

Assessment of the Effect of Personal and Familial Characteristics on Students' Attitudes Towards Writing on Paper and Digital Writing

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Abstract – The aim of this study is to investigate whether the high school students' attitudes towards writing on paper and digital writing were affected by their personal characteristics and familial characteristics. Survey method was used to determine high school students' attitudes towards writing on paper and digital writing. The sample of the study was determined using convenience sampling. Accordingly, a total of 301 students studying at Kahramanmaraş Anatolian High School during the 2019-2020 academic year were included in the study. "Inventory of Attitudes Towards Writing on Paper and Digital Writing" was used to collect the research data. Mann-Whitney U, Kruskal Wallis and Wilcoxon Signed-Rank tests were used to analyse the data. Based on the findings of the research, it was concluded that high school students' attitudes towards writing on paper and digital writing did not differ according to their personal characteristics or familial characteristics, except for one independent variable, that is the father's educational attainment.

Keywords – writing skill, writing on paper, digital writing, writing attitude, high school students.

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Introduction

In the 21st century, conventional ways of obtaining information, learning and communication is changing due to the widespread use of the internet and developing technological tools [1]. In this context, the society of today is named with concepts such as information society, network society, and technology society [2]. The technological advancements transformed the world into a new world that has more than meets the eye. In parallel, people that are trying to adapt to this new environment are given various names based on their level of adaptation, such as digital generation, y generation, z generation, digital natives, digital immigrants, and digital hybrids [3]. There are important differences in terms of attitude, way of thinking and mindset between people who were born during the period when digitalization became widespread and who were born before then [4]. Accordingly, people who were born after 1980 are called digital natives [5]. In some sources, children born in this period are called "digikids" as their lives are surrounded by sound, music, images, or by texts that contain all [6].

Today's youth is faced with numerous digital tools, but the fact that they learned reading and writing on paper should not be forgotten [7]. Youth of the digital age can access texts and images with just one click and interact with them [8]. Thus, they are affected by the technological products that surround them, and this situation causes changes in their literacy habits [9]. The information that was produced and distributed by means of books, newspapers and magazines in the past, is produced and disseminated much more quickly and easily today by means of computers, television and social networks [10]. The digital environment, which is interactive, rich in visuals, dynamic, open to fast access and circulation, has altered the skills that individuals should possess in terms of literacy [11].

The developments in science and technology changed the necessities of the individuals [10]. The most important skills in adapting to the said changes

imposed by the scientific and technological advancements are reading and writing [12]. Nevertheless, technological developments also affect the way these skills are defined [13]. There are many studies on how reading and writing skills change in digital media [14], [15].

Hayles [16] obtained neurological findings that digital reading stimulates different parts of the brain as compared to reading printed products. On the other hand, Tüzel and Tok [17] determined that digital reading causes distraction and negatively affects the power of written expression. In some studies, it has been concluded that reading printed products is more efficient than digital reading, allowing comprehension [18], [19]. In these studies, it has been found that individuals prefer reading on paper rather than digital reading. In other studies, reading process has been described as a complex skill that is affected by many variables, and it was thus claimed that concluding that the environment containing the text to be read, that is, paper or digital, negatively affects the reading process would be a definite judgment and may not be accurate [12].

Unlike the higher number of studies that support reading on paper over digital reading, there is a higher number of studies that support digital writing over reading on paper. It was reported in these studies that the youth prefers to write in digital environments as digital environments allow more functionality and are more comfortable compared to writing on paper [18], [20]. It is not correct to degrade the scope of digital writing only to typing and writing sentences and paragraphs on computer medium. Tyger [21] stated that children of the digital age use writing skills both in producing and evaluating information, and draws attention to the fact that digital writing skill contains many variables, unlike writing on paper. In other words, digital writing skill is not limited to using a computer and accessing the internet.

Digital writing should be considered as a skill utilizing digital technologies to create meaning and has a social dimension. In digital writing, auditory and visual elements such as sound, video, graphics, etc., as well as signs and symbols are put together to produce meaning as a whole. For this reason, it should be addressed as a very different concept compared to paper-based writing skill [22]. In particular, typing is highlighted as a convenient feature of digital writing and indicated as a reason why it is preferred over writing on paper. It has been reported that the short-term memory is used more efficiently in digital writing, as it is less tiring than writing on paper [23]. Similarly, in another study, it was stated that digital writing does not increase the mental load, and thus that the quality of the products produced via digital writing is not affected negatively [24].

A review of the Turkish literature on digital writing revealed that most of the study samples

consisted of pre-service teachers [25], [26]. The positive aspects of digital writing reported in these studies were that it is physically comfortable, saves time, economical, allows easy sharing, use of visuals and legible writing, reduces spelling and punctuation mistakes, and enables choosing from many page layout and archiving options. On the other hand, the negative aspects of digital writing reported in these studies were that it creates distraction, leads to individualization and lazy thinking and makes plagiarism easy. Another result pointed out in these studies was the increase observed in digital writing skills in connection with having a social media account. Participants stated that digital writing improves online research skills, increases collaboration and interaction, improves creativity and expands the target group. In view of the foregoing, in this study, it was aimed to conduct a study on high school students rather than pre-service teachers. Accordingly, it was investigated whether the high school students' attitudes towards writing on paper and digital writing were affected by their personal characteristics and familial characteristics. The effect of teachers and school on high school students' attitudes towards writing on paper and digital writing has not been addressed in this study as it is thought that it requires a separate study. The main research question/problem statement of the study was determined as "What are the attitudes of high school students towards writing on paper and digital writing?", and additional research questions have been developed to elaborate this problem statement.

1. Do high school students' attitudes towards writing on paper and digital writing differ significantly according to:
 - i. their personal characteristics, such as gender, number of books they read in a year and average the number of hours spent online in a day?
 - ii. their familial characteristics, such as educational attainment of the mother, educational attainment of the father, perceived economic status of the family and place of residence?
 - iii. Is there a significant difference between high school students' attitudes towards writing on paper and digital writing?

Materials and Method

Research Design

In this study, survey method was used to determine high school students' attitudes towards writing on paper and digital writing. Survey method, one of the quantitative research approaches, aims to reveal a situation that existed in the past or exists today for what it is [27].

Population and Sample

The population of the study consisted of students in Türkoğlu district of Kahramanmaraş province of Turkey. The sample of the study was determined using convenience sampling. Kahramanmaraş province was chosen for the population of the study as one of the authors was working there, considering that it would save time, be more practical and economical. Consequentially, a total of 301 students studying at Kahramanmaraş Anatolian High School during the 2019-2020 academic year were included in the study. The distribution of the independent variables of the sample which have been expressed in frequencies and percentages are presented in Table 1.

Table 1. Independent variables of the study

Variables	Frequency	Percentage
Gender		
Female	174	57.8
Male	127	42.2
Number of books read in a year *		
0 (0 to 100 pages)	45	15
1 (101 to 200 pages)	53	17.6
2 (201 to 300 pages)	54	17.9
3 (301 to 400 pages)	38	12.6
4 (401 to 500 pages)	14	4.7
5 (501 to 600 pages)	34	11.3
6 (601 pages and above)	63	20.9
Average number of hours spent online in a day		
0 (less than 1 hour)	30	10.0
1 (1 to 2 hours)	81	26.9
2 (2 to 3 hours)	72	23.9
3 (3 to 4 hours)	44	14.6
4 (4 to 5 hours)	29	9.6
5 (5 to 6 hours)	22	7.3
6 (6 hour and above)	23	7.6
Educational attainment of the mother		
1 (Primary school)	190	63.1
2 (Middle school)	83	27.6
3 (High school)	28	9.3
4 (University)	0	0
Educational attainment of the father		
1 (Primary school)	94	31.2
2 (Middle school)	129	42.9
3 (High school)	69	22.9
4 (University)	9	3.0
Perceived economic status of the family		
1 (Low income)	30	10.0
2 (Middle income)	257	85.4
3 (High income)	14	4.7
Place of residence		
1 Village	118	39.2
2 City	183	60.8

*Number of books read in a year was determined dividing the total number of pages read by 100, assuming that one book has 100 pages.

Data Collection Tool

“Inventory of Attitudes Towards Writing on Paper and Digital Writing” (I) developed by Baştuğ and Keskin [28] was used to collect the research data. In order to quantify the content validity of the inventory, opinions of 9 experts were obtained and analyzed using the content validity ratio (Lawshe) technique. As a result, items with a validity index of less than 75% were excluded from the inventory. Subsequently, item analysis was performed and an additional 2 items that were not split as a result of the analysis were removed from the test. Factor loading of all items except for 2 items were determined to be over 0.45 in factor analysis. The factor rotation process was repeated after excluding the said 2 items. In the final analysis, all items were determined to have a factor loading of over 0.45. The remaining items were categorized into two sub-inventories, attitudes towards digital writing (D) and attitudes towards writing on paper (P). 12 items were included in the D sub-inventory and 7 items were included in the P sub-inventory. Factor loadings of the items included in the D sub-inventory were determined to be between 0.467 and 0.747, whereas the factor loadings of the items included in the P sub-inventory were determined to be between 0.475 and 0.713. In order to quantify the reliability of the inventory, Cronbach's Alpha was used for the internal consistency of the inventory, and Pearson Moments Multiplication correlation coefficient was used for the stability of the inventory in accordance with the test-retest reliability method. As a result, Cronbach's Alpha (α) values of the D and P sub-inventories were found as $\alpha = 0.89$ and $\alpha = 0.75$, respectively, and the Cronbach's Alpha (α) value of the overall inventory was found as $\alpha = 0.77$; whereas Pearson Moments Multiplication correlation coefficient values of the D and P sub-inventories were found as $r = 0.98$ and $r = 0.96$, respectively, and the Pearson Moments Multiplication correlation coefficient value of the overall inventory was found as $r = 0.97$ [28].

Data Analysis

In terms of data analysis, first, it was checked whether high school students' attitudes towards writing on paper and digital writing, which are considered as dependent variables, have differed according to the independent variables. Prior to this, it had to be checked using a normality test whether the research data conformed to the normal distribution or not. Shapiro-Wilk test is used for samples with less than 50 subjects, whereas Kolmogorov-Smirnov test is used for samples with more than 50 subjects [29]. Accordingly, the results of the Kolmogorov-Smirnov test was taken into consideration in this study, as there were 301, thus over 50, subjects in the study sample. The analysis of the scores obtained from the inventory revealed that the scores do not conform to normal distribution [KS (301) = 0.072, $p = <0.05$] (Table 2.).

Table 2. Results of the normality tests performed to determine whether the research data conform to normal distribution

	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
	Statistic	df	Sig.	Statistic	df	Sig.
I	.072	301	.001	.979	301	.000
D	.050	301	.063	.984	301	.002
P	.069	301	.001	.976	301	.000

p < 0.05, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

Subsequently, since it was found that the research data did not conform to normal distribution, Mann-Whitney U and Kruskal Wallis tests, which are non-parametric tests, were used to determine whether attitudes towards digital writing and towards writing on paper differed significantly according to independent variables. Additionally, Wilcoxon Signed-Rank test, one of the non-parametric tests, was used to determine whether there is a significant difference between a student's attitude towards digital writing and towards writing on paper. Statistical analyses were performed using the SPSS 24 (IBM Statistical Package for the Social Sciences Version 24) software package.

Results

Mann-Whitney U test was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to gender. The respective findings are given in Table 3.

Table 3. Results of the Mann-Whitney U Test performed to determine the effect of gender variable on the scores obtained from the I inventory, and D and P sub-inventories

I			
Gender	n	X	mean rank
Female	174	77.18	149.01
Male	127	77.16	153.73
Total	301		
D			
	n	X	mean rank
Female	174	49.43	149.88
Male	127	49.07	152.54
Total	301		
P			
	n	X	mean rank
Female	174	27.75	149.67
Male	127	28.09	152.83
Total	301		
	I	D	P
U	10702.000	10854.000	10817.000
Z	-.465	-.262	-.311
p	.642	.794	.755

p < 0.05, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Mann-Whitney U test did not reveal any significant difference between the mean scores the students obtained from I inventory, and D and P sub-inventories, according to the independent variable of gender (p > 0.05). Hence, it can be said that gender did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing.

Kruskal Wallis Test, one of the non-parametric tests, was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to number of books read in a year. The respective findings are given in Table 4.

Table 4. Results of the Kruskal Wallis test performed to determine the effect of the variable of number of books read in a year on the scores obtained from the I inventory, and D and P sub-inventories

I			
Number of books read in a year	n	X	mean rank
0	45	78.93	162.51
1	53	75.34	138.81
2	54	78.61	160.42
3	38	76.63	144.36
4	14	81.29	179.21
5	34	74.85	138.06
6+	63	76.87	149.68
Total	301	77.17	
D			
Number of books read in a year	n	X	mean rank
0	45	50.47	159.48
1	53	47.62	140.99
2	54	50.81	163.87
3	38	49.18	147.32
4	14	52.21	168.54
5	34	48.76	147.51
6+	63	48.17	142.54
Total	301	49.28	
P			
Number of books read in a year	n	X	mean rank
0	45	28.47	158.31
1	53	27.72	146.10
2	54	27.80	152.34
3	38	27.45	148.59
4	14	29.07	164.11
5	34	26.09	128.16
6+	63	28.70	159.61
Total	301	27.89	
	I	D	P
Chi-Square (X2)	4.921	3.598	3.812
df	6	6	6
p	.554	.731	.702

p < 0.05, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Kruskal Wallis Test did not reveal any significant difference between the mean scores the students obtained from I inventory, and D and P sub-inventories, according to the independent variable of number of books read in a year ($p > 0.05$). Hence, it can be said that the number of books they read in a year did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing.

Kruskal Wallis Test was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to the average number of hours student spent online in a day time. The respective findings are given in Table 5.

Table 5. Results of the Kruskal Wallis test performed to determine the effect of the variable of the average number of hours spent online in a day on the scores obtained from the I inventory, and D and P sub-inventories

I			
Average number of hours spent online in a day	n	X	mean rank
0 hours to 1 hour	30	72.67	124.45
1 hour	81	76.85	149.17
2 hours	72	78.88	161.83
3 hours	44	74.41	130.19
4 hours	29	79.97	169.57
5 hours	22	82.00	177.89
6 hours and above	23	75.96	148.83
Total	301	77.17	
D			
Average number of hours spent online in a day	n	X	mean rank
0 hours to 1 hour	30	45.57	124.18
1 hour	81	48.05	142.19
2 hours	72	50.72	161.73
3 hours	44	47.45	135.36
4 hours	29	52.72	176.14
5 hours	22	54.14	182.66
6 hours and above	23	48.39	151.37
Total	301	49.28	
P			
Average number of hours spent online in a day	n	X	mean rank
0 hours to 1 hour	30	27.10	141.93
1 hour	81	28.80	164.35
2 hours	72	28.15	152.16
3 hours	44	26.95	137.15
4 hours	29	27.24	149.21
5 hours	22	27.86	146.98
6 hours and above	23	27.57	144.80
Total	301	27.89	
Chi-Square(X ²)	9.899	11.533	3.542
df	6	6	6
p	.129	.073	.738

$p < 0.05$, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Kruskal Wallis Test did not reveal any significant difference between the mean scores the students obtained from I inventory, and D and P sub-inventories, according to the independent variable of average number of hours spent online in a day ($p > 0.05$). Hence, it can be said that the average number of hours students spent online in a day did not cause a significant difference between their attitudes towards writing on paper and towards digital writing.

Kruskal Wallis Test was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to the educational attainment of their mothers. The respective findings are given in Table 6.

Table 6. Results of the Kruskal Wallis test performed to determine the effect of the variable of the educational attainment of the mother on the scores obtained from the I inventory, and D and P sub-inventories

I			
Educational attainment of the mother	n	X	mean rank
Primary school	190	77.37	153.74
Middle school	83	75.40	138.05
High school	28	81.04	170.79
University	0	0	0
Total	301	77.17	
D			
Educational attainment of the mother	n	X	mean rank
Primary school	190	49.82	156.53
Middle school	83	47.51	136.12
High school	28	50.82	157.61
University	0	0	0
Total	301	49.28	
P			
Educational attainment of the mother	n	X	mean rank
Primary school	190	27.55	146.43
Middle school	83	27.89	150.63
High school	28	30.21	183.13
University	0	0	0
Total	301	27.89	
Chi-Square(X ²)	3.476	3.356	4.351
df	2	2	2
p	.176	.187	.114

$p < 0.05$, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Kruskal Wallis Test did not reveal any significant difference between the mean scores the students obtained from I inventory, and D and P sub-inventories, according to the independent

variable of educational attainment of the mother ($p > 0.05$). Hence, it can be said that the educational attainment of their mothers did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing.

Kruskal Wallis Test was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to the educational attainment of their fathers. The respective findings are given in Table 7.

Table 7. Results of the Kruskal Wallis test performed to determine the effect of the variable of the educational attainment of the father on the scores obtained from the I inventory, and D and P sub-inventories

I			
Educational attainment of the father	n	X	mean rank
Primary school	94	79.97	168.26
Middle school 129	77.48	151.44	
High school	69	72.90	127.71
University	9	76.22	143.00
Total	301	77.17	
D			
Educational attainment of the father	n	X	mean rank
Primary school	94	51.67	168.95
Middle school 129	49.49	151.43	
High school	69	45.75	125.92
University	9	48.22	149.56
Total	301	49.28	
P			
Educational attainment of the father	n	X	mean rank
Primary school	94	79.97	168.26
Middle school 129	77.48	151.44	
High school	69	72.90	127.71
University	9	76.22	143.00
Total	301	77.17	
	I	D	P
Chi-Square (X2)	8.724	9.742	.170
df	3	3	3
p	.033*	.021*	.982
Difference (Scheffe Test)			
I	Primary school>High school		
D	Primary school>High school		
P	-		

$p < 0.05$, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Kruskal Wallis Test did not reveal any significant difference between the mean scores the students obtained from the P sub-inventory according to the independent variable of educational attainment of the mother ($p > 0.05$). However, there were significant differences between the mean scores

the students obtained from the I inventory and D sub-inventory ($p < 0.05$).

Hence, it can be said that the educational attainment of their fathers did not cause a significant difference between students' attitudes towards writing on paper, however did cause a significant difference between students' attitudes towards digital writing. Scheffe test was used to find out the groups favored by this significant difference. Consequentially, it was found that the attitudes of the high school students, whose fathers' educational attainment did not go beyond primary school, towards digital writing, were found to be significantly higher than the attitudes of high school students, whose fathers' educational attainment did not go beyond high school, towards digital writing. This result revealed that the attitudes of the high school students, whose fathers' educational attainment was higher, towards digital writing were lower, contrary to what was expected by the authors.

Kruskal Wallis Test was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to the perceived economic status of their families. The respective findings are given in Table 8.

Table 8. Results of the Kruskal Wallis test performed to determine the effect of the variable of the perceived economic status of the family on the scores obtained from the I inventory, and D and P sub-inventories

I			
Perceived Economic Status of the Family	n	X	mean rank
Low income	30	75.53	145.37
Middle income 257	77.55	153.03	
High income	14	73.71	125.79
Total	301	77.17	
D			
Perceived Economic Status of the Family	n	X	mean rank
Low income	30	48.13	142.60
Middle income 257	49.63	153.60	
High income	14	45.21	121.25
Total	301	49.28	
P			
Perceived Economic Status of the Family	n	X	mean rank
Low income	30	27.40	150.08
Middle income 257	27.92	150.61	
High income	14	28.50	160.21
Total	301	27.89	
	I	D	P
Chi-Square(X2)	1.442	2.146	.166
df	2	2	2
p	.486	.342	.920

$p < 0.05$, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Kruskal Wallis Test did not reveal any significant difference between the mean scores the students obtained from I inventory, and D and P sub-inventories, according to the independent variable of perceived economic status of the family ($p > 0.05$). Hence, it can be said that the perceived economic status of their families did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing.

Mann-Whitney U Test, one of the non-parametric tests, was used to determine whether the scores that the students obtained from I inventory, and D and P sub-inventories differed according to their places of residence. The respective findings are given in Table 9.

Table 9. Results of the Mann-Whitney U test performed to determine the effect of the variable of the place of residence on the scores obtained from the I inventory, and D and P sub-inventories

I			
Place of Residence	n	X	mean rank
Village	118	77.18	154.04
City	183	77.16	149.04
Total	301		
D			
Place of Residence	n	X	mean rank
Village	118	49.43	156.10
City	183	49.07	147.71
Total	301		
P			
Place of Residence	n	X	mean rank
Village	118	27.75	149.89
City	183	28.09	151.72
Total	301		
	I	D	P
U	10438.000	10195.000	10665.500
Z	-.487	-.817	-.179
p	.626	.414	.858

$p < 0.05$, I: Inventory of Attitudes Towards Writing on Paper and Digital Writing; D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Mann-Whitney U Test did not reveal any significant difference between the mean scores the students obtained from I inventory, and D and P sub-inventories, according to the independent variable of place of residence ($p > 0.05$). Hence, it can be said that their places of residence do not make a significant difference in students' attitudes towards writing on paper and towards digital writing ($p > 0.05$).

Wilcoxon Signed-Rank Test, one of the non-parametric tests, was used to determine whether there was a significant difference between students' attitudes towards writing on paper and towards digital writing. The respective findings are given in Table 10.

Table 10. Comparison of the scores high school students obtained from the D and P sub-inventories

Score	Rank	N	Mean Rank	Total Rank	z	p
D	Negative ranks	141	144,96	20439,5	-1.044	0.297
P	Positive ranks	155	151,72	23516,5		
	Equal	5				
	Total	301				

$p < 0.05$, D: Sub-inventory of Attitudes Towards Digital Writing; P: Sub-inventory of Attitudes Towards Writing on Paper

The results of the Wilcoxon Signed-Rank Test did not reveal any significant difference between the mean scores the students obtained from the D and P sub-inventories ($p > 0.05$). The mean item score students obtained from the D sub-inventory was found as 4.11 ($s=1.04$), whereas the mean item score students obtained from the P sub-inventory was found as 3.98 ($s = 0.98$).

Discussion and Conclusion

The results of the study indicated that the high school students' attitudes towards writing on paper and digital writing did not differ according to their personal characteristics. Similarly, it was found that the high school students' attitudes towards writing on paper and digital writing did not differ according to their familial characteristics, except for one independent variable, that is, the educational status of the father. Accordingly, it was found that the scores high school students obtained from the D sub-inventory and thus from the I inventory differed according to the variable of educational status of the father.

As for the rest of the other personal and familial characteristics, according to which high school students' attitudes towards writing on paper and digital writing were found not to have differed; first, the fact that the gender variable did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing can be explained by the fact that the knowledge, skills and attitudes of female and male students in respect of technology are similar in today's world. In comparison, in other studies available in the literature conducted with pre-service teachers, it was reported that their attitudes towards writing on paper did not differ according to gender, which is similar to the finding obtained in this study. Contrary to the finding of this study however, in the said studies, the digital literacy levels of male pre-service teachers were found to be higher than female pre-service teachers [30]. It may be that digital literacy levels of male students improve more during the period when they

are studying at a university compared to female students, a hypothesis which needs however to be corroborated.

Secondly, it has been revealed in many studies that the reading attitudes positively affect the writing attitudes [31]. However, in this study, the variable of number of books read in a year did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing. This discrepancy between the respective result of this study and the relevant results reported in the literature may be explained by the fact that it is important to have certain knowledge and skills for digital writing even though reading books certainly can enrich an individual's world of thought. Along the same lines, it has been stated that individuals who have sufficient knowledge about media literacy in particular may be more competent in digital writing [32].

Thirdly, it was found in this study that the average number of hours spent online in a day did not cause a significant difference between students' attitudes towards writing on paper and towards digital writing. This is a finding similar to the relevant findings reported in other studies available in the literature in that the time spent on the Internet was not found to have an effect on literacy [33]. It has been emphasized in these studies that the time spent on the Internet involves less act of reading whereas that the act of writing it involves includes only short and insufficient narratives. Onursoy [3] reported that the youth is not sufficient in digital skills, which is a result also corroborated by the findings of the study by Özerbaş and Kuralbayeva [34]. It was reported in these studies that almost all of the children stated that they use the internet and social networks primarily for playing games and secondarily for communication. In another study conducted in Turkey, it was found that internet usage has increased in quantity, however not in quality [35]. It is extremely important to determine where the problem really lies in, whether in generating, searching or evaluating the information or somewhere else.

Fourthly, the fact that the familial characteristics of the students, i.e., the educational status of the mother, perceived economic status of the family and the place of residence were found not to have affected high school students' attitudes towards writing on paper and digital writing suggests that the family is not as effective as before in the academic development of their children. Özel and Zelyurt [36] pointed out to this fact stating that the effect of the family on the child's development process decreases as the child starts school. Children spend more time with their teachers during the day than with their families. Hence, the findings of this study suggesting that the

family has no effect on the development of writing skills are similar to the relevant findings of many studies available in the literature [37].

One of the familial characteristics of the students however, that is the educational status of the father, was found to have affected the scores high school students obtained from the digital writing sub-inventory and thus from the overall inventory. Contrary to what was expected, it was found that fathers with higher educational attainment did not have a positive effect on the digital writing attitudes of their children compared to fathers with lower educational attainment. As a matter of fact, it was found that fathers with lower educational attainment had a positive effect on the digital writing attitudes of their children. A significant difference was found between the digital writing attitudes of high school students, whose fathers' educational attainment did not go beyond primary school, and the digital writing attitudes of high school students, whose fathers' educational attainment did not go beyond high school. This result may be due to the fact that any pressure or excessive attention coming from the family may have negative results rather than positive results on the academic development of children, or that fathers with higher educational attainments limit the screen time of their children.

Gül has evaluated the role of the families in the literacy development of their children, drawing attention to the existence of various factors that prevent family participation in the literacy and learning life of their children at school [38]. It was stated in the said study that different factors should also be taken into account and that a family's high educational level is not automatically reflected on the child's academic development as positive. These factors were indicated as poverty, single parenting, parents' lack of proficiency in their mother tongue and/or families' struggle to meet other social needs. It was stated that such factors have negative effects on the general development of the child and have the potential to eliminate the positive effects of family participation. Whether there is a significant difference between the high school students' attitudes towards digital writing and writing on paper was also investigated in Gül's study, and a difference was found in favor of attitudes towards digital writing, albeit not statistically significant. This result is different than the results of the relevant studies available in the literature, in which a statistically significant difference was reported in favor of digital writing between the two types of writing [23], [24]. This discrepancy in results may be attributed to the finding reported by many studies conducted in Turkey that the teachers do not pay due attention to the use of digital writing skills in their lessons, and that they generally continue to enforce the practice of

writing on paper [20], [28]. According to the said finding, taking into account that the students are using digital writing only in their spare time or on social media and not for academic purposes, it is not surprising that no significant difference was found between high school students' attitudes towards digital writing and writing on paper.

Recommendations

Following recommendations have been developed based on the results of this study:

Factors other than the personal and familial characteristics are likely to have an effect on writing attitudes. In this context, it is recommended to focus especially on the effect of teacher, school and the teaching of the mother tongue (Turkish, if this study is considered). Further studies on the writing attitudes of students can be designed based on whether the teacher gives feedback in the writing process, whether he/she makes preliminary preparations, and whether he/she makes use of technology in writing education.

The finding of this study on the significant effect father's educational attainment on the digital writing attitudes of the students should be elaborated. Accordingly, an in-depth and detailed qualitative research should be carried out on the role of the family in high school students' writing attitudes. The finding that the attitudes of high school students, whose fathers' educational attainment is low, towards digital writing were found to be higher than the attitudes of high school students, whose fathers' educational attainment is high, towards digital writing, is truly a matter worth researching.

Digital writing skill, which is known to have a number of important and considerable differences compared to paper-based writing skill, should also be evaluated within the scope of language education process. Development of digital writing skills in Turkish lessons has become a fundamental requirement in all class levels and regardless of the type of education. In this context, it is very important to consider and evaluate several dimensions of the matter such as teacher competencies, the status of Turkish education programs, and the infrastructure facilities of schools.

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