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A Multivariate Analysis of Pre-Service Teachers' Critical Internet Literacy

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Abstract

This study aims to reveal the critical Internet literacy levels of preservice teachers in terms of multiple variables, by employing the correlational survey design. The sample of the study is formed by 216 preservice teachers of Turkish language studying at a state university located in western Turkey. The Critical Internet Literacy Scale developed by Dal & Aktay (2015) was used as the data collection tool. The data obtained in the study were subjected to explanatory factor analysis, descriptive statistical analysis, t-test, ANOVA, and correlation analysis. It was found that the teacher candidates pay attention to online content reliability and websites' being supported by proven data. The reliability of the online content emerges as the most important issue for preservice teachers. Their critical Internet literacy correlates with the location they spend their lives, their maternal educational background and maternal professional status, grade point averages, year of study, and the number of books they have read.

Keywords: Internet, Critical Literacy, Preservice Teacher, Web Sites, Internet Reliability

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Introduction

The understanding that knowledge acquisition is central to education has evolved within the course of the history of education, and has been supplanted by an understanding which views knowledge as something to be used, produced, and interpreted. This understanding necessitates educating individuals who are able to process, analyze, examine and interpret information with an awareness of the thinking, learning and reasoning processes, and the contemporary educational approaches aim to equip individuals with these skills (Çevik & Güneş, 2017; Güven, 2019). The constructivist approach, which highlights cognitive processes rather than knowledge acquisition, can be characterized as a philosophy that discusses the concepts of knowledge and learning critically (He, 1997; Gordon, 2008; Oral, 2009; Tural, 2011; Felder, 2012; Li, 2016).

The effective use of the Internet in the modern world, where the concept of information and the understanding of education has changed, has led to the globalization of information acquisition and communication. (Yılmaz & Horzum 2005). Learning outcomes can be achieved through the Internet (Kitchenham, 2006; Tucker & Bari 2010; Keane & Blicblau, 2012; Webb 2014). With the incorporation of the Internet and other technological tools in the modern curriculum, a major shift has also been observed in the key content related to knowledge acquisition covered by various pedagogical approaches. For example, Avcı (2020) labeled this type of curricular processes under the heading of "instruction in digital environment" and classified them as "formal instruction in digital environment" and "informal instruction in digital environment". As is evident from these new definitions, education and training processes have evolved from being confined to closed spaces into self-updating online environments. However, the fact that the information available online can be produced, edited and changed by anyone raises some ethical questions about the reliability, origin, and accuracy of the information on the internet (Evers, 2010). Considering that the modern educational approaches aim to educate generations who question, analyze, examine, interpret and produce knowledge, it is clear that the literacy has a critical role in all types of education.

Developments in the understanding of information and education have obviously shaped the concept of literacy, and new instructional approaches have been developed in line with the unique conditions and characteristics of specific historical periods (Lankshear, 1999), which has produced various types of literacy such as information literacy, digital literacy, critical literacy, media literacy, and IT literacy (Altun, 2005; Eryaman, 2007).

Developments in science and technology have played a crucial role in the increasing diversification of individual cognitive needs, which have also shaped the skills expected from individuals. Turkish Language Curriculum (MoNE, 2019) places a great emphasis on literacy as part of such skills, and aims individuals to use ICT effectively, and to develop their critical thinking and questioning skills.

Critical literacy involves studying the source, reliability and structure of a text (Lewison, Flint, & Sluys, 2002; Dal, 2012; Dooley, 2015; Exley & Dooley, 2015). The individual questions the purpose and impartiality of the text s/he is reading, and examines personal values and attitudes related to the text. Critical Internet literacy is associated with the concepts of digital literacy, media literacy, information literacy, science literacy, and Information Communication because it covers common targeted aims and skills. With the Internet, the concept of critical literacy has become inclusive of Global Information Communication.

The aim of science literacy is to educate individuals who perform research and inquiry, with an awareness of the scientific methods of attaining scientific knowledge (Gauchat, 2015; Öz, 2015). Information literacy is the ability of the individual to use internet and digital technologies in a well-informed way (Degerli, 2013). Digital literacy can be defined as a solution-oriented approach to problems in the online environment, and the ability to question the reliability, source and structure of texts (Ilomäki, Paavola, Lakkala & Kantosalo 2016; Traxler & Lally, 2016; Chan, Churchill, & Chiu, 2017; Hamutoğlu Güngören, Uyanık ve Erdoğan, 2017; Mishra, Wilder, & Mishra 2017). Media literacy aims to enable individuals to accurately interpret texts in various media environments, to use the media in a well-informed way, to question them critically, and to have media awareness (Kurt & Kürüm, 2010). As such, a media-literate individual questions the reliability and source of texts and information in the media and is acutely aware that media texts are structured, directed and produced through individuals. It is observed that the types of literacy in question focus on issues such as the reliability and source of texts and are associated with critical literacy.

The curricular outcomes detailed by the specific objectives of the Turkish Language Curriculum (MoNE, 2019) can be said to be closely related to the critical Internet literacy: “to develop the skills of researching, discovering, interpreting and structuring knowledge in the mind; to develop the skills of accessing, editing, questioning, using and producing information from printed materials and multiple media sources; to evaluate and question reading from a critical point of view.” Therefore, the concept of critical Internet literacy is highly important for preservice Turkish language teachers.

Method

Research Design

The correlational survey design, as a quantitative research design, was used in this study. The correlational survey aims to determine the existence of co-variation between two and more variables and attempts to determine whether the variables change together, and if there is change, how this happens (Karasar, 2014). The current study employed this design to find out the relationship between the critical Internet literacy levels of teacher candidates and the variables.

Sample of Group

The sample group of the study consists of 216 Turkish language teachers studying at a state university located in western Turkey. The descriptive statistical analyses of the sample group are given below.

Table 1. Participants' Gender Distribution

Gender	f	%
Female	136	63.0
Male	80	37.0

Table 1 shows that 63% of the teachers who participated in the study were female and 37% were male.

Table 2. Participants' Age Distribution

Age	f	%
18-19	79	36.6
20-21	100	46.3
22-23	27	12.5
24+	10	4.6

Table 2 shows that 36.6% of the participants were in the 18-19 age range, 46.3% were in the 20-21 age range, 12.5% were in the 22-23 age range, and 4.6% were in the 24+ age range.

Table 3. Type of Residential Setting the Participants Have Lived in

Location	f	%
Village	28	13.0
Town	39	18.1
City	83	38.4
Metropolitan City	66	30.6

Table 3 shows that 13% of the participants have spent most of their lives in a village, 18.1% in a town, 38.4% in a city, and 30.6% in a metropolitan city.

Table 4. Participants' GPA

GPA	f	%
0-1.99	15	6.9
2.00-2.49	53	24.5
2.50-2.99	100	46.3
3.00-4.00	48	22.2

Table 4 shows that 6.9% of the participants had a GPA of 0-1.99, 24.5% had a GPA of 2.00 to 2.99, 46.3% had a GPA of 2.50 to 2.99, and 22.2% had a GPA of 3.00 to 4.00.

Table 5. Participants' Year of Undergraduate Study

Year of Study	f	%
1st Year (Freshman)	73	33.8
2nd Year (Sophomore)	53	24.5
3rd Year (Junior)	75	34.7
4th Year (Senior)	15	6.9

As shown in the table above, 33.8% of the participants were university freshmen, 24.5% sophomores, 34.7% of them juniors, and 6.9% were in their senior year.

Table 6. The Annual Number of Books Read by the Participants

Number of Books	f	%
1-5	37	17.1
5-10	76	35.2
10-15	54	25.0
16+	49	22.7

As can be seen above, 17% of the participants read 1 to 5 books, 35.2% read 5 to 10 books, 25% read 10-15 books, and %22.7 read 16 or more books a year.

Table 7. Time Spent Online by the Participants

Online Time	f	%
0-1 hrs.	10	4.6
1-2 hrs.	36	16.7
2-3 hrs.	60	27.8
3-4 hrs.	46	21.3
4+ hrs.	64	29.6

Table 12 shows that 4.6% of the participants spend between 0 and 1 hour online, 16.7% spend 1 to 2 hours, 27.8% spend 2 to 3 hours, 21.3% spend 3 to 4 hours, and 29.6% spend more than 4 hours.

Data Collection Tool

As the data collection tool, the Critical Internet Literacy Scale developed by Dal and Aktay (2015) was used in the study. Kaiser-Meyer-Olkin (KMO=.95) and Bartlett test (x2=6290.249; sd=528 (p=.000) showed that the scale is consistent with the validity of the structure. The scale consists of 27 items and a single factor. The required permissions were obtained from the developers of the scale to use it with the pre-service teachers participating in the study. After obtaining the necessary permissions, the researchers performed an exploratory factor analysis on the scale. The Kaiser-Meyer-Olkin (KMO=.93) and Bartlett test (x^2=3176,491; sd=351 (p=.000) analyses conducted on the scale revealed that the scale's structure validity is satisfactory and that it has a five-factor structure. According to the data obtained from the scale, the factors were named as: reliability of the internet content, internet contents, Internet target audience, accuracy and source of the internet content, social transformation in social networks. The scale explains 61.77% of the total variance.

Data Analysis

To determine the reliability of the scores obtained from the Critical Internet Literacy Scale, Cronbach Alpha internal consistency calculations were made. The 27-item Cronbach Alpha value of the scale was calculated to be 0.94. A Cronbach Alpha value above 0.80 indicates that the scale is reliable ($p<0.05$). To determine whether the research data show normal distribution, the skewness and kurtosis values were calculated. The related literature states that the values of skewness and kurtosis should vary between -2 and +2 in order for the data to show normal distribution (Şencan, 2005). The data obtained from the scale used in the study confirm that the scale meets the normality requirement.

Table 8. Skewness and Kurtosis Values of the Scale

Dimensions	Skewness	Kurtosis
Reliability of the Internet Content	-.680	.835
Accuracy and Source of the Internet Content	-.554	.494
Internet Contents	-.510	.149
Internet Target Audience	-.706	.955
Social Transformation in Social Networks	.005	-.317

As can be seen from the table, the data of the study show normal distribution. Parametric tests were applied for the analyses since the data were normally distributed. Exploratory factor analysis, descriptive statistical analysis, t-test, ANOVA and correlation analysis were performed on the data obtained in the study. Correlation analysis is the analysis technique used to measure the direction and strength of a relationship between two variables. Correlation coefficient is shown as "r" in the correlation analysis. In this analysis, the correlation can range between (-1) and (+1). There is a low level of "r" correlation value between the variables with values ranging between 0.00-0.29, moderate level between 0.30-0.69, and a high level of correlation between 0.70 and above (Ural and Kılıc, 2006).

Results

Table 9. Descriptive Statistical Analysis of the Reliability of the Internet Content Dimension

Dimension	Items	$\bar{X}$	ss	Mean
Reliability of the Internet Content	I try to distinguish between the facts and personal opinions on the websites I visit.	3.99	.84	3.89
	When I read some content on a website, I associate it with the information I have previously obtained on that subject.	3.97	.86	
	I try to distinguish between the assumptions and the proven information in the content on websites.	3.93	.86	
	I pay attention to the creator of the web content I access.	3.65	1.09	

As can be seen in Table 9, the pre-service teachers participating in the study try to distinguish verifiable facts and personal information on the websites they visit, they associate the web information with the information they have obtained before, they try to distinguish between the assumptions and the online information, and pay attention to who created the content they accessed. It is seen that pre-

service teachers firstly check whether the data on the website are subjective or objective. However, the participants pay relatively less attention to the identity of the content creators, compared to the other items in this dimension.

Table 10. Descriptive Statistical Analysis of the Accuracy and Source of the Internet Content Dimension

Dimension	Items	$\bar{X}$	ss	Mean
Accuracy and Source of the Internet Content	I pay attention to whether the opinions on the websites contradict my own opinions.	4.01	.98	3.84
	I pay attention to whether the information on the websites is up to date.	4.00	.93	
	I pay attention to the language style used by the author on the website.	3.93	.93	
	I pay attention to whether there are contradictory statements in the website content.	3.90	.88	
	I pay attention to whether the website content contains bias.	3.89	.93	
	I pay attention to whether there are gaps in the subject that is intended to be explained in the content of the websites.	3.76	.91	
	I check the accuracy of the information shared on social networks with information from different sources.	3.73	1.03	
	I pay attention to whether the author gives information from an emotional perspective.	3.70	.91	
	I pay attention to whether the original sources are cited in the content created on the website.	3.60	1.03	

As can be seen in Table 10, preservice teachers pay attention to the currency of the information on the internet, the form of the language used by the author, whether there are contradictory statements, whether there is bias, whether the presented information is correct, whether the author gives information from an emotional point of view, and whether citations are given from the original sources, respectively.

Table 11. Descriptive Statistical Analysis of the Internet Contents Dimension

Dimension	Items	$\bar{X}$	ss	Mean
Internet Contents	I try to understand whether discrimination is made on the websites regarding issues such as gender, race, class, ethnicity, religion and sect.	3.85	.99	3.63
	I check whether the pages opened by hyperlinks on the websites are related to the content.	3.71	1.05	
	I try to see which segment or segments of society are represented in the website content.	3.69	.93	
	I pay attention to the context (sociocultural, historical, economic and political) in which the content on the websites are created.	3.69	.98	
	I pay attention to which person or institution websites belong to.	3.63	1.10	
	I pay attention to whether the multimedia on the websites are compatible with their content.	3.62	1.04	
	After accessing some content on a website, I try to find out if the same content is presented from another perspective in different sources.	3.60	1.05	
	I examine the designs of the websites in terms of whether they give a message other than content.	3.53	1.04	
	I pay attention to whether the content on the website makes me a passive reader.	3.32	1.04	

Table 11 clearly shows that the preservice teachers in the study firstly try to understand whether there is discrimination in internet content; and check whether the hyperlinks are related to the content; which social segment or segments the web content represents, in what context (sociocultural, historical, economic and political) it was created; which person or institution it belongs to, whether the multimedia is appropriate with the content of the webpage, whether the same content is presented from a different perspective in different sources; whether the designs give a message not related to the content, and whether the web content puts them in a passive reader position.

Table 12. Descriptive Statistical Analysis of the Internet Target Audience Dimension

Dimension	Items	$\bar{X}$	ss	Mean
Internet Target Audience	While playing games on the Internet, I pay attention to whether the game has an ulterior motive like propaganda.	3.55	1.16	3.59
	I pay attention to whom the content on the website appeals to.	3.69	1.00	
	As I review website contents, I develop alternative perspectives on them.	3.52	1.02	

As can be seen in Table 12, the preservice teachers in the study report that they try to determine whether the game has an implicit purpose such as propaganda while playing games on the internet and whose interests the web content would match.

Table 13. Descriptive Statistical Analysis of the Social Transformation in Social Networks Dimension

Dimension	Items	$\bar{X}$	ss	Mean
Social Transformation in Social Networks	I pay attention to whether the content in social networks is created to transform the society.	3.57	1.04	3.33
	I share the content in social networks to transform the society.	3.09	1.13	

The preservice teachers in the study state that they consider whether the content in social networks is created to transform the society, and that they share the content in social networks in order to ensure the transformation in the society.

Table 14. Descriptive Statistical Analysis of All the Dimensions

Dimensions	F	%
Reliability of the Internet Content	3.89	.72
Accuracy and Source of the Internet Content	3.84	.69
Internet Contents	3.63	.73
Internet Target Audience	3.59	.90
Social Transformation in Social Networks	3.33	.91

As displayed in Table 14, when the statements of the preservice teachers in the study are analyzed, the dimensions obtained from the items emerge as the reliability of the internet content, accuracy and source of the internet content, internet contents, internet target audience, and social

transformation in social networks. As seen in the table, the preservice teachers pay the strongest attention to the reliability of the content while they place the least importance on the social transformation dimension.

Table 15. T-test Results by Gender Related to the Dimensions in the Scale

Dimension	Gender	n	$\overline{X}$	ss	t	df	p
Reliability of the Internet Content	Female	136	3.86	.769	-.812	214	.418
	Male	80	3.94	.657			
Accuracy and Source of the Internet Content	Female	136	3.58	.773	1.240	214	.216
	Male	80	3.71	.666			
Internet Contents	Female	136	3.55	.921	-.714	214	.476
	Male	80	3.65	.880			
Internet Target Audience	Female	136	3.86	.717	.591	214	.555
	Male	80	3.80	.650			
Social Transformation in Social Networks	Female	136	3.27	.904	1.228	214	.221
	Male	80	3.43	.929			

When Table 15 is analyzed, it can be seen that there is no statistically significant correlation between the variable of gender and the dimensions of internet content reliability ($t_{(214)}$= -.812; p>.05), accuracy and source of internet content ($t_{(214)}$= 1.240; p>.05), internet contents ($t_{(214)}$= -.714; p>.05), internet target audience ($t_{(214)}$=0.591; p>.05), and the social transformation in social networks ($t_{(214)}$= 1.228; p>.05) comprised by the scale of Critical Internet Literacy. It can be said that the gender variable does not affect the participants' opinions of on critical internet literacy.

Table 16. T-test Results According to Gender Related to the Items in the Critical Internet Literacy Scale

Dimension	Gender	n	$\overline{X}$	ss	t	df	p
I try to see which segment or segments of society are represented in the website content.	Female	136	3.58	.954	-2.353	214	.020
	Male	80	3.88	.871			
I pay attention to the language style used by the author on the website.	Female	136	4.06	.887	2.731	214	.007
	Male	80	3.71	.970			

Table 16 shows a statistically significant correlation between the gender variable and the items *"I try to see which segment or segments of society are represented in the website content."* ($t_{(214)}$= -2.353; p<.05), "*I pay attention to the language style used by the author on the website* ($t_{(214)}$= 2.731; p<.05)" on the Critical Internet Literacy Scale. When the findings obtained are taken into consideration, it is evident that the male teacher candidates try harder than the female teacher candidates to see which parts of the society the content of the websites represent, whereas the female teacher candidates pay more attention to the language used by the author on the website.

Table 17. ANOVA Results for the Correlation between the Critical Internet Literacy Dimensions and the Type of Location where Preservice Teachers Have Spent Most of Their Lives

Variable	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
Reliability of the Internet Content	Inter-group	3.489	3	1.163	2.224	.086	
	Intra-group	110.830	212	.523			
	Total	114.318	215				
Internet Contents	Inter-group	2.588	3	.863	1.602	.190	
	Intra-group	114.198	212	.539			
	Total	116.786	215				
Internet Target Audience	Inter-group	8.031	3	2.677	3.371	.019	D-A, C-A
	Intra-group	168.339	212	.794			
	Total	176.370	215				
Accuracy and Source of the Internet Content	Inter-group	3.882	3	1.294	2.764	.043	C-A
	Intra-group	99.243	212	.468			
	Total	103.125	215				
Social Transformation in Social Networks	Inter-group	2.945	3	.982	1.177	.320	
	Intra-group	176.884	212	.834			
	Total	179.829	215				

A=Village, B=Town, C=City, D=Metropolitan city

As can be seen in Table 17, there is a statistically significant correlation between the dimensions of places where the pre-service teachers spent most of their lives and the internet target audience ($f = 3.371$; $p<.05$), and their scores on the accuracy and source of the internet ($F = 2.764$; $p <.05$). The Tukey multiple comparison test revealed that the dimension of *internet target audience* created this significance in the results. This test showed that the pre-service teachers who have spent most of their lives in a city or a metropolitan area pay attention to whether the game is a propaganda tool while playing games and try to figure out whose interests the content of the website addresses, and develop alternative perspectives on the content of the website. Regarding the accuracy and source of the Internet content dimension, compared to those who have spent most of their lives in a rural setting, those who have spent most of their lives in an urban setting check the language used by the web author, whether there are any gaps in the information on the subject that is intended to be explained, whether there are any contradictions in the content, whether the content contains bias, whether the content is presented from an emotional stance by the author, whether the content is cited from the original sources, and whether the information on the websites is updated. They also check whether the opinions on the websites are inconsistent with their own opinions and check the accuracy of the information shared on social networks with information from alternate sources.

Table 18. ANOVA Results for the Correlation between Preservice Teachers' Answers to the item "I pay attention to whom the content on the websites appeals to" and their Maternal Education Level

Item	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
I pay attention to whom the content on the websites appeals to.	Inter-group	11.310	5	2.262	2.323	.044	E-D
	Intra-group	204.523	210	.974			
	Total	215.833	215				

A= Illiterate, B= Literate, C= Primary school graduate D= Secondary school graduate, E= High school graduate F=University graduate

When Table 18 is examined, it becomes clear that there is a statistically significant correlation between the pre-service teachers' answers to the item "*I pay attention to whom the content on the websites appeals to."* and the educational status of their mothers. Based on the results of the Tukey multiple comparison test, it can be said that the preservice teachers whose mothers are high school graduates are able to identify who is interested in the website content when compared to those whose mothers are secondary school graduates.

Table 19. ANOVA Results for the Correlation between Preservice Teachers' Answers to the item "I pay attention to whether the website content contains bias" and their Maternal Professions

Item	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
I pay attention to whether the website content contains bias	Inter-group	11.599	5	2.320	2.753	.020	A-B
	Intra-group	176.952	210	.843			
	Total	188.551	215				

A= Worker, B= State Employee

Table 19 shows that there is a statistically significant correlation between the pre-service teachers' answers to the item "*I pay attention to whether the website content contains bias."* and the professions of their mothers. Based on the results of the Tukey multiple comparison test, it can be said that the preservice teachers whose mothers are blue collar workers pay more attention to whether website contents contain bias than those whose mothers work in the state sector.

Table 20. ANOVA Results for the Correlation between Preservice Teachers' GPAs and the Critical Internet Literacy items

Item	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
I check whether the multimedia on the websites are compatible with their content.	Inter-group	11.960	2	5.980	5.663	.004	C-A
	Intra-group	224.910	213	1.056			C-B
	Total	236.870	215				B-A
I check whether the pages opened by hyperlinks on the websites are related to the content.	Inter-group	9.186	2	4.593	4.272	.015	C-A
	Intra-group	229.018	213	1.075			
	Total	238.204	215				
I check the language style used by the author on the websites.	Inter-group	10.045	2	5.022	6.042	.003	C-A
	Intra-group	177.048	213	.831			C-B
	Total	187.093	215				B-A
I check the accuracy of the information shared on social	Inter-group	9.661	2	4.831	4.703	.010	C-A
	Intra-group	218.765	213	1.027			

networks with information from different sources.	Total	228.426	215

A= 2.00-2.49; B=2.50-2.99; C=3.00-4.00

As can be seen in Table 20, there is a statistically significant correlation between the answers given by the participants to the items "*I check whether the multimedia on the websites are compatible with the content of the page; I check whether the pages opened by hyperlinks on the websites are related to the content; I check the language style used by the author on the websites; I check the accuracy of the information shared on social networks with information from different sources."* and their grade point average. Based on the results of the Tukey multiple comparison test, the pre-service teachers who have a GPA between 3.00 and 4.00 pay more attention to whether the multimedia on the websites fit in with the content of the page and the language style used by the author than those with a GPA of 2.50 and 2.99 do; and the pre-service teachers who have a GPA between 2.50 and 2.99 pay stronger attention to these aspects than the pre-service teachers who have a GPA between 2.00 and 2.49. Furthermore, compared to the pre-service teachers with a GPA of 2.00-2.49, the pre-service teachers with a GPA of 3.00-4.00 pay more attention to whether the hyperlinked pages on the websites are related to the content, and they show a higher tendency to check the accuracy of the information shared on social networks with information from multiple sources.

Table 21. ANOVA Results for the Correlation between Preservice Teachers' Year of Study and the Critical Internet Literacy items

Item	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
When I read the content on a website, I associate it with the information I have previously obtained.	Inter-group	12.039	3	4.013	5.956	.001	D-B C-B A-B
	Intra-group	142.846	212	.674			
	Total	154.884	215				
I pay attention to whether the opinions on the websites contradict my own opinions.	Inter-group	8.142	3	2.714	2.894	.036	A-B
	Intra-group	198.816	212	.938			
	Total	206.958	215				
I share the content in social networks to transform the society.	Inter-group	11.554	3	3.851	3.100	.028	A-B
	Intra-group	263.404	212	1.242			
	Total	274.958	215				

A= 1st Year; B=2nd Year; C=3rd Year; D=4th Year

As can be seen in Table 21, there is a statistically significant correlation between the answers given by the participants to the items "*When I read the content on a website, I associate it with the information I have previously obtained; I pay attention to whether the opinions on the websites contradict my own opinions; I share the content in social networks to transform the society"* and their year of study. Based on the results of the Tukey multiple comparison test, first, third, and fourth year teacher candidates are more likely to relate the information they have previously obtained to the website content they are reading than the second year teacher candidates. Compared to the second year teacher candidates, the first year teacher candidates try harder to find out whether the opinions

expressed online contradict their own opinions, and are more likely to share social network contents to help achieve social transformation.

Table 22. ANOVA results for the Correlation between The Annual Number of Books Read by Preservice Teachers' and the Critical Internet Literacy İtems

Item	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
I pay attention to whether the website content makes me a passive reader.	Inter-group	15.130	3	5.043	4.856	.003	C-A
	Intra-group	220.185	212	1.039			D-B
	Total	235.315	215				D-A
I examine the designs of websites in terms of whether they give a message other than content.	Inter-group	14.274	3	4.758	4.595	.004	
	Intra-group	219.499	212	1.035			C-A
	Total	233.773	215				D-A
I try to see which segment or segments of society are represented in the website content.	Inter-group	11.881	3	3.960	4.772	.003	
	Intra-group	175.952	212	.830			C-A
	Total	187.833	215				D-A
I pay attention to whether the multimedia on the websites are compatible with their content.	Inter-group	17.025	3	5.675	5.473	.001	
	Intra-group	219.845	212	1.037			C-A
	Total	236.870	215				D-A
I check whether the pages opened by hyperlinks on the websites are related to the content.	Inter-group	15.887	3	5.296	5.050	.002	
	Intra-group	222.317	212	1.049			C-A
	Total	238.204	215				D-A
As I review website contents, I develop alternative perspectives on them.	Inter-group	9.751	3	3.250	3.219	.024	C-A
	Intra-group	214.082	212	1.010			D-A
	Total	223.833	215				
I pay attention to the context (sociocultural, historical, economic and political) in which the content on the websites are created.	Inter-group	14.057	3	4.686	5.074	.002	
	Intra-group	195.776	212	.923			C-A
	Total	209,833	215				D-A

A= 1-5; B=6-10; C=11-15; D=16 and above

As can be seen in Table 22, there is a statistically significant correlation between the answers given by the participants to the items "*I pay attention to whether the website content makes me a passive reader, I examine the designs of websites in terms of whether they give a message other than content, I try to see which segment or segments of society are represented in the website content, I pay attention to whether the multimedia on the websites are compatible with their content, I check whether the pages opened by hyperlinks on the websites are related to the content, As I review website contents, I develop alternative perspectives on them, I pay attention to the context (sociocultural, historical, economic and political) in which the content on the websites are created"* and the number of books they read per year. The results of the Tukey multiple comparison test revealed that compared to the pre-service teachers who read between 1 and 5 books a year, those who read 16 or more books and 11-15 books annually, pay more attention to whether website contents make them passive readers; they try harder to see which section of society is represented in the web content, in which context (sociocultural, historical, economic and political) the content is generated, examine the designs of the

websites in terms of whether they give a message other than content, pay more attention to whether the multimedia on the websites are compatible with the content of the page, pay more attention to whether the hyperlinks on the websites are related to the content, and while examining the content they develop alternative perspectives.

Table 23. ANOVA Results for the Correlation between Preservice Teachers' Time They Spend on the Internet and the Critical Internet Literacy items

Item	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
While playing games on the Internet, I pay attention to whether the game has an ulterior motive like propaganda.	Inter-group	14.971	4	3.743	2.837	.025	A-C A-D A-E
	Intra-group	278.362	211	1.319			
	Total	293.333	215				
I pay attention to whether the original sources are cited in the content created on the website.	Inter-group	12.042	4	3.010	2.894	.023	A-E
	Intra-group	219.509	211	1.040			
	Total	231.551	215				

A= 0-1 hours; B=2 hours; C=3 hours; D=4 hours, E=5+ hours

As shown in Table 23 above, there is a statistically significant correlation between the answers given by the participants to the items "*While playing games on the Internet, I pay attention to whether the game has an ulterior motive like propaganda; I pay attention to whether the original sources are cited in the content created on the website"* and the time they spend online. The Tukey multiple comparison test revealed that the teacher candidates who spend 0-1 hours on the internet pay more attention while playing an online game to whether the game has a propaganda-like purpose compared to the teacher candidates who spend 3, 4 and 5 hours on the Internet. The teacher candidates who spend 0-1 hours on the Internet pay more attention to whether the original sources are provided on the website than the teacher candidates spending more than 5 hours on the Internet.

Table 24. Correlations Among the Dimensions

	1	2	3	4	5
Reliability of the Internet Content	1				
Accuracy and Source of the Internet Content	.587**	1			
Internet Contents	.565**	.720**	1		
Internet Target Audience	.600**	.726**	.728**	1	
Social Transformation in Social Networks	.332**	.512**	.503**	.478**	1

** Significant at the p<0.01 significance level

1.Reliability of the Internet Content, 2.Accuracy and Source of the Internet Content, 3.Internet Contents, 4.Internet Target Audience, 5.Social Transformation in Social Networks

Table 24 shows that there is a positive, moderate and significant relationship between the internet content reliability dimension and the accuracy and source of the internet content, internet contents, and internet target audience dimensions. It can be said that there is a positive, low level and significant relationship between content reliability dimension and social transformation dimension. Further, a positive, high level and significant relationship is observed among the dimensions of accuracy and source of internet content, the internet contents, and the internet target audience.

Discussion and Conclusion

With the rapid growth of the number of images on the Internet, it has become more necessary to ensure the content security of images (Zhang, Liang, He & Sun, 2015; Xu, Xie & Yan, 2017). The preservice teachers in this study were found to attach great importance to internet content reliability and to strive to ensure that websites they visit are created with proven data. Çifçi & Kaplan (2020) emphasize that individuals facing many texts should approach these texts critically. The preservice teachers participating in the current study pay attention to the accuracy and source of the content on the internet, whether the presented information is consistent and up-to-date, and whether it is the same as reported by other sources. They check whether web content discriminates, in what context it is created, and how it is designed. The target audience on the internet is important for preservice teachers and they state that they use social networks to achieve social transformation. They are primarily concerned about the reliability of the internet content.

It can be said that the gender variable does not affect preservice teachers' opinions about critical internet literacy. Similar studies have not found a significant relationship between gender variable and critical internet literacy either (Akaydın & Kurnaz, 2015; Çepni, Palaz & Ablak, 2015; Yılmaz & Aladağ, 2015; Karasu & Arıkan, 2016; Çiftçi, 2019). Male pre-service teachers pay more attention to which sections of the society represented by the web content than female preservice teachers do. On the other hand, female preservice teachers pay more attention to the language used on websites than male preservice teachers. However, Uslu, Yazıcı & Çetin (2016) found this difference to be in favor of men. A significant gender difference was observed in favour of male-related perceptions of undergraduate students regarding digital literacy (Seok & DaCosta, 2017). Some other studies point out that gender does not matter (Teo, Fan & Du, 2015; Argelagós & Pifarré, 2017).

Preservice teachers spending most of their lives in the city and metropolitan areas pay attention to whether the game is a propaganda tool while playing online. Yeşiltaş (2017) cautions that with its increasing effect on the mass media, propaganda manifests itself in all spheres of life, and therefore, individuals need to be taught the ways of protecting themselves from such incessant propaganda. Çifçi & Kaplan (2020) urge that individuals should carefully check the implicit or explicit messages on the images in their environment.

Regarding the accuracy and source of the Internet content dimension, those living most of their lives in urban settings pay more attention to the intended purpose, content, and language of a given website than those living most of their lives in rural settings. The preservice teachers whose mothers are high school graduates can more successfully determine who the website contents appeal to than those whose mothers are secondary school graduates. The preservice teachers, whose mothers are working as blue collar workers, pay more attention to whether the content on their website contains bias than the preservice teachers, whose mothers are working as public employees. Another

correlation is observed between the pre-service teacher GPA, concern about whether the multimedia on the websites are appropriate with the content of the page, and a strong focus on the author's linguistic style. Depending on the preservice teachers' undergraduate year of study, they relate the new information to those they already have while reading contents on a website, and share this knowledge to ensure transformation in the society. It is further observed that there is a significant relationship between the number of books read by preservice teachers and their perspectives on website contents. Çolak, Yalçın & Korkmaz (2011) found that individuals were redirected to fake websites and fraud activities were on the rise. Research has found that individuals are not adequately informed about cybersecurity (Karaoğlan-Yılmaz, Yılmaz & Sezer, 2014; Akgün & Topal, 2015; Gökmen & Akgün, 2105). Pusey & Sadera (2011) found that pre-service teachers do not have the necessary competence in cybersecurity. Gökmen & Akgün (2016) also found that teacher candidates need information about internet security. The present study found a relationship among the place where preservice teachers have spent most of their lives, their maternal graduation and professional status, grade point averages, year of study, the number of books they read, and their critical internet literacy.

Along with the recent increase in the use of smart phones, the time devoted to internet usage has also increased (Çiftçi, 2018). It is observed that the rate of internet usage has increased in studies conducted abroad (Hamilton, Scali, Yu, Gusnowski & Ingledew, 2014; Xu, Hong, Li, & Liu, 2014). Compared to a preservice teacher who spends 3 hours or more on the Internet, a preservice teacher spending 0-1 hours on the Internet pays more attention to whether the online game s/he is playing serves a purpose (e.g. propaganda) other than gaming, and when reading online content, questions the reliability and verifiability of its sources.

The most interesting result reached in this study is undoubtedly the question regarding the ownership of the information produced on the Internet. In the early years of the Internet, the phrase "surfing the internet," instead of "reading on the internet" was used. Surfing on the Internet referred to the act of navigation through the web pages with an algorithm that the reader cannot solve, such as the necessity to move with the route offered by the sea by following the waves that are constantly rising and descending in the flow of a surfboard floating on the sea due to the flow rate of information. The curiosity towards the source of the information on the Internet seems to be inversely proportional to the time spent there. The more time you spend, the more insensitive you are about the reliability of web-based information.

Internet-based readers seem to be more interested in supporting their knowledge and staying current with the events. In a sense, the Internet appears as an environment providing a continuous flow of information to support the present, always hurrying up to supply the fresh information demanded. Contrary to expectations, social media is not seen as an environment to help achieve major transformations in the society, which indicates that social media is either perceived truly as an

entertainment medium or its mode of action does not allow short-term results. It can be said that the language of web-based information seems to have a stronger effect on the female participants. The male participants appear to be more concerned with which social segment the online information affects, rather than with its language.

The interest shown by the Turkish culture in anonymous information seems to have expanded on the Internet. Even though our reading style has changed in the last quarter century of reading on the Internet, the primary motivation behind our act of reading seems not to have changed much, at least as indicated by the findings of this study.

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