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Roles assigned by prospective teachers to themselves in terms of use of educational technology: A metaphor study

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Abstract

In this of qualitative nature study, metaphors developed by prospective teachers who are being taught at Departments of Primary Education, Chemistry Teaching, Pre-school Education, Social Studies Education, Turkish and Primary School Mathematic Teaching at Afyon Kocatepe University, Turkey in terms of their roles in use of educational technology were analyzed. Totally, 45 different metaphors were obtained from 131 prospective teachers. Considering their reasons, those metaphors were coded into themes. Metaphors developed in terms of roles of prospective teachers in use of educational technology can be clustered under six different categories: being important / useful, assistant / guide, user, producer / designer, learner and attitude. Results indicated that prospective teachers were mostly assigned roled of being important / useful, assistant / guide and user. As an another result, it was seen that departments at which prospective teachers are taught differed on their metaphors.

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1. Introduction

Educational technologies can be defined as ethical applications of technological processes and resources in order to design, use and manage them to assist learning and develop performance (AECT, 2004). As understood from the definition, humans' knowledge, attitudes and experiences differ on the use of educational technology which can be perceived as a process. Handal (2004) stated that teachers' attitudes towards use of educational technology affect their tendency of technology use. Akkoyunlu (1996) also pointed out that teachers' knowledge of technology have an effect on their attitudes towards technology. In this sense, as a human factor, teachers are assigned important roles in terms of use of educational technology.

In terms of use of educational technology, prospective teachers in Turkey are significantly educated during their undergraduate education. Prospective teachers are educated in terms of use of educational technology especially in "Instructional Technologies and Material Development" course and so many courses such as pedagogical formation,

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computer use and area courses with all their aspects e.g. materials, power and technique appropriately for their subjects. Determining roles assigned by prospective teachers to themselves in terms of use of educational technology as a result of education which partially differentiate from subjects to subjects will help evaluate education given in that area as part of teacher education in Turkey.

1.1. Purpose of the study:

The main purpose of this study was to determine roles assigned by prospective teachers to themselves in terms of use of educational technology by means of metaphors as a result of their undergraduate education. With this aim, questions below were addressed in this study:

1. Which metaphors do prospective teachers develop in order to describe their roles in terms of use of educational technology?
2. Under which categories can those metaphors developed by prospective teachers in order to describe their roles in terms of use of educational technology clustered?
3. What kind of distribution do metaphors developed by prospective teachers in order to describe their roles in terms of use of educational technology display according to their departments at which they are being taught?

2. Method

In this part, research design, participants, data collection and analysis are verbalized.

2.1. Research design

Since this study portrays a general picture, it is considered as a case study in which qualitative research methods are employed. A case study is a research method which explains a current phenomenon within its framework and in which boundaries between that phenomenon and content are not distinct (Yıldırım ve Şimşek, 2005). Data obtained from this study were analyzed by means of content analysis. In order to determine teachers' perceptions and views, metaphors, one of data collection techniques in qualitative research methods, were utilized.

Table 1. Demographical data of participants

		<i>f</i>	%
Gender	Male	52	39.7
	Female	79	60.3
	Total	131	100
Departments	Primary Education	30	22.9
	Pre-school Education	25	19.0
	Social Studies Education	22	16.8
	Turkish Teaching	19	14.5
	Primary School Mathematic Teaching	20	15.3
	Chemistry Teaching	15	11.5
	Total	131	100

2.2. Participants

This study which aims to determine prospective teachers' perceptions and views in terms of use of educational technology was conducted at Faculty of Education, Afyon Kocatepe University, Turkey with senior students in the spring term of academic year of 2008-2009. In this study, a sample was selected. In order to make this study practical and faster, easily attainable sampling was employed as a sampling method mostly used in qualitative research (Yıldırım & Şimşek, 2005). The distribution of participants according to their departments and gender is displayed in Table 1.

2.3. Data collection method and data collection

In order to determine teachers' perceptions and views, metaphors, one of data collection techniques in qualitative research methods, were utilized. As one of data collection techniques of a qualitative research, metaphors are one of

the most important methods utilized to examine correctness of theories based on so many variables (Jensen, 2006). Especially in social sciences, metaphors are utilized to obtain data indirectly that are not directly obtained in an objective way (Yıldırım & Şimşek, 2005). Meaningful and interpretable metaphors consist of two components: simulated and simulation (Kovecses, 2002). Kovecses (2002) also identified those components as “source domain” and “target domain”. In addition, it is required to present how and why those metaphors are developed to make metaphors meaningful (Oğuz, 2005). Those meanings derived from metaphors are used while analyzing metaphors.

A form consisting of three parts, that is, instructions, personal information and a metaphor question, was developed by researchers to gather data. Data were collected by researchers and before data collection, students were informed about metaphors and it was especially paid attention not to canalize students. Participants were asked a question of “Which role would you prefer if you were asked to assign a role to yourself in terms of use of educational technology? Why?” to make them write a metaphor related to educational technology.

2.4. Data analysis

Data obtained from prospective teachers were employed to check of appropriateness for analysis before being analyzed. Due to not developing a metaphor, not displaying a precise metaphor directly and using more than one metaphor, forms that are not appropriate for analysis were not included in analysis procedure. Three experts of different fields were consulted in order to strengthen reliability of the data. In qualitative research methods, reliability of the data is formulized as follows: $\text{Agreement} / (\text{Agreement} + \text{Disagreement}) * 100$ (Miles ve Huberman, 1994). Responses of field experts were compared according to that formula and the reliability coefficient of the study was found as .86.

3. Findings and Discussion

In this part, categories derived from metaphors developed by prospective teachers in terms of their roles in use of educational technology, metaphors that form those categories and their distribution among departments at which they are being taught were separately analyzed and interpreted.

3.1. Metaphors Used by Prospective Teachers for Their Roles in Use of Educational Technology and Categories Derived From Those Metaphors

When metaphors obtained from this research generally considered, it was seen that 131 valid metaphors were totally used. The rate of use of the same metaphors except categories of user and learner was low. Among those metaphors, mostly used metaphors were as follows: “teacher” (17 times), “user” (16 times), “designer” (11 times) and “computer” (9 times). Metaphors were categorized according to why those metaphors were used while analyzing metaphors. Metaphors developed in terms of roles of prospective teachers in use of educational technology were clustered under six different categories (Table 2).

Table 2. Categories of metaphors obtained from prospective teachers

Categories	<i>f</i>	%
Being important / useful	36	27.5
Assistant / guide	34	26.0
User	28	21.4
Producer / designer	16	12.2
Learner	10	7.6
Attitude	7	5.3
Total	131	100

When roles assigned by prospective teachers to themselves in terms of use of educational technology considered, it was seen that prospective teachers used metaphors such as being important / useful, assistant / guide, user, producer / designer, learner and attitude. The mostly used metaphor was being important / useful whereas the metaphor of attitude was used at least. Tablo 3 displays the distribution of metaphors that constitute categories.

Table 3. The distribution of metaphors that form categories

	Being important / useful		Assistant / Guide		User		Producer / Designer		Learner		Attitude						
	f	%	f	%	f	%	f	%	f	%	f	%					
Computer	7	19.4	Guide	7	20.7	User	12	42.9	Designer	8	50.0	Student	7	70.0	Guide	2	28.6
User	3	8.4	Teacher	4	11.8	Teacher	10	35.7	Producer	3	18.6	Educator	1	10.0	Designin	2	28.6
Engine driver	2	5.6	Executive	3	8.8	Student	2	7.1	Grapher	1	6.3	Innovator	1	10.0	Teacher	1	14.3
Projector	2	5.6	Computer	2	5.9	Educator	2	7.1	Teacher	1	6.3	Unexperienced driver	1	10.0	User	1	14.3
Painkiller	1	2.7	Steering wheel	1	2.9	Implementer	1	3.6	Expert	1	6.3			Director	1	14.3	
Scientist	1	2.7	Educator	1	2.9	Key	1	3.6	Programmer	1	6.3						
Other (*)	20	55.6	Other(*)	16	47.0				Researcher	1	6.3						
Overall Mean	36	27.5	Overall Mean	34	26.0	Overall Mean	28	21.4	Overall Mean	16	12.2	Overall Mean	10	7.6	Overall Mean	7	5.3

(*) Some of the metaphors which have a frequency of 1 in each category were clustered under “Other” in order to attain a space.

Although some prospective teachers used the same metaphor as a role, differentiation of the reasons for metaphor use was attention grabbing. Use of different metaphors by prospective teachers was explained by Howard (1984) with humans’ purposes and ways of use and by Cisek (1999) as different points of view. In addition, Erdoğan and Gök (2008) stated that technological access opportunities have a significant effect on metaphors related to technology. Technological access opportunities may have an effect on describing different metaphors.

The metaphors mostly used in categories are supported with sample expressions below:

A sample expression related to metaphors in “Being important / useful” category is as follows:

“The role of a computer. A computer is a very useful tool for humans. Especially when education is the case, people can learn everything with a simple click. Furthermore, a computer has another importance in educational technology...”

Metaphors in “Assistant / Guide” category can be exemplified as below:

“I would be assigned as a guide. I would guide students in terms of use of technological tools and provide them to be in a good position in our society.”

Metaphors used by 16 participants in “User” category can be exemplified as follows:

“I would be assigned as a user since we can be effective by using educational technology effectively.”

Metaphor samples in “Producer / Designer” category are given below:

“I would be a designer of Technologies since use of something which is designed by yourself is more effective.”

Metaphor samples in “Learner” category are as follows:

“I would be assigned as a student since I do not have enough information about use of educational technology.”

Sample metaphor expressions of “Attitude” category are given below:

“I would be a guide because I love teaching something to people and being a guide about something.”

3.2. Distribution of Metaphors Used by Prospective Teachers According to Their Departments

The distribution of metaphor categories used by prospective teachers for the concept of educational technology according to departments at which they are being taught was examined. Results based on that scope are given in Table 4.

Table 4. The distribution of metaphor categories according to departments at which they are being taught

	Being important / useful		Assistant / Guide		User		Producer / Designer		Learner		Attitude		TOTAL	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Primary Education	13	43.3	7	23.3	7	23.3	3	10.0	0	0	0	0	30	22.9
Pre-school Educ.	9	36.0	4	16.0	5	20.0	3	12.0	4	16.0	0	0	25	19.0
Soc. Stud. Educ.	4	18.2	6	27.3	3	13.6	3	13.6	1	4.5	5	22.3	22	16.8
Turkish Teachin.	3	15.8	4	21.0	5	26.3	1	5.3	5	26.3	1	5.3	19	14.5
Primary S. Math.	1	5.0	6	30.0	6	30.0	6	30.0	0	0	1	5.0	20	15.3
Chemistry Teachin.	6	40.0	7	46.7	2	13.3	0	0	0	0	0	0	15	11.5
TOTAL	36	27.5	34	26.0	28	21.4	16	12.2	10	7.6	7	5.3	131	100

When Table 4 considered, it is seen that departments of prospective teachers at which they are being taught differed on their metaphors used for educational technology. For instance, senior students of Department of Primary Education used metaphors in “Being important / useful” category (43.3%) but did not use any metaphors in “Learner” and “Attitude” category. Senior students of Department of Social Studies Education (27.3%) and Chemistry Teaching (46.7%) used mostly metaphors in “Assistant / Guide” category. Furthermore, metaphors in

“Attitude” category were mostly used by senior students of Department of Social Studies Education. Departments of Primary School Mathematic Teaching and Turkish Teaching had a balanced distribution whereas senior students of Department of Turkish Teaching felt insufficient in “Learner” category. Department of Chemistry Teaching was extensive in “Assistant / Guide” (46.7%) and “Being important / useful” (40%) categories.

It can be said that departments at which students are being taught may have effect on the roles assigned for the use of educational technology. Differentiating of metaphors developed by prospective teachers for roles can be explained by Mcdermot (2003) with a significant effect of jobs on metaphors and by Eripek (1998) with an importance of educational practices and past experiences in formation of metaphors. Kabakçı and Tanyeri (2006) also stated that departments of prospective teachers have an effect on their perceptions of educational technology.

4. Conclusion

Totally, 131 metaphors of prospective teachers from six different departments were clustered under six categories in this study. Those categories were entitled as follows: Being important / useful (36 metaphors), assistant / guide (34 metaphors), user (28 metaphors), producer / designer (16 metaphors), learner (10 metaphors) and attitude (7 metaphors). It was seen that prospective teachers mostly described roles as being important / useful, being an assistant and user, roles of designer and learner were fewer and they also focused merely on the role of attitude (loving role). When departments considered, a different distribution related roles in categories was obtained. In other words, distribution of roles assigned in use of educational technology differed according to departments at which students are being taught.

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