

Digital Literacy Perceptions of the Students in the Department of Computer Technologies Teaching and Turkish Language Teaching

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Abstract

The rapid spread of information with the wide use of the printing press has gained momentum in the 21st century as digital texts have become widespread. Reading is among the major abilities educated individuals are expected to hold and Turkish language teachers are looked to in the acquisition of this ability. Besides, computer technologies teachers are expected to teach how to use digital devices. To fulfill this duty, they are required to have developed a high level of digital literacy. The present study aims to determine and compare the perceptions of prospective teachers of computer technologies and Turkish languages. This descriptive study follows a survey model.. The population of the study comprises the students at a university located in western Turkey and the sample consists of the first-, second-, third-, and fourth-year prospective teachers of Turkish Language and Computer Technologies. The results revealed that the students in the department of Turkish Language Teaching and of Computer Technologies Teaching considered that they were sufficient enough in the attitudinal, technical, cognitive, and social sub-dimensions and differences were observed only in the sociability sub-dimension to favor the male students. Interdepartmental differences were observed in terms of the attitude and sociability sub-domains in favor of computer technologies students and statistically significant differences were found between the scores concerning the freshman and senior undergraduates of both departments.

Keywords: Prospective Turkish language teacher, prospective computer technologies teacher, digital literacy

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Introduction

Humans are different than other beings in transferring their sets of knowledge and experiences to the next generations. Transfers may occur orally or in writing and individuals can avail themselves of the transfers through their ability to read. Thousands of languages are spoken in the world; however, the number of languages with literature to transfer what they know to the next generations and accordingly the number of languages with literate people is very low. Literate people constitute a very small portion of the world population, yet their power is felt greater than their number is. In a way, it is a lesson by literacy: The literate have the power of expressing their thoughts members of an oral culture will never be able to do (Sanders, 1999).

Developments in informatics and communication in the 21st century require individuals be competent in both literacy and technological issues (Eryaman, 2007). Now, people live as a member of the information age. “Visualize an amphibian with its shell inside and its organs outside. Electronic man wears his brain outside his skull and his nervous system on top of his skin. Such a creature is ill-tempered, eschewing overt violence” (McLuhan & Powers, 2001, 156). Literacy once having occurred only through printed materials has moved into a new dimension in the present age. In the past too, literacy reminded us of making sense of a written text, yet literacy was always the process of interpreting what is seen, heard and even felt, be it written or not. Studies on language enabled us to look at the concept of literacy from different perspectives. Freire (1998) expresses the act of reading as follows: “Reading the world always precedes reading the word, and reading the word implies continually reading the world. As I suggested earlier, this movement from the word to the world is always present; even the spoken word flows from our reading of the world. In a way, however, we can go further and say that reading the word is not preceded merely by reading the world, but by a certain form of writing it or rewriting it, that is, of transforming it by means of conscious, practical work. For me, this dynamic movement is central to the literacy process” (Freire & Macedo, 1987, 23).

With the discontinuation of the conception that literacy is the process of reading a text and making sense out of it, new literacy types emerged. “Creation of knowledge, its presentation in various media, and technological revolution built on information technologies led to multiple and new literacy types in education systems. Multiple intelligence applications, desire for differentiation, interdisciplinary perspective, cultural structure, and ever-changing social needs not only increased the literacy types but also resulted in expectations of literacy proficiency” (Önal, 2010, 101).

Individuals of the 21st century have been encountering digital devices in every aspect of life. “Digital technologies have become unavoidable elements of political life, of everyday consumption, of social relations, and indeed of community and public pedagogy and learning. Simply childhood, ‘development’ and learning have changed in unprecedented ways that researchers and teachers are struggling to come to grips with” (Luke, 2012, 9). Due perception of the messages sent via digital devices is of great importance for the people of this century. Digital literacy can be defined as the ability to achieve goals or to retrieve information by using the device with a digital screen and to use the achieved goal and obtained information. The concept of digital literacy has come into prominence in the 1990s. “The concept of digital literacy as it is now was introduced by Paul Gilster (1997). In fact, Gilster was not the first person to use “digital literacy”. Gilster refers to digital literacy as the ability to retrieve and use information from various digital sources without being concerned about different competence lists mostly criticized for being restrictive (Koltay, 2011, 216).

Being digitally literate is important. “Socially powerful institutions, such as education, tend to support dominant literacy practices. These dominant practices can be seen as part of whole discourse formations, institutionalized configurations of power and knowledge which are embodied in social relationships” (Barton and Hamilton, 2003, 12). Efforts have been made in relation to digital literacy in Turkey with the introduction of the FATİH Project by the Ministry of National Education at schools. Today, education in various areas can be received in digital media with a less investment of time, effort, and money than in the past. “The digital revolution having originated from rapid

developments in information and communication technologies has resulted in very significant changes in daily communication and information transfer. Individuals and communities have enjoyed the opportunity to express themselves more democratically and to get quicker access to information in this new virtual environment” (Öymen Dikmen, 2011, 156).

People at any age and in any social class use the internet by signing in social networks or visiting websites. Every website accessed when online records what that user has looked at and for. This is performed via small files uploaded in the computer by the web server. In other words, record of digital readers is kept by the visited website or page. These records determine what that particular reader will see on the internet, from advertisements to the first shown content. As a result, digital reader is trapped in the world of what he/she has looked at and for before.

It is expected that teachers teaching language and other teachers teaching by using a language should be qualified enough in digital literacy to communicate with the children of the digital age. Skills required for digital literacy are as follows:

- internet search
- hypertext navigation,
- information collection,
- content evaluation (Koltay, 2011).

“As educators, we need to be thinking about how to teach both Legacy and Future content in the language of the Digital Natives” (Prensky, 2001, 5). Teachers are responsible to transmitting past experiences and new pieces of information/knowledge to their students. “The primary way of acquiring information about the world we live in is the experiences in the broadest sense” (Adalı, 2004, 176). Fulfilling this responsibility, in other words, the transfer of experiences is directly and closely related to being a competent digital literate. Digital literacy will enable us to be successful in educational issues by spending less time and making less effort. Digital literacy is also effective in answering a number of questions for diagnosis and treatment of the diseases in medicine. Digital literates use social networks more efficiently to socialize and to be able to join a group and express themselves. Moreover, knowing what is going on in the world and following cultural and artistic events are among the benefits of digital literacy.

While a digitally literate individual gain a number of advantages, many dangers await individuals incompetent in digital literacy. Digital illiterates may suffer from various mishaps ranging from personal data breach, online theft and fraud, misleading in educational and health-related issues and from their devastating consequences.

Digital literacy of prospective teachers trained in the field of education will help them become proficient teachers capable of exploiting information and communication technologies efficiently and effectively. Digital devices facilitate finding, transferring, using and storing information, the skills teachers are expected to develop. A teacher aware of all of these will practice his/her profession more efficiently. The concept of literacy incorporates the competency in reading and writing. Digital literacy should be understood as the ability to read and understand the digital texts and to create digital texts. Digital literacy should not be considered as solely reading and interpreting texts and visuals on a computer screen. Understanding the signs on a refrigerator, visuals on an oven, and directives on a toy refers to digital literacy. Digital authoring is sharing texts or visuals created with digital tools with whoever requests communication in a well-planned and functional way. All individuals in a society need these competencies and digital literacy stands out as the prominent literacy type for these reasons.

Baştuğ and Keskin (2017) carried out a study where students were asked to transfer textual contents from papers to digital media to investigate their writing attitudes in digital media. The research by Öcal (2017) titled *Primary school teachers and parents' perceptions of competency about Themselves and the Children* demonstrated that teachers and parents considered themselves highly competent in digital literacy ,while children moderately competent. In a similar study, Acar (2015) revealed the views of parents about the digital literacy of their own and their children at varying teaching levels.

Purpose of the study

The purpose of this study is to determine the perceptions of students of Turkish Language Teaching and Computer Technologies Teaching about digital literacy and investigate whether there is a difference between the students' perceptions of digital literacy. To this end, the present paper seeks answers to the following questions:

1. What are the perceptions of the students of Turkish Language Teaching and Computer Technologies Teaching Turkish Language Teaching and Computer Technologies Teaching about digital literacy?
2. Is there a difference between the perceptions of the students of Turkish Language Teaching and Computer Technologies Teaching about digital literacy?
3. At what level are the skills of the students of Turkish Language Teaching and Computer Technologies Teaching in technical issues concerning digital literacy?
4. Is there a difference between the skills of the students of Turkish Language Teaching and Computer Technologies Teaching in technical issues related to digital literacy?
5. How are the cognitive perceptions of the students of Turkish Language Teaching and Computer Technologies Teaching about digital literacy?
6. Is there a difference between the cognitive perceptions of the students of Turkish Language Teaching and Computer Technologies Teaching related to digital literacy?
7. At what level are the social skills of students of Turkish Language Teaching and Computer Technologies Teaching related to digital literacy?
8. Is there a difference between social skills related to digital literacy of students of Turkish Language Teaching and Computer Technologies Teaching?
9. Is there a gender-related difference between perceptions of students of Turkish Language Teaching and Computer Technologies Teaching about digital literacy?
10. Is there a class standing-related difference between the attitudes of the students of Turkish Language Teaching and Computer Technologies Teaching towards digital literacy?

Method

This survey was carried out to evaluate the digital literacy levels of the students of Turkish Language Teaching and Computer Technologies Teaching and to investigate whether there is a difference between the digital literacy levels of these students. This method was chosen to quantitatively assess the differences and similarities between variables. "General survey models are surveys conducted on an entire population or a sample out of the population to pass general judgments about the population" (Karasar, 2013, 79). This paper aims to reveal the digital literacy levels of the

students of Turkish Language Teaching and Computer Technologies Teaching in terms of class standing, gender, and departments and to this end a quantitative research approach was adopted. Creswell (2002,26) expresses the quantitative research as “describing a research problem through a description of trends or a need for an explanation of the relationship among variables; providing a major role for the literature through suggesting the research questions to be asked and justifying the research problem and creating a need for the direction (purpose statement and research questions or hypotheses) of the study; creating purpose statements, research questions, and hypotheses that are specific, narrow, measurable, and observable; collecting numeric data from a large number of people using instruments with preset questions and responses; analyzing trends, comparing groups, or relating variables using statistical analysis, and interpreting results by comparing them with prior predictions and past research; and writing the research report using standard, fixed structures and evaluation criteria, and taking an objective, unbiased approach”. This paper attempts to describe the present situation of the students and to demonstrate the similarities and differences between two groups.

Population and sample

The population of the study comprises students of college of education at a university in Turkey. The sample consists of first- (87 students), second- (58 students), third- (108 students), and fourth-year students (64 students) of the Department of Turkish Language Education and of the Department of Computer and Teaching Technologies (317 students in total) and was produced by simple random sampling. The reason for selecting the students of these two departments is that the research subject is digital literacy. The researcher attempts to determine the population by creating ad hoc criteria. The best way to determine a population is to produce criteria for the purpose of the study and to include individuals conforming to these criteria in the population (Karasar, 2005, 110).

Data collection tool

Digital Literacy Scale, developed by Ng in 2012 and adapted to the Turkish academia by Hamtuoglu et al. (2017) was used in the study. There are four factors in the scale, i.e. attitudinal, technical, cognitive, and social factors. This scale of 17 items contains no reversely scored item. A 5-Point Likert with levels ranging from rating “I strongly agree (5)” to “I strongly disagree (1)” was employed for the purpose of the study.

Data collection

Previous studies related to the research subject were reviewed for the theoretical framework. The data were collected with the Digital Literacy Scale, developed by Ng in 2012 and adapted to Turkish academia in 2017. The data were collected from prospective Turkish Language teachers expected to be competent in literacy and prospective Computer Technologies teachers expected to be competent in digital subjects.

Analysis of data

SPSS17.0, a statistical software program, was used to analyze the data. The analyses were intended to investigate whether there were differences between digital literacy levels of students of Turkish Language Teaching and Computer Technologies Teaching by department, gender, and class standing. Kolmogorov-Smirnov test of normality was employed to find out whether the data are normally distributed. Since the data were found out to exhibit non-normal distribution ($p < .05$), the non-parametric Mann-Whitney U and Kruskal Wallis H test were used.

Findings and Interpretation

Table 1. Analysis of digital literacy levels of the participants (mean and standard deviation)

	Attitudinal	Technical	Cognitive	Social	Total
\bar{X}	3.85	3.87	3.92	3.65	3.84
s	.74	.74	.83	.93	.69

The views of the students of Turkish Language and Computer Technologies teaching about digital literacy by dimensions are presented in Table 1. It can be observed that the students of Turkish Language Teaching and Computer Technologies Teaching strongly agreed with the statements of cognitive domain ($\bar{X} = 3.92$), and still agreed with the ones of the social domain but at the lowest level ($\bar{X} = 3.65$). It is understood that prospective teachers consider themselves more proficient in terms of the cognitive domain but less in the social one. The attitudes of the students of Turkish Language Teaching and Computer Technologies Teaching towards the digital literacy are “good”.

Table 2. Analysis of the Differentiation of the Attitudes of the Participants towards Digital Literacy by Department - The Results of Mann-Whitney U Test

		N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Attitudinal	Comp.T.	106	185.23	19634.50	8296.50	-3.71	0.000*
	Turkish T.	210	145.01	30451.50			
	Total	316					
Technical	Comp.T.	106	170.69	18093.50	9837.50	-1.69	0.091
	Turkish T.	210	152.35	31992.50			
	Total	316					
Cognitive	Comp.T.	106	170.11	18031.50	9899.50	-1.64	0.100
	Turkish T.	210	152.64	32054.50			
	Total	316					
Social	Comp.T.	106	178.09	18878.00	9053.00	-2.75	0.006*
	Turkish T.	210	148.61	31208.00			
	Total	316					
Total	Comp.T.	106	182.81	19378.00	8553.00	-3.36	0.001*
	Turkish T.	210	146.23	30708.00			
	Total	316					

* $p < .05$

In Table 2, a statistically significant difference is observable in the digital literacy levels of the students of Turkish Language Teaching and Computer Technologies Teaching in consideration of the attitudinal domain ($U=8296.50$; $p<.05$). The scores of the students of computer technologies teaching are higher than those of the students of Turkish Language teaching. The attitudes of the students of computer department are significantly higher than those of the students of Turkish Language teaching. It may be related to the fact that the students of computer technologies department come across digital literacy media more frequently and even it is a prerequisite to their future professions.

There is no significant difference related to technical subdimension between the students of computer technologies teaching and Turkish language teaching ($U=9837.50$; $p>.05$). It was expected that the students of computer technologies teaching would be more positive about the technical subdimension. However, it can be suggested that they have no statistically significant difference in technical domain with the students of Turkish Language teaching due to the proliferation of the media requiring digital literacy.

There is no significant difference related to the cognitive subdimension between the students of computer technologies teaching and Turkish language teaching ($U=9899.50$; $p>05$). It can be realized that the students of both departments believe that both they and instructors should benefit more frequently from digital media for cognitive subjects. This finding is related to the fact that the students are aware that digital media are integral to daily life.

In the social subdimension, A statistically significant difference is observable in digital literacy levels of the participants in favor of the students of computer technologies teaching ($U=9053.00$; $p<.05$). The fact that the students of computer technologies consider themselves more competent in the social subdimension of digital literacy may be related to the fact that they are knowledgeable about the subject, which may have resulted from the opportunity offered to them to learn about digital subjects in a formal education setting.

It is clear that there is a statistically significant difference between the total scores of the students of Turkish language and computer technologies in the attitudinal domain of digital literacy in favor of the students of computer teaching ($U=8553.00$; $p<.05$). The significant difference in favor of the students of computer technologies is expected. Literacy is a skill that every individual in a society should have and digital literacy is a type of literacy that individuals should be qualified in since digital media has become an integral part of our daily life. However, this difference might have caused by the fact that the students of computer technologies have the opportunity to receive the related formal education and the students of other teaching departments need to develop competence in such literacy through their efforts and opportunities they can find.

Table 3. Analysis of the Differentiation of Digital Literacy Levels of the Participants by Gender- The Results of Mann-Whitney U Test

		N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
<i>Attitudinal</i>	Female	179	157.59	28208.00	12098.00	-0.31	0.754
	Male	138	160.83	22195.00			
	Total	317					
<i>Technical</i>	Female	179	155.92	27909.50	11799.50	-0.68	0.494
	Male	138	163.00	22493.50			
	Total	317					
<i>Cognitive</i>	Female	179	161.44	28897.50	11914.50	-0.55	0.581
	Male	138	155.84	21505.50			
	Total	317					
<i>Social</i>	Female	179	145.99	26131.50	10021.50	-2.92	0.003*
	Male	138	175.88	24271.50			
	Total	317					
<i>Total score</i>	Female	179	154.47	27651.00	11541.00	-1.00	0.316
	Male	138	164.87	22752.00			
	Total	317					

* $p<.05$

Table 3 shows that there is no by-gender significant difference in the digital literacy levels of the students of computer technologies teaching and Turkish language teaching in terms of total scores ($U=11541.00$; $p>05$) and attitudinal ($U=12098.00$; $p>05$), technical ($U=11799.50$; $p>05$), cognitive ($U=11914.50$; $p>05$), and social domain ($U=10021.50$; $p>05$). The fact that there is no gender-based difference between the scores of the students of both departments in relation to their attitudes towards digital literacy can be associated with the fact that the individuals of both gender engage in environments requiring digital literacy and are aware that digital literacy is an integral part of daily life.

Table 4. Analysis of the Differentiation of Digital Literacy Levels of the Participants by Class Standing–The Results of Kruskal-Wallis H Test (a.b)

		n	Line Mean	Chi-Square	df	Asymp. Sig.
Attitude	Year 1	87	139.88	22.93	3	.000*
	Year 2	58	122.75			
	Year 3	108	179.09			
	Year 4	64	183.94			
	Total	317				
Technique	Year 1	87	134.32	11.23	3	.011*
	Year 2	58	155.34			
	Year 3	108	177.79			
	Year 4	64	164.16			
	Total	317				
Cognitive	Year 1	87	133.83	17.25	3	.001*
	Year 2	58	140.51			
	Year 3	108	180.12			
	Year 4	64	174.33			
	Total	317				
Social	Year 1	87	133.31	19.77	3	.000*
	Year 2	58	137.15			
	Year 3	108	183.48			
	Year 4	64	172.41			
	Total	317				
Total score	Year 1	87	131.32	26.68	3	.000*
	Year 2	58	131.19			
	Year 3	108	184.71			
	Year 4	64	178.45			
	Total	317				

* $p < .05$

a Kruskal Wallis Test

b Grouping Variable: year

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 In Table 4, a significant difference in total scores ($\chi^2=22.68$; $p < .05$) between the digital literacy levels of the students of Turkish Language and computer technologies teaching by class standing is presented. The differences were observed in attitudinal ($\chi^2=22.93$; $p < .05$), technical ($\chi^2=11.23$; $p < .05$), cognitive ($\chi^2=17.25$; $p < .05$), and social ($\chi^2=19.77$; $p < .05$). The scores of the students starting to receive undergraduate education may vary in the next stages of their undergraduate education depending on their education and experiences. This change can be observed in all different aspects of an individual, i.e. physical, mental, spiritual, and emotional aspects. This change occurring in time can also be observed in the attitudes of the students towards digital literacy. It can be claimed that undergraduate education contributes to students of both teaching departments in terms of digital literacy.

Conclusion and Discussion

1. The good level of the attitudes of Turkish language and computer technologies teaching is the outcome of the proliferation of information and ubiquity of information in the 21st century. Although there is a difference in the digital literacy levels in favor of the students of computer technologies, the fact that both groups replied this item as “I agree” is an indicator of the interest in and need for digital literacy as a skill of individuals in the digital age.

In the study by Üstundağ, Güneş, and Bahçivan (2017), the qualities of science teaching students were investigated in view of the skills associated with digital literacy and it was found out that the skills of digital literacy of the science teaching students were good. The present study and a study on the students of science teaching yielded similar results. It makes us think that the attitudes of undergraduate students of the college of education towards digital literacy are positive. Since the students from the college of education will pursue their professional life in education, it is important that they exhibit a positive attitude towards digital literacy.

2. The high-level skills of the students of Turkish language and computer technologies teaching in technical issues related to digital literacy is favorable for the achievement of a high level of proficiency in digital literacy proficiency. “Functional Internet literacy is not the ability to use a set of technical tools; rather, it is the ability to use a set of cognitive tools” (Johnson, 2008, 42). The fact that students consider themselves proficient enough in the technical aspect of digital literacy suggests that they consider themselves cognitively competent. Although there is no significant difference between the skills of the students of Turkish language and computer technologies teaching in the technical subjects related to digital literacy, actually a difference was expected. Students are granted the right to study in their respective departments based on different score types of the examinations they sit for and therefore the students of computer technologies teaching were expected to feel proficient in technical issues.

3. The high level of cognitive perception related to the digital literacy of the students of Turkish language teaching and computer technologies teaching and no difference between the cognitive perceptions concerning the digital literacy of the students of Turkish language teaching and computer technologies teaching show that the students of both departments have internalized the use of digital sources. “Dissemination of the digitalization in education as education technologies has occurred with the proliferation of educational technologies. For this reason, all stakeholders of the education world should be digitally literate” (Sönmez and Gül, 2014). It can be realized that the students of both departments are aware of the significance of digital literacy and that the use of digital tools and materials in education activities will prove beneficial.

4. The high level of digital literacy-related social skills of the students of Turkish language teaching and computer technologies teaching and the observed difference in favor of the students of computer technologies teaching demonstrate that digital information affects the proficiency in this issue. The students of computer technologies teaching know how to benefit from digital media socially, to avoid losses, and to use these media more efficiently. The reason is the education they receive and their interests motivating them to pursue this education. For this reason, their considering themselves more proficient than the students of Turkish language teaching is an expected result.

5. Gender caused no difference in the attitudes towards the digital literacy of the students of Turkish language teaching and computer technologies teaching. In a study on digital literacy carried out on prospective teachers in Turkey and Kazakhstan (Ozerbas & Kuralbayeva, 2015), a significant by-gender difference was found in favor of male students. It does not overlap with the data herein. In the study where the result obtained in favor of male prospective teachers was interpreted to suggest that male prospective teachers were better at the use of technology. However, the scale used in the aforementioned study is “Digital Literacy Evaluation Scale”, developed by Acar and Simsek (2015), and different from the scale in this study.

6. Higher class standing translated into more positive attitudes towards digital literacy exhibited by the students of Turkish Language Teaching and Computer Technologies Teaching. When “literacy” and “digital” are tackled separately, it is an expected result that the students of Turkish language teaching are more competent in any kinds of literacy as the class standing gets higher. Similarly, the students of computer and technologies teaching are expected to be more competent in digital subjects and digital media as the class standing gets higher. For this reason, an increase in the level of positive attitudes towards digital literacy with higher class standings is an expected and desired result.

Suggestions

1. The students of computer technologies teaching consider themselves more competent in digital literacy than the students of Turkish language teaching, which may have resulted from the education they have received. Hence, elective courses can be offered in undergraduate programs especially for the students of the Turkish language teaching department and of all other teaching departments.

2. Digital literacy is an integral part of daily life and therefore introducing informative and conscious-raising classes or activities related to digital literacy in all education levels starting from elementary school will prove useful.

3. The number of studies on digital literacy is quite limited. Conducting research on this subject will be fruitful for societies to become more informed and to raise an awareness of this issue.

4. Institutions such as İSMEK, Microsoft, and Bilgi University offer courses and hold activities related to digital literacy. Rendering such courses and events accessible for all age groups and social classes is believed to be beneficial.

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