Eğitimde Kuram ve Uygulama *Articles /Makaleler*
Journal of Theory and Practice in Education *2013, 9(2): 94-112*
ISSN: 1304-9496

METAPHORICAL PERCEPTIONS OF TECHNOLOGY: CASE OF ANADOLU UNIVERSITY TEACHER TRAINING CERTIFICATE PROGRAM[1]

(TEKNOLOJİYE İLİŞKİN METAFORİK ALGILAR: ANADOLU ÜNİVERSİTESİ ÖĞRETMENLİK SERTİFİKASI PROGRAMI ÖRNEĞİ)

Adile Aşkım KURT[2]
Özge ÖZER[3]

ABSTRACT

Nowadays technology has been given great importance to access knowledge and learning. It is known that both students and teachers use technology for different purposes. Students use technology to enhance their learning and access knowledge in a short time. Besides, teachers use technology to make their students' learning process easier. In the progress of technology integration, determination of teacher perceptions related to technology is an emphasis by the researches in literature. In this context the aim of this study is to determine the perceptions of the students of Teacher Training Certificate Program concerning technology through metaphors. The study group of the research consists of 164 teacher candidates attending Teacher Training Certificate Program of the Educational Sciences Department in the Faculty of Education at Anadolu University. Both qualitative and quantitative techniques were used to figure out the metaphor categories and whether they differentiate according to participants' gender and department variables. Content analysis was used to analyze the perceptions of the participants. Findings of the study showed that the participants indicated 120 valid metaphors which were grouped into seven categories as technology facilitating the quality of life, useful technology, harmful technology, both useful and harmful technology, developing technology, know-how technology and necessary technology. In the research the metaphors developed by the candidates did not differ according to gender and according to their departments.

Keywords: Technology, Metaphor, Teacher Training Certificate Program

ÖZET

Teknolojinin sunduğu olanaklar nedeniyle eğitim ortamlarında etkin bir şekilde kullanılması gereklilik haline gelmiştir. Teknoloji entegrasyonu sürecinde, öğretmenlerin teknolojiye ilişkin algılarının onların teknolojiyi kullanıp kullanmamalarını büyük oranda belirleyeceği alanyazındaki araştırmalar tarafından vurgulanmaktadır. Bu bağlamda bu araştırmanın amacı Öğretmenlik Sertifikası Programı öğrencilerinin teknoloji kavramına ilişkin algılarını metaforlar aracılığıyla belirlemektir. Araştırmanın çalışma grubunu Anadolu Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Bölümü Öğretmenlik Sertifikası Programında öğrenim gören 164 öğrenci oluşturmaktadır. Araştırmada hem nitel hem nicel veri çözümleme teknikleri kullanılmıştır. İçerik analiz kullanılarak çözümlenen verilerin analiz süreci sonunda 120 geçerli metafor "hayatı kolaylaştıran teknoloji", "yarar sağlayan teknoloji", "zararlı olan teknoloji", "hem yararlı hem zararlı olan teknoloji", "gelişen teknoloji", "bilgiye ulaştıran teknoloji" ve "gerekli olan teknoloji" olmak üzere yedi kategoride sınıflandırılmıştır. Araştırmada ayrıca öğretmen adaylarının ürettikleri metaforların cinsiyetlerine ve bölümlerine göre farklılık göstermediği sonucuna ulaşılmıştır.

Anahtar Kelimeler: Teknoloji, Metafor, Öğretmenlik sertifikası program

---

[1] This paper is an extended version of the study that was presented in 19th International Conference on Learning as oral presentation

[2] Assoc. Prof. Dr, Anadolu University, Education Faculty, Department of Computer Education and Instructional Technologies. **E-mail:**aakurt@anadolu.edu.tr

[3] Lect, Anadolu University, Education Faculty, Department of Educational Sciences. **E-mail:**ozgeo@anadolu.edu.tr

INTRODUCTION

Due to the rapidly growing and changing technology it became a necessity for a person to be adapted to these changes. It is very important for the individuals to have the knowledge about the rapidly changing technologies and the usage of these technologies according to their needs (Erdoğan and Gök, 2008). Technology and technological tools can be used as making the individuals' life easier, and they have a great importance to construct the business and educational life of an individual. However, it should not be forgotten that these technologies not only make the individuals' life easier but they also bring some responsibilities. The individual and public awareness of these responsibilities, with the correct use of technology and combining it with the life environment, gives them the opportunity to be one step further than the other societies (Gündüz and Odabaşı, 2004).

Nowadays technology has been given great importance to access knowledge and learning. Student's use of technology enhances their learning and accesses knowledge in a short time. Teacher candidates take some courses related to the use of technology during their education at the Faculty of Education. Those courses are Instructional Technologies and Material Design and Computer. In the content of those courses students are taught about using technology in general and in teaching. The aim of these courses in teacher training curriculum is to help the teacher candidates to make their teaching process effective when they become teachers. That's why teacher candidates' views and perceptions related to technology and technology use are important.

It is very important to have positive or negative perceptions relating to technology for teacher candidates who attend Faculty of Education (Christensen, 2002; Çelik and Kahyaoğlu, 2007; Marcinkiewicz, 1993–1994; Hew and Brush, 2007; Lai, Pratt and Trewem, 2001). While those who have positive perceptions relating to technology may be inclined to use technology in the future, others who have negative perceptions relating to technology do not seem to be likely to use technology. Proactively teacher candidates who do not have positive views related to the use of technology well maybe convinced before the beginning of their career life. For this reason teacher candidates have been asked to give their opinions and perceptions about technology in this study.

Metaphors have become to be widely used in educational research in order to visualize abstract concepts (Lakoff and Johnson, 1980). For that reason one of the best ways to determine the views and perceptions of teacher canditates related to technology is to use metaphors. Because metaphor is a way of thinking and seeing that helps us to understand the world (Çelikten, 2005). Metaphor is a mental tool which individuals use for understanding and explaining an abstract view or a theoretical fact (Saban, 2008). In other words, metaphors become effective tools in explaining something abstract or difficult (Wahyudi, 2007). Metaphors help individuals to express their aims and imaginations in a clear way (Cornelissen, Oswick, Christensen and Phillips, 2003; Lopez, 2007, Trs: Döş, 2010). Besides,

metaphors are used to determine how the concepts, which are intended to be analyzed, are perceived (Döş, 2010).

There are a number of studies examining the metaphors used by pre-service teachers to define their perceptions about teacher (Aydın and Pehlivan, 2010; Pektaş and Kıldan, 2009), language teacher (Nikitina and Furuoka, 2008; Oxford et al, 1998), science and technology teacher (Afacan, 2011), teacher-profession (Ocak and Gündüz, 2006), teaching (Bullough and Stokes, 1994), student (Aydın and Pehlivan, 2010; Saban, 2009), gifted student (Eraslan-Çapan, 2010),school (Balcı, 1999; Saban, 2008), curriculum (Özdemir, 2012), technology (Karadeniz, 2012; Gök and Erdoğan, 2010) and social network (Gürol and Donmuş, 2010).

In the literature many studies have been done on teachers candidates' views of technology determined by means of metaphors. One of them is carried by Erdogan and Gök (2008) with classroom teacher candidates, and in the study 285 metaphors related to technology were developed. As a result of the study, teacher candidates perceived technology as at most "developing", at least "facilitating the quality of life". In that research, teacher candidates' perceptions related to technology concept were classified into nine categories as "needed", "continuously changing", "developing", "harmful", "useful", "addictive", "both useful and harmful", "rapidly developing", and "facilitating the quality of life". In Küçük and Yalçın's (2011) study 160 classroom teacher candidates participated and developed 120 metaphors. These metaphors were classified into eight categories as "needed", "continuously changing", "developing", "useful", "addictive", "both harmful and useful", "rapidly developing", and "facilitating the quality of life". The purpose of Karadeniz's (2012) study
is to investigate the perceptions of school administrators, ICT coordinators and teachers regarding the concept of "technology". Findings of the study showed that the participants indicated 60 valid metaphors which were grouped into five categories as technology as a changing and developing entity, technology as a facilitator, technology as a needed entity, technology as a useful and harmful entity and technology as a diffusional entity. According to the findings of the research there is no significant relationship between the participants' perceptions of technology regarding gender.

Çoklar and Bağcı's (2010) metaphor research examined the teacher candidates' roles in using educational technologies. 131 teacher candidates from different teacher training programs participated in the study. The metaphors which were developed by the teacher candidates were classified into six categories as "important", "useful", "guide, user, producer", "designer", "student" and "attitude". In that research it was also found that there was a difference between the metaphors developed by teacher candidates in terms of their departments.

As seen from the literature almost all studies were done with the teacher canditates who were studying at education faculties. However, the graduates of other faculties and departments have right to be appointed as teachers in schools if they attend the teaching training certificate program. Therefore, the views and

perceptions of the teacher candidates who attended the teaching training certificate program are important, too. That is why this study is conducted with them.

Aim of the Research

The aim of this study is to determine the perceptions of the teacher canditates in Teacher Training Certificate Program concerning technology through metaphors. In line with this overall purpose, the following research questions were tried to be answered:

- What are the metaphors used by teacher candidates to refer to technology?
- What are the categories of these metaphors depending on their common points?
- Do these conceptual categories of metaphors differ in terms of teacher candidates' gender and departments?

METHODOLOGY

Research Design

Survey method is used in this study. Survey method is the technique of gathering data by asking questions to people who are thought to have desired information. Teacher candidates' perceptions about technology were found out through metaphors they developed. Qualitative techniques were used to collect the data in line with the research questions.

Study Group

In the study 164 teacher candidates attending Teacher Training Certificate Program of the Educational Sciences Department in the Faculty of Education at Anadolu University at 2011-2012 fall terms were asked to fill the forms, but the forms of 120 teacher candidates were included to the study. Remaining 44 forms were not included due to the fact that they did not include a reason related to the metaphors, they included more than one metaphor and they did not include any sources or they were not logical. 83 different metaphors were developed by 120 teacher candidates. The candidates who developed valid metaphors are from the departments of Science (28), Fine arts (23), Turkish Literature (15), Tourism and Hotel Management (8), Physical Education (8), Communication Sciences (7), Health Sciences (6), Economics (5) and other departments (20).

Data Collection and Analysis

In order to collect the data for the study, the following simple tool was used: Teacher candidates were asked to complete the sentences "Technology is……., because ……" to determine the metaphors of what they understand of technology. With the sentence "Technology is……", it is aimed to determine what the students mean by the metaphors, and with the other sentence "Because…….", they were asked to justify their own metaphors. One of the

researchers delivered the forms at the end of the lesson, did not interfere during the metaphor writing process and did not make any interventions.

Qualitative data collected analyzed as teacher candidates' own technological metaphors through applying the content analysis technique. Content analysis can be explained as a research technique for making replicable and valid inferences from texts to the contexts of their use (Krippendorff, 2013). Content analysis is fruitful for understanding the metaphorical expressions (Moser, 2000).

The metaphors teacher candidates generated were analyzed using the following steps as coding and elimination, sorting and categorization, validity and reliability, analyzing data quantitatively. In coding and elimination step, all the metaphors developed by teacher candidates were coded. Data collection tools, in which a metaphor was not clearly explained or a rationale was not provided were eliminated. In the second step generative categories were tried to be defined out of 83 metaphors (f=120). In order to provide the validity of this study, the process of data collection and data analysis were explained. Moreover, the results obtained by the help of the content analysis were supported with direct quotations. Besides, in order to provide the inter reliability, the obtained data were firstly analysed by two different researchers. In the second stage, researchers came to an agreement comparing the analysis. Also the metaphors which take place in the categories developed in this study were analysed by two different experts to see whether they represent the related category or not. As a result, the metaphors they agreed and disagreed on were determined. In order to calculate the reliability of the study, the reliability formula [Reliability = number of agreements / (total number of agreements + disagreements) *100] suggested by Miles and Huberman (1994) was used. The calculations revealed that the reliability of the study was 86%. In the next step, all the data were entered into the SPSS program to calculate the frequencies (f) and percentages (%) of the metaphors in each conceptual category. According to the conceptual categories of metaphors results are interpreted. In addition, the data were analysed to find out whether the perceptions of teacher candidates change or not according to their gender and departments by using the chi-square statistical technique.

FINDINGS AND INTERPRETATIONS

83 valid metaphors obtained from 120 teacher candidates were grouped in seven categories as "technology facilitating the quality of life," "useful technology," "harmful technology," "both useful and harmful technology," "developing technology," "know-how technology" and "necessary technology." The highest number of metaphors (23) out of 83 goes into the category of "both useful and harmful technology" and the lowest number of metaphors (7) goes into the category of "useful technology". In Erdoğan and Gök's (2008) study "developing technology" (47) was obtained as the highest metaphor category. In addition the categories obtained from this study are similar to the categories created by Yalçın and Küçük (2011) and Erdogan and Gök (2008). In Table 1 the frequency and

percentage of metaphors developed under the category of "technology facilitating the quality of life"are presented.

Table 1. The Frequency and Percentage of the Metaphors Developed Under the Category of "Technology Facilitating the Quality Of Life"

Metaphors	**f**	**%**
Tool	7	5.83
Machine	2	1.66
Key	2	1.66
Magic wand	1	0.83
Robot	1	0.83
Invention	1	0.83
Compass	1	0.83
Innovation	1	0.83
High speed train	1	0.83
Computer/ Internet	1	0.83
Zip	1	0.83
Friend	1	0.83
Turbo engine	1	0.83
Science	1	0.83
Total	22	18.33

As shown in Table 1 teacher candidates developed 14 metaphors (f=22) related with "technology facilitating the quality of life" category. In "technology facilitating the quality of life" category it is seen that teacher candidates likened technology to a *tool* (7) and also a *machine* (2) and a *key* (2). A teacher candidate's expression related with the metaphor tool and its reason is like this: **"***Technology is a tool; because it enables us to do our work in a very short time.***"** The teacher candidate who likened technology to a machine expresses his reason saying **"***because it makes the things easier for people in any work and it improves their performance.***"** And another teacher candidate who used key metaphor expresses his reason with the words "*Because we can open the locked doors with a key. If we don't have that key, we can be locked up in a dark room. Thanks to computer technology and internet, we can reach information quickly and easily when we have no other way".*

The frequency and percentage of the metaphors developed under the category of "useful technology" are given in Table 2.

Table 2. The Frequency and Percentage of the Metaphors Developed Under the Category of "Useful Techonolgy"

Metaphors	**f**	**%**
Bread and butter	2	1.66
Friend	1	0.83
Drug	1	0.83
Car	1	0.83
Hands- arms	1	0.83
Light	1	0.83
Timesaver	1	0.83
Total	8	6.66

According to the data in Table 2, teacher candidates who attended this study developed seven metaphors (f=8) in "useful technology" category. The metaphors that the teacher candidates developed in this category is *bread and butter* at most. A teacher candidate's expression related with this metaphor and its reason is like this: **"***Technology is bread and butter; because developments in business life increase correlatively when technology furthers."*

The frequency and percentage of the metaphors developed under the category of "harmful technology" are presented in Table 3.

Table 3. The Frequency and Percentage of the Metaphors Produced under the Category of "Harmful Technology"

Metaphors	**f**	**%**
Addictive	1	0.83
Slave	1	0.83
Senselessness	1	0.83
Rusty iron	1	0.83
Helmeted soldier	1	0.83
Luxury	1	0.83
Weapon	2	1.66
Bomb	2	1.66
Lazy person	2	1.66
Kaos	1	0.83
Total	13	10.83

In Table 3, it is seen that the teacher candidates developed 10 metaphors (f=13) in "harmful technolgy" category. In this category the teacher candidates likened technology to a *bomb*, a *weapon* and a *lazy person* at most. The teacher candidates' expressions related with these metaphors and their reasons are like these:

"Technology is like a weapon; because humanity thinks techonogy is good for them, but it will be too late when they understand how poisonous it is."

"*Technology is like a bomb; because it may explode in your hand if you do not know how to use it.***"**

"*Technology is like a lazy person; because it will make us lazy when it develops and makes our life easier.***"**

The frequency and percentage of metaphors developed by the teacher candidates related to "both useful and harmful technology" category are presented in Table 4.

Table 4. The Frequency and Percentage of the Metaphors Developed Under the Category of "Both Useful and Harmful Technology"

Metaphors	**f**	**%**
Medicine	2	1.66
World	2	1.66
Loan shark	1	0.83
Chewing gum with strong xylitol flavour	1	0.83
Equipment bag	1	0.83
Factory	1	0.83
Hypocrite	1	0.83
The man on the edge of the cliff	1	0.83
Maths	1	0.83
Imperfect wanting to be perfect	1	0.83
Vicious circle	1	0.83
Time bomb	1	0.83
Domino	1	0.83
Plant	1	0.83
River	1	0.83
Epidemic	1	0.83
Escalator	1	0.83
Equipment	1	0.83
Nucleer power	1	0.83
Hurricane	1	0.83
Sharp knife	1	0.83
Tool	1	0.83
Science	1	0.83
Total	25	20.83

As seen in Table 4, there are 23 metaphors (f=25) developed by the teacher candidates under **"**both useful and harmful technology" category. Two teacher candidates used *medicine* and the other two teachers used *world* metaphors relating to that category. The teacher candidates expressed the metaphors and their reasons like these:

"*Technology is like medicine; because it helps us recover when we us it in a correct amount. However, it threatens our lives when it is abused.***"**

"Technology is like a world; because there are many kinds of knowledge and tools which are necessary, useful or unuseful in the world. It causes complexity besides ease."

The frequency and percentage of metaphors developed by teacher candidates related to the "developing technology" category are presented in Table 5.

Table 5. The Frequency and Percentage of The Metaphors Developed under the Category of "Developing Technology"

Metaphors	**f**	**%**
Life	3	0.83
Science	3	0.83
Process	2	1.66
Invention	2	0.83
World	2	0.83
A fish which cannot be caught	1	0.83
Sun	1	2.50
Magic tool	1	0.83
Game	1	1.66
Plane tree	1	2.50
Chameleon	1	1.66
Man kind	1	0.83
A dog which never feels full	1	0.83
Total	20	16.66

According to the data in Table 5, the teacher candidates developed 13 metaphors (f=20) in "developing technology" category. Three teacher candidates developed *life* and another three developed *science* metaphors for technology. *Process, invention* and *world* metaphors followed them. The metaphors in "developing technology" catergory and their reasons were expressed in the following way:

"*Technology is like life. Different types of technology such as chemical technologies, information technologies, and technology of informatics, technological processes and teaching technologies are life themselves.***"**

"*Technology is a science; because it meets the needs of people all the time. As it meets the needs of people, the area of technology use gets wider and wider.***"**

"Technology is a process and it is growing up day by day. It improves and changes with respect to the human needs, expectations and curiosity."

"Technology is an invention and all inventions are produced as a result of curiosity. Technology develops as a result of needs and wishes. When you use it effectively, it carries you to success. If you don't use technology you live in the past. Technology is everything that carries a person to the future.''

The frequency and percentage of metaphors developed by teacher candidates related to the "know-how technology" category are presented in Table 6.

Table 6. The Frequency and Percentage of the Metaphors Produced under the Category of "Know-How Technology"

Metaphors	**f**	**%**
Communication device	6	5
Ocean/Sea	3	1.66
Source	2	0.83
Miniature	1	0.83
Deep well	1	0.83
Computer age	1	2.50
Magic wand	1	0.83
Science	1	0.83
Total	16	13.33

As seen in Table 6, the teacher candidates developed eight metaphors (f=16) in "know-how technolgy" category. Teacher candidates developed *communication device* and *ocean/sea* metaphors in this category for technology. The metaphors in "know-how technology" category and their reasons are given below:

"*Technology is a communication device; because thanks to technology, libraries, encyclopedias, most up-dated information and articles are at your finger tips.***"**

"*Technology is like an ocean; because when you start to use it, it always arouses curiosity and awakes a feeling that you always want the better. Firstly, its beauty and comfort attract you the more you use it the more you want to use it."*

"It is just like an ocean - endless, blue, deep water, attractive. When one once gets into the water, he or she wants to go deeper and deeper and believes that he or she will find something more beautiful."

The frequency and percentage of metaphors developed by the teacher candidates related to the "necessary technology" category are presented in Table 7.

Table 7. The Frequency and Percentage of the Metaphors Developed under the Category Of "Necessary Technology"

Metaphors	**f**	**%**
Need	3	2.50
Life	7	5.83
Bread	1	0.83
Everything	1	0.83
Tool	1	0.83
Internet	1	0.83
Communication	1	0.83
Keeping update	1	0.83
Total	16	13.33

According to the Table 7, the teacher candidates developed eight different metaphors (f=16) in "necessary technology" category. Teacher candidates developed *life* metaphor at most, and *need* followed it in this category for

technology. The metaphors in "necessary technology" category and their reasons are given below:

"*Technology is like life, because we do everything in our lives with technology. We see the benefits of technology in every work we do. People state that they become helpless and don't know what to do without technology. That's why technology is life itself."*

"*Technology is a need, because in the time which we live in, technological improvements make the life conditions easier and help us adapt ourselves to them. We use technology in communication, traveling, choosing food, at home and at work. That's why it's a need for us.***"**

It is understood that the teacher candidates developed positive metaphors for this category. This finding is similar to the findings in the research made by Vural, Yüksel and Çoklar (2008) in which the participants didn't develop negative attitutes towards computer. However, the metaphors like *friend* and *robot* emerged in the same research may cause us think about computer whenever the word *technology* is used.

In this study, as a part of the last research question, whether the categories of metaphors differed or not according to the teacher candidates' gender. A comparison of categories related to technology by gender is given in Table 8.

Table 8. A Comparison of Categories Related to Technology by Gender

Metaphor Categories	**Female**		**Male**		**Total**	
	f	**%**	**f**	**%**	**f**	**%**
Technologies facilitating the quality of life	16	72.72	6	27.27	22	100
Useful technology	6	75	2	25	8	100
Harmful technology	8	61.53	5	34, 46	13	100
Both useful and harmful technology	20	80	5	20	25	100
Developing technology	13	65	7	35	20	100
Know-how technology	15	93.75	1	6.25	16	100
Necessary technology	13	81.25	3	18.75	16	100
	91	75.83	29	24.16	120	100
χ^2 =6.145 sd=6 p=0.40						

As seen in Table 8, the perceptions of male and female teacher candidates did not differ from each other (χ^2 =6.165; sd=6; p=0.40). In other words, their perceptions related to technology were similar. Similar to this result in research of Karadeniz's (2012), Cerit's (2008) and Gürol and Donmuş's (2010) the metaphors developed did not differ regarding gender. However, we should not ignore the fact that it can be caused by that the gender distribution of the teacher candidates were not equal in the research. On the other hand, in the research of Erdoğan and Gök (2008), the metaphors produced were highly different according to teacher candidates' gender.

In the last research question, it was also examined whether the categories of metaphors differed or not according to the teacher candidates' department. A comparison of categories related to technology by deparment is given in Table 9.

Table 9. A Comparison of Categories Related to Technology by Department

	Facilitating the quality of life		Useful		Harmful		Both Useful and Harmful		Developing		Know-how		Necessary		Total	
Teaching Subjects	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Economy	2	1,7	0		0		1	0.8	1	0.8	1	0.8	0		5	4.2
Litrature	3	2,5	1	0.8	2	1.7	5	4.2	2	1.7	2	1.7	0		15	12.5
Fine Arts	3	2,5	2	1.7	4	3.3	7	5.8	3	2.5	3	2.5	1	0.8	23	19.2
Sciences	5	4.2	1	0.8	3	2.5	7	5.8	6	5	2	1.7	4	3.3	28	23.3
Health Sciences	1	0.8	0	0	0		1	0.8	1	0.8	2	1.7	1	0.8	6	5
Tourism and Hotel Management	1	0.8	1	0.8	0		0		0		3	2.5	3	2.5	8	6.7
Pysical Education		0	1	0.8	0		0		4	3.3	0		3	2.5	8	6.7
Communication	1	0.8	0		0		2	1.7	1	0.8	2	1.7	1	0.8	7	5.8
Others	6	5	2	1.7	4	3.3	2	1.7	2	1.7	1	0.8	3	2.5	20	16.7
Total	22	18.3	8	6.7	13	10.8	25	20.8	20	16.7	16	13.3	16	13.3	120	100

χ^2 =49.754 sd=48 p=0.403

As seen in Table 9, the perceptions of the teacher candidates from different departments did not differ from each other about technology metaphors (χ^2 =49.754; sd=48; p=0.403). In other words, they all developed similar metephors about technology. Apart from this finding, in Çoklar and Bağcı's (2010) research it was found that there was a difference between the metaphors according to the programs that the teacher candidates graduated. It is known that the individuals' educational backgrounds are very effective on the metaphors that are used (Eripek, 1998). This may be the reason for this finding of this study.

CONCLUSION AND SUGGESTIONS

This study aimed to determine the metaphors for technology conception of the teacher candidates who attended Teacher Training Certificate Program. Results can be summarized as follows:

- Teacher candidates' metaphors were classified in seven different categories as "technology facilitating the quality of life", "useful technology", "harmful

technology", "both useful and harmful technology", "developing technology", "know-how technology", and "necessary technology".

- Teacher candidates perceive technology mostly as "both useful and harmful" and "useful" at least.
- When the categories are considered as a whole, the metaphors developed at most are *tool* and *life*.
- The fact that the teacher candidates see technology as a tool may be the evidence of that they are aware of technology as a support of education.
- There is no meaningful difference found between the metaphors that are developed by male and female teacher candidates. This shows that all the teacher candidates think similarly about technology.
- In addition, there is no meaningful difference between the metaphors of teacher candidates from different departments. It shows that the perceptions of teacher candidates from different departments do not change.

In the light of the results of this study the following suggestions can be made:

- Awareness seminars can be organized for teachers and teacher candidates being indispensable partners for the integration of technology.
- For teacher candidates to have more positive views toward technology they might be encouraged to have more classes on technology or technology use in their pre-service education.
- To have the teacher candidates think positive about technology use, instructors should use different technologies in their classes and they should be role models for them.
- By finding out the perceptions of teachers who work at preschools, elementary schools and secondary schools, a comparison can be made between the perceptions of teacher candidates and of teachers.
- Similar studies can be carried out with faculty members teaching in the education faculties and in other faculties and comparisons can be made.

REFERENCES

Afacan, Ö. (2011). Fen bilgisi öğretmen adaylarının "fen" ve "fen ve teknoloji öğretmeni" kavramlarına yönelik metaphor durumları (Metaphors used by elementary science teacher candidates to describe "science" and "elementary science teacher"). *E-Journal of New World Sciences Academy, 6* (1), 1242-1254

Aydın, S.İ. & Pehlivan, A. (2010). Türkçe öğretmeni adaylarının "öğretmen" ve "öğrenci" kavramlarına ilişkin kullandiklari metaforlar (The metaphors that Turkish teacher
candidates use concerning "teacher" and "student" concepts). Turkish Studies International Periodical For the Languages, Literature and History of Turkish or Turkic, 5(3), 818-842.

Balcı, A. (1999). Metaphorical images of school: School perceptions of students, teachers and parents from four selected schools. Doctoral Dissertation, Ankara: METU.

Bullough, R.V. & Stokes, D.K. (1994). Analyzing personal teaching metaphors in preservice teacher education as a means for encouraging professional development. *American Educational Research Journal, 31*(1), 197-224.

Cerit, Y. (2008). Öğrenci, öğretmen ve yöneticilerin müdür kavramı ile ilgili metaforlara ilişkin görüşleri (Students, teachers and administrators' views on metaphors with respect
to the concept of principal). *Education & Sciences, 33*(147), 3-13

Christensen, R. (2002). Effects of technology ıntegration education on the attitudes of teachers and students. *Journal of Research on Technology in Education, 34* (4), 411-433.

Çelik, H. C. & Kahyaoğlu, M. (2007). İlköğretim öğretmen adaylarının teknolojiye yönelik tutumlarının kümeleme analizi (The cluster analysis of primary school candidate teachers' attitudes toward technology). *Türk Eğitim Bilimleri Dergisi, 4* (5), 571–586.

Çoklar, A. N. & Bağcı, H. (2010). What are the roles of prospective teachers on the educational technology use: A metaphor study. *World Journal on Educational Technology, 2* (3), 186-195.

Çelikten, M. (2006). Kültür ve öğretmen metaforları (Culture and teacher metaphors used in educational system). *Erciyes University Journal of the Institute Social Sciences, 2*(21), 269-283.

Döş, İ. (2010). Aday öğretmenlerin müfettişlik kavramına ilişkin metafor algıları (Metaphoric perceptions of candidate teachers to the concept of inspectors). *Gaziantep University Journal of Social Sciences, 9*(3), 607 -629.

Eraslan Çapan, B. (2010).Öğretmen adaylarının üstün yetenekli öğrencilere ilişkin metaforik algıları (Teacher candidates' metaphoric perceptions of gifted students). *Uluslararası Sosyal Araştırmalar Dergisi, 3* (12), 140-154

Erdoğan, T. & Gök, B. (2008). Sınıf öğretmeni adaylarının teknoloji kavramına ilişkin algılarının metafor analizi yoluyla incelenmesi (Investigation of pre-service teachers' perceptions about concept of technology through metaphor analysis). In Proceedings of *8th International Educational Technology Conference* (pp.1071-1077). Eskişehir, Turkey.

Eripek, S. (1998). Öğrenci davranışlarını değiştirme. In A. Hakan, (Ed.) *Eğitim bilimlerinde yenilikler* (s.133-148). Eskişehir: Anadolu University Publications.

Gündüz, Ş. & Odabaşı, F. (2004). Bilgi çağında öğretmen adaylarının eğitimde öğretim teknolojileri ve materyal geliştirme dersinin önemi (The importance of instructional technologies and material development course at pre-service teacher education in information age). *The Turkish Online Journal of Educational Technology, 3* (1), 7.

Gürol, M. & Donmuş, V. (2010). Metaphors created by prospective teachers related to the concept of "Social Network". *Procedia Social and Behavioral Sciences, 9*, 1489–1496.

Hew, K.F. & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. Educational Technology Research & Development, 55,223-252.

Karadeniz Ş. (2012). School administrators, ICT coordinators and teachers' metaphorical conceptualizations of technology. *Education, 2* (5), 101-111.

Krippendorff, K. (2013). *Content analysis: An introduction to its methodology* (3rd ed.). Thousand Oaks: Sage.

Küçük, M. & Yalçın, Y. (2011). Sınıf öğretmeni adaylarının teknoloji kavramıyla ilgili metaforları (Investigation of primary student teachers' perceptions about the concept of technology through metaphor). Paper presented at *10th Classroom Teachers and Education Symposium,* Sivas, Turkey.

Lai K.W., Pratt K. & Trewern, A. (2001) Learning with technology: Evaluation of the Otago secondary schools technology project. The Community Trust of Otago, Dunedin.

Lakoff, G. & Johnson, M. (1980). *Metaphors we live by.* Chicago: University of Chicago Press.

Marcinkiewicz, H. R. (1993–1994). Computers and teachers: Factors influencing computer use in the classroom. *Journal of Research on Computing in Education, 26*(2), 220–237.

Moser, K. S. (2000). Metaphor analysis in psychology-Method, theory, and fields of application. Forum: Qualitative Social Research, 1(2), Retrieved 1 April 2013 from http://www.qualitative-research.net/index.php/fqs/article/view/1090/2387

Nikitina L. & Furuoka, F. (2008). Measuring metaphors: A factor analysis of students' conceptions of language teachers. *Metaphor.de, 15,* 161-180.

Ocak, G. & Gündüz, M. (2006). Eğitim fakültesini yeni kazanan öğretmen adaylarının öğretmenlik mesleğine giriş dersini almadan önce ve aldıktan sonra öğretmenlik mesleği hakkındaki metaforlarının karşılaştırılması (The comparison of pre-service teachers' metaphors about the teacher-profession before and after the 'ıntroduction to teacher-profession' course). *Sosyal Bilimler Dergisi, 8*(2), 293-310

Oxford, R., Tomlinson, S., Barcelos, A., Harrington, C., Lavine, R.Z., Saleh, A. & Longhini, A. (1998). Clashing metaphors about classroom teachers: Toward a systematic typology for the language teaching field. *System, 26* (1), 3–50.

Özdemir, S.M. (2012). Eğitim program kavramına ilişkin öğretmen adaylarının metaforik algıları (Metaphoric perceptions of prospective teachers regarding the concept of curriculum). *Journal of Theoretical Educational Science, 5* (3), 369-393.

Pektaş, M. & Kıldan, O. (2009). Farklı branşlardaki öğretmen adaylarının "öğretmen"
kavramı ile ilgili geliştirdikleri metaforların karşılaştırılması (A comparison of "teacher" metaphores generated by preservice teachers from different majors). *Erzincan Eğitim Fakültesi Dergisi*, *11*(2), 271-287.

Saban, A. (2009).Öğretmen adaylarının öğrenci kavramına ilişkin sahip oldukları zihinsel imgeler (Prospective teachers' mental images about the concept of student). *Türk Eğitim Bilimleri Dergisi, 7*(2), 281-326

Saban, A. (2008). Okula ilişkin metaforlar (Metaphors about school). *Educational Administration: Theory and Practice, 55,* 459-496.

Vural, L., Yüksel, İ. & Çoklar, A.N. (2008). Bilgisayar mühendisliği ile bilgisayar ve öğretim teknolojileri eğitimi son sınıf öğrencilerinin bilgisayar kavramına ilişkin geliştirdikleri mecazlar (Computer metaphors developed by the last year students of department of computer education and instructional technology, and department of computer engineering). In Proceedings of *8th International Educational Technology Conference* (pp.610-616). Eskişehir, Turkey.

Wahyudi, W. (2007). *Using metaphors to explore teachers' perceptions of school science curriculum: an Indonesian lower secondary schools case.* Paper presented at the Second International Conference on Science and Mathematics Education, Penang, Malaysia. Retrieved March 8 2013 from http://www.recsam.edu.my/cosmed/cosmed07/AbstractsFullPapers2007/SCIENCE%5CS040F.pdf

APPENDIX: TÜRKÇE UZUN ÖZET

GİRİŞ

Günümüzde teknoloji bilgiye ulaşma ve öğrenme açısından da büyük önem taşımaktadır. Öğrencilerin öğrenmelerini hızlandırmaları, daha çok bilgiye daha kısa zamanda ulaşmaları, öğretmenlerin de aynı biçimde öğrencilerinin öğrenmelerini kolaylaştırmaları bakımından teknolojiyi kullandıkları bilinmektedir. Öğretmen adayları teknoloji kullanımına ilişkin Eğitim Fakültelerinde bazı dersler almaktadırlar. Bunlar Öğretim Teknolojileri ve Materyal Tasarımı, Bilgisayar gibi derslerdir. Bu derslerde teknolojinin öğretimde kullanılmasına ilişkin bilgilerle birlikte teknolojinin kullanımına yönelik becerilere yer verilmektedir. Bu derslerin öğretmenlik meslek bilgisi dersleri içerisinde yer almasının nedeni de, öğretmen adaylarının öğretmen olduklarında öğretim sürecinde teknolojiyi kullanarak öğrenme sürecini etkili kılmalarını ve öğrenme süresini kısaltmalarını sağlamaktır. Ancak tüm bunların öncesinde, öğretmen adaylarının teknolojiye ve teknoloji kullanımına ilişkin algıları ile görüşlerinin önem taşıdığı söylenebilir. Öğretmen adaylarının teknolojiye ilişkin olumlu görüşlere sahip olmaları, onların ileride teknolojiden yararlanma olasılıklarını artırırken, olumsuz görüşlere sahip olmaları da bu olasılığı azaltmaktadır. Öğretmen adaylarının teknoloji ve kullanımına yönelik görüşlerinin olumsuz olması durumunda, o öğretmen adaylarının öğretmenliğe başlamadan bu görüşlerinin değiştirilmesi için önlem alınabilir. Bu nedenle gerçekleştirilen bu çalışma ile öğretmen adaylarının teknolojiye ilişkin algılarının ve görüşlerinin belirlenmesi istenmiştir.

Öğretmen adaylarının teknolojiye ilişkin algılarının ve görüşlerinin belirlenmesini en doğru biçimde yapmanın yollarından birisi de metaforlardan yararlanmadır. Çünkü, Çelikten'in (2005) belirttiği gibi, metafor genel olarak dünyayı kavrayışımıza yardım eden bir düşünme ve görme biçimidir. Bireyin soyut bir düşünceyi, kuramsal bir olguyu anlama ve açıklamada kullandığı bir tür zihinsel araçtır (Saban, 2008). Bir başka deyişle metafor bir kavram, olgu veya olayın, bir başka kavram olgu ya da olaya benzetilerek anlatılmasıdır. Metaforlar bireylerin hayal gücü ve amaçlarını açık bir dille ifade etmelerine yardımcı olur (Cornelissen, Oswick, Christensen ve Phillips, 2003; Lopez, 2007, Akt. Döş, 2010). Aynı zamanda metaforlar, analiz edilmek istenen kavramların nasıl algılandığını belirlemede kullanılırlar (Döş, 2010).

Alanyazında yapılan tüm araştırmalar eğitim fakültelerinde öğrenim gören öğretmen adayları üzerinde yapılmıştır (örn: Çoklar ve Bağcı, 2010; Erdoğan ve Gök, 2008; Küçük ve Yalçın, 2011). Oysa tüm fakülte ve bölüm mezunlarının "öğretmenlik eğitimi" alıp devlet okullarında öğretmen olarak atanabilme hakkı kazanmasını sağlayan ve pedagojik formasyon olarak ta adlandırılan sertifika programı yoluyla da birçok öğretmen adayı öğrenim görmektedir. Onların da geleceğin öğretmenleri olarak teknolojiye ilişkin algıları ve görüşleri önem taşımaktadır. Bu bağlamda gerçekleştirilen araştırma bu gereksinmeye dayalı olarak tasarlanıp yapılmıştır.

Bu bağlamda araştırmanın amacı, Anadolu Üniversitesi Eğitim Fakültesi tarafından düzenlenen Öğretmenlik Sertifikası Programı öğrencilerinin teknolojiye ilişkin algılarının ve görüşlerinin metaforlar aracılığıyla belirlenmesidir. Bu genel amaç çerçevesinde aşağıdaki sorulara yanıt aranmıştır:

1. Öğretmen adaylarının teknoloji kavramına yükledikleri metaforlar ve metafor kategorileri nelerdir?
2. Elde edilen kavramsal kategoriler öğretmen adaylarının cinsiyetleri ve öğretmenlik dalları açısından farklılık göstermekte midir?

YÖNTEM

Araştırmada var olan durumun olduğu gibi ortaya konması amaçlandığı için tarama türü bir desen kullanılmıştır. Araştırma, 2011-2012 öğretim yılı bahar döneminde Anadolu Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Bölümü tarafından açılan Öğretmenlik Sertifikası Programında öğrenim gören öğrenciler üzerinde gerçekleştirilmiştir. Araştırmanın çalışma grubunu 164 öğrenci oluşturmuştur. Araştırmaya katılan 164 öğretmen adayından 83 farklı (f=120) metafor elde edilmiştir. 44 adet ölçme aracı araştırmaya hizmet etmediği için kapsam dışında tutulmuştur. Geçerli metafor üreten öğretmen adaylarının 28'i Fen, 23'ü Güzel Sanatlar, 20'si diğer, 15'i Edebiyat, 8'i Turizm, 8'i Beden Eğitimi ve Spor, 7'si İletişim Bilimleri, 6'sı Sağlık Bilimleri ve 5'i İdari Bilimler alanlarındadırlar.

Bu çalışmada öğretmen adaylarının teknoloji kavramına ilişkin metaforlarını belirlemek için, "Teknoloji……..'dir/dır/tır/tir. Çünkü…… ." şeklindeki açık uçlu anket cümlelerini tamamlamaları istenmiştir. Öğretmen adaylarının "Teknoloji… dir." ile teknolojiye yükledikleri metaforların belirlenmesi ve "çünkü…" ile de kendi metaforlarını gerekçelendirmeleri istenmiştir. Öğretmen adaylarının geliştirmiş oldukları metaforlar içerik analizi ile analiz edilmiştir.

Araştırmada, veri analizinin güvenirliği için iki araştırmacı tarafından farklı formlara nedenleri ile aktarılan mecazlar karşılaştırılmıştır. Mecazlar görüş birliği sağlanarak, nedenlerine göre kategoriler altında toplanmıştır. Bu aşamada güvenirlik %86 olarak belirlenmiştir. Elde edilen kategoriler güvenirliği sağlamak amacı ile araştırmacılar dışında bir uzman tarafından da doğrulanmıştır. Elde edilen bu kategorilere göre gerçekleştirilen analizler yorumlanmıştır. Ayrıca araştırmada öğretmen adaylarının teknoloji kavramına ilişkin algılarının cinsiyet ve mezun oldukları fakültelere göre farklılık gösterip göstermediği ki-kare istatistiksel yöntemi kullanılarak analiz edilmiştir.

SONUÇ

Araştırmada 120 öğretmen adayından 83 farklı metafor elde edilmiştir. Elde edilen metaforlar "hayatı kolaylaştıran teknoloji", "yarar sağlayan teknoloji", "zararlı olan teknoloji", "hem yararlı hem zararlı teknoloji", "gelişen teknoloji", "bilgiye ulaştıran teknoloji" ve "gerekli olan teknoloji" olarak toplam yedi

kategoriye ayrılmıştır. Kategoriler bir bütün olarak düşünüldüğünde öğretmen adaylarının en çok oluşturdukları metaforların "araç" (15) ve "hayat" (10) olduğu saptanmıştır. Kategoriler ayrı ayrı ele alındığında, en çok "hem yararlı hem zararlı teknoloji" kategorisinde metafor oluşturulmuştur. Bunun yanısıra, "gerekli olan teknoloji" kategorisinde en çok üretilen metafor "yaşam/hayat"; "hayatı kolaylaştıran teknoloji" kategorisinde ise en çok "araç" metaforu kullanılmıştır. Öğretmen adaylarının cinsiyetlerine göre oluşturdukları metaforlar arasında anlamlı bir farklılık bulunmamıştır. Bu durum da cinsiyet ayırımı olmadan öğretmen adaylarının benzer metaforlar ürettiklerinin göstermektedir. Ancak ortaya çıkan bu sonucun araştırmaya katılan öğretmen adaylarının cinsiyet dağılımlarının eşit olmamasından kaynaklanabileceği de göz ardı edilmemelidir. Bunun yanısıra öğretmen adaylarının lisans programlarına göre oluşturdukları metaforlar arasında da anlamlı bir farklılık bulunmamıştır. Bunun sonucu olarak öğretmen adaylarının teknoloji ile ilgili metaforlarının lisans programlarına göre değişmediği ortaya çıkmıştır.

Araştırmada elde edilen sonuçlara yönelik olarak şu öneriler getirilebilir: Öğretmen adaylarının teknolojiyi en az "yararlı" olarak görmelerinden yola çıkarak teknolojiye olumlu bakabilmeleri için hizmet öncesi eğitimlerinde teknoloji ve teknoloji kullanımına yönelik eğitimler almaları ya da teknolojiyle ilgili aldıkları ders sayılarının artırılması gerektiği söylenebilir. Öğretmen adaylarının teknolojiye ilişkin algılarının olumlu yönde geliştirilebilmesi için öğretim elemanlarının derslerinde farklı teknolojilere yer vermeleri ve öğretmen adaylarına, teknolojinin öğretme-öğrenme süreçlerinde doğru kullanımı ile ilgili örnek olmaları sağlanabilir. Okulöncesi eğitim, ilköğretim ve ortaöğretim kurumlarında görev yapan öğretmenlerin teknolojiye ilişkin algıları belirlenerek öğretmen adayları ile karşılaştırması yapılabilir. Benzer bir araştırma da öncelikle Eğitim Fakültesinde görev yapan öğretim elemanları üzerinde ve sonrasında da diğer fakültelerdeki öğretim elemanlarının teknolojiye ilişkin algıları belirlenebilir.