		Chi Square	1241.916
		Sd	78
		P	.000*

*p<.05

The KMO (Kaiser-Mayer-Olkin) sampling sufficiency measure of the scale was determined as 0.923. It is required that the KMO rate is equal to or greater than 0.5. According to Sharma (1996), if this value is determined above 0.90, the data set is excellent for conducting factor analysis (cited by Kalaycı, 2010). As a result of the pilot study, the Reliability Coefficient (Cronbach α) was calculated as .923. That is, the data collection tool was found to be reliable. As a result of the pilot study, factor loads of the scale were exhibited on Table 5. The data collection tool is Turkish. The English translations of the data collection tool and factor loads were exhibited on Table 5.

Table 5. The Items and Factor Loads

Items	Factor 1
High level of competency of teacher educators in utilizing technology tempts me to also use technology.	.747
I would like to use technologies used by my teacher educators in my professional life.	.765
Experiencing how the application of a certain technology can be used in the classroom increases my confidence about using this technology in my professional life as well.	.722
I would like to use technology because I have observed that it facilitates my teacher educator's classroom management.	.782
I would like to use technology because I observed that it facilitates students' comprehension of the course subject.	.481
When I am faced with technological problems, I try to solve them like my teacher educators had done before.	.700
I am able to recognize the advantages/disadvantages of using technology by observing my teacher educators' way of using technology.	.762
I find my teacher educators utilization of technology interesting during my courses.	.774
I am able to recognize conditions required for using technology by observing my	.753

teacher educators utilization of technology.	
It is interesting for me to see that teacher educators use various technologies according to their different objectives during courses.	.794
I would like to use technologies with which I have observed that teacher educators have acquired positive results.	.736
I feel like I am obliged to use technology because my teacher educator has used technology in the classroom.	.651
Effective courses taught by teacher educators through the use of technology let me imagine myself in a condition in which I am using technology successfully.	.737

Exploratory factor analysis conducted following the primary application supports the results of the pilot application which indicated that the scale is composed of 13 items and has single-factor structure. Additionally, the reliability coefficient (Cronbach α) of the primary application was calculated as .915, which suggests that the data collection tool is reliable.

The construct validity of the scale was tested by applying confirmatory factor analysis with Lisrel 8.8. It was carried out by selecting 500 data randomly selected from the main data of the research. As a result of the analysis, although the fit indices are within acceptable limits, if modifications are suggested for some items, the model has been corrected according to the modification indexes since it is thought that the model will fit better. Modifications were made for items 1-2 and 4-5. It has been observed that the modifications made contribute significantly to chi-square ($p < .05$). As a result of the modification, the model in Figure 1 was created and goodness of fit values in Table 6 were obtained.

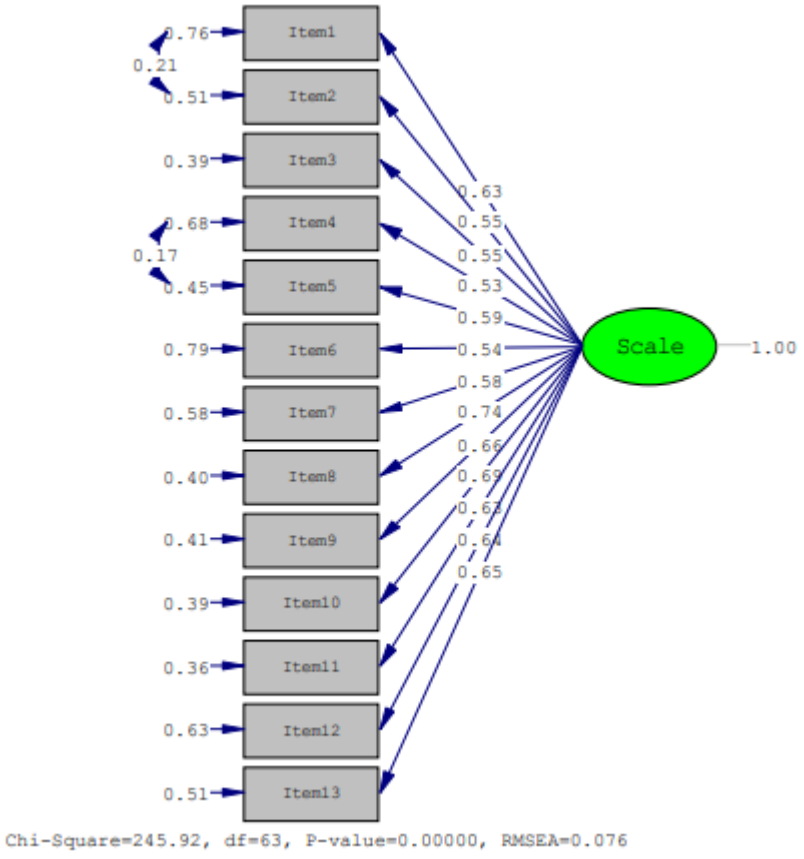

Figure 1. **Confirmatory factor analysis model and modifications**

The criteria related to the fit indices accepted as criteria and the values obtained from the confirmatory factor analysis related to this scale are given in Table 6.

Table 6. Scale's Confirmatory Factor Analysis Goodness of Fit Results

Index	Values
χ^2/df	3.90
RMSEA	.076
SRMR	.043
CFI	.98

When the fit indices related to the model in Table 6 are analyzed, the ratio of chi-square value to degree of freedom (X^2/df) is 3.90. Bollen (1989) stated that this value can assessed as a good fit, up to 5. RMSEA value is below .08 shows good fit (Brown, 2006). SRMR value below .08 shows good fit (Hu & Bentler, 1999). CFI value of .95 and above indicates that the model has a perfect fit (Sümer, 2000). As a result, confirmatory factor analysis shows that the results confirm the structure resulting from exploratory factor analysis.

Data Collection

The relevant data was collected in the school of education of two public universities during the spring semester of the 2012-2013 educational years. A total of 1040 pre-service teachers in their senior year from the departments of Elementary Education (Science Education, Primary School Education, Elementary Mathematic Education, Early Childhood Education, Social Science Education), Turkish Education and Computer Education and Instructional Technology, participated in the study. The data collection tool was printed and distributed to the pre-service teachers and it was implemented on a voluntary basis as well. The required institutional permits have been acquired for the data collection process.

Data Analysis

The collected data presented normal distribution characteristic based on Skewness and Kurtosis values. To investigate the event of pre-service teachers regarding their teacher educators as role models in the application of ICT, a descriptive analysis was conducted. While investigating differences based on gender, t-test was applied for the non-relevant groups, to investigate differences based on department, one way ANOVA was conducted. With this analysis, the aim was to test whether there was a difference between the averages of the independent variable of department and the dependent variable of regarding as a role model.

In previous studies about pre-service teachers' use of technology, researchers have investigated the variables, such as gender or department (Barton & Haydn, 2006; Agyei & Voogt, 2011; Salentiny, 2012). This research aims to investigate whether there are differences in the event of pre-service teacher regarding teacher educators as role models in the application of ICT based on the gender, university and department of the pre-service teachers. In the process of regarding teacher educators as role models, the characteristics of the observer are an important factor. Therefore, it is important to focus on gender-related differences since the characteristics of female and male pre-service teachers can be different from each other. Moreover, the environment in which the observer and the observed person are interacting, as well as their interests and needs are all important factors in the event of pre-service teachers regarding teacher educators as role models. Therefore, differences in terms of the university and

the department that pre-service teachers are attending were investigated. Sizes and locales of the universities participating in the research varied from each other, therefore their development levels and opportunities they provided were also different from each other. Accordingly, it was also investigated whether there was any difference in terms of the university attended. The differences were also investigated based on the participants' departments because each department's integration level with ICT and their needs for ICT are different. Furthermore, the course content of departments is different from each other. Therefore, the status of pre-service teachers from different departments can be different in terms of ICT application.

Results

Findings Regarding the First Sub-Problem of the Research

Findings concerning the status of pre-service teachers' regarding teacher educators as role models in the utilization of ICT were exhibited in Table 7.

Table 7. Descriptive Findings

	Min	Max	N	$\overline{X}$	Ss
Scale for Role Model	1	5	1035	3.89	0.68

According to Table 7, it was seen that pre-service teachers ($\overline{X}$ = 3.89) tend to regard teacher educators as role models. It was determined that the average role model score was above the average of the five-point scale.

Findings Regarding the Second Sub-Problem of the Research

Findings concerning the event of pre-service teachers' regarding teacher educators as role models in ICT utilization and the differences according to universities were shown in Table 8.

Table 8. T-test Results According to Universities

University	N	$\overline{X}$	S	Sd	t	p
A	616	3.89	0.72	1033	.157	0.875
B	419	3.88	0.61			

$p<0.05$

According to Table 8, while the role model score of the pre-service teachers in the university of A was determined as $\overline{X}$ = 3.89, the role model score of the pre-service teachers in the university of B was determined as $\overline{X}$ = 3.88. As these results were too close to each other, there was no significant difference found in terms of pre-service teachers regarding taking their teacher educators as role models in ICT application based on the t-test result exhibited in Table 8 ($p>.05$).

Findings Regarding the Third Sub-Problem of the Research

Findings concerning the tendency of pre-service teachers to regard their teacher educators as role models in the utilization of ICT with the differences according to gender were exhibited in Table 9.

Table 9. T-test Results According to Gender

Gender	N	$\overline{X}$	S	Sd	t	p
Female	683	3.91	0.68	996	1.62	0.104
Male	315	3.83	0.67			

p<.05

When Table 9 is investigated, it was observed that pre-service teachers' role model scores do not exhibit difference according to genders of participants. While the average score of female pre-service teachers was $\overline{X}$ = 3.91; the average score of male pre-service teachers was $\overline{X}$ = 3.83. However, it was considered that this difference was not significant (p>.05).

Findings Regarding the Fourth Sub-Problem of the Research

Findings concerning the status of pre-service teachers' regarding their teacher educators as role models in the utilization of ICT with differences according to departments were exhibited in Table 10.

Table 10. ANOVA Results According to Departments

Source of Variance	Total of Squares	sd	Average Squares	F	(p)
Inter-groups	8.947	6	1.491	3.256	.004
Intra-groups	470.802	1028	.458		
Total	479.749	1034			

When Table 10 is investigated, it can be observed that pre-service teachers showed the most significant differences in their attitudes in terms of choosing role models when analyzed according to their departments F(6.1028) = 3.256 p<.05. In the post-hoc test conducted to determine differences between groups, the differences were found as follows: Early Childhood education exhibits significant differences in three departments, namely Turkish Education, Primary School Education, and Computer Education and Instructional Technology. These differences are caused by the significantly low level of the average score of the Early Childhood education compared to the other departments. According to this result, pre-service teachers in the Early Childhood department regard their department's teacher educators as role models in ICT application less frequently in comparison to the other pre-service teachers in other departments.

Discussion and Results

The first result of this study is that pre-service teachers regard teacher educators as role models in ICT application in education. Tondeur et al. (2012) emphasized the importance of using teacher educators as role models for the preparation and education of pre-service teachers to enable them to later integrate technology into their own teachings. Educators have important roles in the extension of novelties in an educational institution. Educators are required to guide and steer students in their educational institutions because students need the guidance of professionals in whichever occupational areas they may choose. Emrullah Efendi emphasized that higher education, meaning a college or university education, constitutes the roots of education in his statement called 'Tûbâ Tree Theory'. The author stated that the need for competent professionals is required to be supplied firstly by higher education; and thus, each educated person will eventually enlighten the position where he/she is appointed. Furthermore, he stressed the importance of developing competency through higher education (Bakır, 2008).

In their study, Willemse and Boei (2013) stated that teacher educators discussed that they were able to be a role model for students by demonstrating to them how the classroom setting can be managed and improved through professional development. Barton and Haydn (2006) suggested that pre-service teachers need role models in ICT application and the lack of a role model is a major factor in preventing the utilization of technology. Demiraslan and Usluel (2005) stated that teachers have been able to be sufficient role models for their students in terms of integration of ICT. In another similar study, Semiz and İnce (2012) concluded that teacher educators were not good role models in the use of technology for pre-service teachers. Educators, as a role model to their students in ICT application is a factor facilitating the integration of technology with education. It was concluded that pre-service teachers view teacher educators as role models regarding the application of ICT. Infrastructure investments with small budget figures in faculties of education, and the training activities of teacher educators will have a great impact on the educational system.

Technological infrastructure of universities and sufficiency of faculty members are important factors in taking role model. Özüdoğru and Çakır (2014) found that teacher educators consider themselves to be quite sufficient in the use of ICT. However, lack of technological infrastructure was found to be one of the factors preventing the use of ICT in their research. Additionally, they concluded that the score of awareness being a role model was found above the center and no significant differences according to seniority, gender and department. Artun and Günüç (2016) concluded that pre-service teachers perceived the high level of technology integration competence of their teacher educators. In another study, Hava (2019) found that most of the faculty members stated that universities are insufficient in terms of technological infrastructure. Similarly, Keleş and Turan Güntepe (2018) stated that the faculty members have problems lack of technical infrastructure while using technology in their courses.

The second result of the study is that there was no significant difference among pre-service teachers based on their universities regarding their adoption of teacher educators as role models in ICT application in education. One of the participant universities is located in a larger and more developed city compared to the other. Additionally, the larger city has a larger population of both teacher educators and students. It was suggested that the event of pre-service teachers taking teacher educators as their role models would be a more common practice in the university located in the larger and more city since the levels of technology application of teacher educators and the opportunities in these two universities would be different from each other. However, the result was that there was no significant difference for the pre-service teachers from the two universities regarding their taking teacher educators as role models in ICT utilization in teaching and learning. Accordingly, it can be concluded that teacher educators from the smaller universities have the same probability of being regarded as a role model by their students as the teacher educators from larger universities. Similarly, Bricheno and Thornton (2007) didn't find that statistically significant differences occurred in identifying role models in schools in socially disadvantaged or advantaged regions.

The third result of the present study was that there was no significant difference among pre-service teachers regarding taking teacher educators as role models in ICT utilization in terms of gender. Bricheno and Thornton (2007) found some important differences in the gender of children's chosen role models. Köse and Demir (2014) found that most of the students regard

their teachers as role models and female students are more liable than male students to see their teacher educator as a role model. Gender is an important factor in ICT utilization as well because characteristics, priorities, and attitudes of female and male pre-service teachers can differ from each other. In popular literature, there are differences found among pre-service teachers in terms of factors such as competency, attitude, perception, and readiness regarding the utilization of teaching and learning technologies. The present study investigates whether there was any difference among pre-service teachers regarding taking teacher educators as role models in ICT application in terms of gender. However, there were no significant differences to be found. Thus, in regarding teacher educators as role models in ICT application, there were no differences between female and male pre-service teachers.

The fourth result of the study was that there was significant difference among pre-service teachers regarding taking teacher educators as role models in ICT utilization in terms of the departments. The literature includes several studies which examined whether there were significant differences among variables such as the perception, attitude, and competency of pre-service teachers in technology application in terms of the departments they attended. Some of these studies reported partial differences. But the current study investigated possible significant differences in terms of regarding teacher educators as role models for ICT utilization among pre-service teachers attending different departments. Finally, it was found that the department of Early Childhood Education showed differences from the departments of Turkish Education, Primary School Education, and Computer Education and Instructional Technology. This difference was negatively effecting the pre-service teachers in Early Childhood Education. That is, the average score of Early Childhood Education was found to be lower compared to the other departments. The status of each department in terms of integrating education in their area of subjects with technology is different from each other. This situation is considered to be related to their curriculum.

Education of teachers is an essential subject because teachers will reflect the knowledge and experiences they have acquired during their education in their professional lives. This research emphasizes the point that teacher educators are regarded as role models by pre-service teachers. It is highly possible that pre-service teachers take teacher educators as role models (Salentiny, 2012). Cheng, Cheng and Tang (2010) in their study concluded that the role modelling of the teacher educators is an important factor in the development of pre-service-teachers' insight into teaching. Similarly, Köksal and Çöğmen (2013) concluded that a teacher role model is one of the important social and cultural activities of any university according to the opinions of pre-service teachers. It is not quite possible for pre-service teachers to adopt the utilization of technological tools and to integrate them into their professional life without observing proper role models (Suess, 2007). In the integration of technology into education, positive role models have a considerable effect on pre-service teachers and their colleagues (Hastings, 2009). Teacher educators can contribute to raising the qualification of pre-service teachers by being competent role models for them.

Recommendations

The present research was carried on pre-service teachers attending fourth grade in the faculties of education, which constitutes a limitation of the study. This study can be applied to other grades, especially to the freshmen, in order to investigate that whether the length of the bachelor

programs has an impact on taking teacher educators as role model in ICT application. Additionally, the study can be conducted for a group of students for a four-year period as pre-test and post-test so that whether status of pre-service teachers regarding taking teacher educators as role model would change or not. Additionally, in order to confirm study results and to enhance generalization it can be expanded to various universities across other regions.

Teacher educators are required to encourage pre-service teachers to apply ICT by using in their education process. In order to be a good role model, teacher educators need to develop themselves in a professional manner. At this point, faculties can open courses for teacher educators in application of ICT. Thus, teacher educators can develop themselves in application of new technologies and their integration into the educational environment through their opportunities. To facilitate integration of instructional and communicational technologies into educational environments, awareness must be raised to show that role model functions of teacher educators will be beneficent. Experimental studies must be carried out so that pre-service teachers model ICT application and to investigate factors with impact on this situation.

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Genişletilmiş Özet

Giriş

Öğretim elemanları birçok konuda olduğu gibi eğitimde bilişim teknolojilerinin kullanımı konusunda da öğretmen adayları için birer rol modeldir. Öğretim elemanları iyi birer rol model olduklarında, öğretmen adayları da kendi meslek hayatlarında bilişim teknolojilerini daha etkili ve verimli bir şekilde kullanacaklardır. Böylece eğitim ortamlarında teknoloji entegrasyonunun gerçekleşmesine katkı sağlanmış olacaktır. Öğretmenlerin hizmet öncesi eğitimlerindeki teknoloji deneyimlerinin miktarı ve kalitesi, mesleğe yeni başlayacak öğretmenlerin teknolojiyi kabullerini etkileyen önemli bir faktördür (Agyei ve Voogt, 2011). Tondeur ve diğerleri (2012) öğretmen adaylarını gelecekteki sınıflarında teknoloji kullanmaya hazırlamak için bir model geliştirmişlerdir. Geliştirdikleri modelde birbirine bağlı ve ilişkili temalar oluşturmuşlardır. Bu çalışma öğretmen adaylarını teknoloji kullanımına hazırlamada önemli temalar ortaya çıkarmıştır, bunlardan biri rol model olmaktır. Sosyal öğrenme kuramına göre bir birey çevresindeki bireylerin davranışlarını model alma eğilimindedir. Öğrenme doğrudan yaparak gerçekleşebileceği gibi dolaylı olarak başkalarını gözlemleyerek de gerçekleşebilmektedir (Schunk, 2011). Ayrıca model almada gözlemlenenin gözlemcinin gözünde saygın, güçlü ve yüksek statülü olması önemlidir (Korkmaz, 2012). Öğretmenler, anneler, babalar ve çevredeki diğer yetişkinler çocuklara kazandırmak istedikleri davranışları model olarak öncelikle kendileri göstermelidirler (Senemoğlu, 2012). Sezer (2018) çalışmasında öğretmenlerin sergilediği olumlu tutum ve davranışların öğrencileri rol model almaya özendirdiği sonucuna ulaşmıştır. Öğretmen eğitimcilerinin teknoloji kullanımında rol model olmaları, yetkin ve istekli görünmeleri önemlidir (Göktaş, Yıldırım ve Yıldırım, 2009). Bu çalışmada öğretmen adaylarının öğretim elemanlarını eğitimde teknoloji kullanmada model alma durumlarını araştırmak amaçlanmıştır. Araştırmanın alt amacı olarak cinsiyet, bölüm ve üniversite açısından model alma durumlarında farklılık olup olmadığı incelenmektedir. Çünkü teknoloji kullanımı ile ilgili konularda cinsiyet, öğrenim görülen bölüm ve üniversiteye göre farklılaşmalar görülebilmektedir.

Yöntem

Bu araştırmada tarama modeli kullanılmıştır. Araştırmanın bağımlı değişkeni model alma durumları iken, bağımsız değişkenleri ise cinsiyet, bölüm ve üniversitedir. Araştırmanın katılımcıları İç Anadolu Bölgesi'ndeki iki devlet üniversitesinde öğrenim gören 1040 öğretmen adayı araştırmanın katılımcılarıdır. Öğretmen adayları 2012-2013 eğitim öğretim yılında bu iki devlet üniversitesinin eğitim fakültelerinin dördüncü sınıflarında öğrenim görmektedirler. Dördüncü sınıfta öğrenim görmekte olan öğretmen adayları, meslek hayatlarına başlamaya daha yakın bir süreçte olduklarından ve hizmet öncesi eğitim deneyimleri diğer sınıflara göre daha fazla olduğu için tercih edilmiştir. Çalışmada iki devlet üniversitesi A üniversitesi ve B üniversitesi olarak anılmaktadır. A üniversitesi B üniversitesine göre daha büyük ve gelişmiş bir ildedir. Ayrıca A üniversitesinin öğrenci ve öğretim elemanı sayısı B üniversitesinden fazladır. Veri toplama aracı araştırmacılar tarafından geliştirilmiştir. Ölçme aracı geliştirilirken Sosyal Öğrenme Kuramı temel alınmıştır. Yerli ve yabancı alanyazın taranıp madde havuzu oluşturulmuştur. Ayrıca öğretmen adaylarına açık uçlu sorular sorularak alınan cevaplardan da madde yazarken yararlanılmıştır. Kapsam geçerliliğini sağlamak için beş konu alanı

uzmanından ve iki dil uzmanından görüş alınmıştır. Dönütler sonrasında gerekli düzeltmeler yapılmıştır. Ölçme aracının cevaplandırma ölçeği beşli Likert tipinde oluşturulmuştur. Bu araştırmaya dahil olmayan orta büyüklükte bir devlet üniversitesinde eğitim fakültesi dördüncü sınıfta öğrenim gören 206 öğretmen adayı ile pilot uygulama gerçekleştirilmiştir. Ölçeğe faktör analizi yapılmıştır. Barlett küresellik testi p değeri ve Kaiser-Meyer-Olkin (KMO) değerleri belirtilmiştir. Ayrıca Cronbach Alfa (α) güvenirlik katsayısı hesaplanmıştır. Bilişim teknolojileri kullanımında öğretim elemanlarını model alma ölçeği pilot uygulamadan önce 24 maddeden oluşmaktaydı. Geçerlik güvenirlik analizlerinden sonra 13 maddeye indirilmiştir. Ölçeğin faktör analizi sonucunda tek boyuttan oluştuğu görülmüştür. Ölçme aracının pilot ve asıl uygulama verilerinin çarpıklık ve basıklık değerleri incelenerek normal dağılım gösterdiği görülmüştür. Asıl uygulama sonucunda yapılan faktör analizleri de pilot uygulamaya benzer şekilde ölçeğin 13 maddeden oluşan tek faktörlü yapı gösterdiği sonucunu destekler niteliktedir. Ayrıca asıl uygulama sonucu ölçeğin güvenirlik katsayısı (Cronbach α) ,915 olarak hesaplanmıştır. Verilerin analizinde SPSS ve Lisrel programları kullanılmıştır. Öğretmen adaylarının öğretim elemanlarını bilişim teknolojileri kullanımında model alma durumlarını belirlemek için betimsel analiz yapılmıştır. Cinsiyete göre farklılık olup olmadığı ilişkisiz gruplar için t-testi ile bölüme göre farklılık olup olmadığı ise Tek Yönlü ANOVA ile incelenmiştir.

Bulgular

Araştırmada öğretmen adaylarının öğretim elemanlarını model aldıkları görülmüştür. Model alma puanı ortalamasının maksimum puanı beş olan bir ölçekte ortanın üzerinde olduğu sonucuna ulaşılmıştır. Model almaları açısından cinsiyete ve öğrenim gördükleri üniversiteye göre anlamlı farklılık görülmemiş iken, öğrenim gördükleri bölüme göre anlamlı farklılık görülmüştür. Okul Öncesi Öğretmenliğini model alma durumu diğer bölümlerden özellikle de Sınıf Öğretmenliği, Bilgisayar ve Öğretim Teknolojileri Eğitimi ve Türkçe Öğretmenliğinden anlamlı düzeyde düşük çıkmıştır.

Tartışma

Öğretmen eğitimcilerinin öğrencilere bilişim teknolojileri kullanımında rol model olmalarının teknolojinin eğitimle bütünleştirilmesini kolaylaştıran bir faktör olduğu düşünülmektedir. Alan yazında yapılan benzer çalışmalar incelendiğinde; Cuckle ve Clarke (2002) çalışmalarında teknoloji kullanan eğitimcilerin öğrencilerinin de teknoloji kullandığı görülerek bunun sebeplerinden birisinin ise rol model alma olduğu düşünüldüğü sonucuna ulaşmışlardır. Barton ve Haydn (2006) çalışmasında öğretmen adaylarının teknoloji kullanımında rol modelleri gerekli gördüklerini ve rol model eksikliğinin teknoloji kullanımlarını engelleyen bir faktör olduğunu düşündükleri sonucuna ulaşmışlardır. Demiraslan ve Koçak Usluel (2005)'in çalışmasında öğretmenler teknoloji entegrasyonu konusunda öğrencilerine model olamadıkları yönünde görüş bildirmişlerdir. Benzer bir diğer çalışmada ise Semiz ve İnce (2012) çalışmalarında öğretim elemanlarının teknoloji kullanımıyla ilgili öğretmen adaylarına iyi rol model olamadığı sonucuna ulaşmışlardır.

Öğretim elemanları, öğretmen adaylarının eğitiminde teknoloji kullanarak öğretmen adaylarını da kullanmaya teşvik etmelidir. Öğretim elemanlarının iyi birer model olması için kendilerini iyi bir şekilde geliştirmeleri gerekir. Bu noktada fakülteler öğretim elemanlarına bilişim teknolojilerinin kullanımı konusunda kurslar verebilirler. Ayrıca öğretime elemanları kendi imkanları ile de kendilerini yeni teknolojilerin kullanımı, eğitim ortamlarına entegre

edilmesi konularında geliştirebilirler. Bilişim teknolojilerinin eğitim ortamlarına entegrasyonunu kolaylaştırmak için öğretim elemanlarının model olmasının fayda sağlayacağı konusunda farkındalık yaratılmalıdır.