CHARACTERIZATION OF THE DIGITAL LITERACY STATES OF SECONDARY SCHOOL STUDENTS IN 5 SCHOOLS OF THE DEPARTMENT OF CESAR

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Abstract: *The purpose of this research is to examine the digital literacy skills of high school students in terms of various variables. The research was conducted using survey-based tools and a quantitative research method. The research study group is made up of 632 high school students who are in grades 6, 7 and 8 in 5 schools of low, medium and high socioeconomic levels in the academic year 2020-2021 in the department of Cesar. As data analysis tools in a Digital Literacy Scale developed by the researchers, and the data obtained were analyzed using the SPSS 22.0 program, and descriptive statistics and non-parametric tests such as the Mann-Whitney U test and the Kruskal Wallis H test were used, since the distribution of the data obtained did not show normality. As a result of the analysis of the data obtained, it was determined that the Digital Literacy Scale scores of the students differed significantly according to their gender, school grade, internet connection at home, presence of computer or tablet at home and frequency of internet access, and connection. According to the purposes of Internet use, no significant difference could be determined between the data obtained from the Digital Literacy Scale. Suggestions were made in accordance with the results obtained from the study.*

Keywords: *Education, Digital literacy, Secondary levels, Social studies.*

INTRODUCTION

With a changing and developing world, information and communication technologies are advancing day by day and playing an active role in all aspects of our lives. This situation has led to many changes in the social and cultural context of the world, increased people's interest and addiction to the Internet, and made the use of the Internet mandatory. Internet technologies have now become an important part of people's daily lives due to rapid advances in communication and information technologies. The internet has become an important part of our lives; While it allows people to access and communicate with the information they need, it has gradually increased its impact in many areas such as education, health, communication, film, social media, shopping, banking, and citizenship transactions (Kaya, 2020).

As technology develops, affecting every aspect of life, it is inevitable that education will also have its share. In the 21st century, where we have significant opportunities in the production and exchange of knowledge, education systems have been renewed according to changing conditions (Pala, 2019). Especially with the effective use of digital tools and social media today, the skills and competencies that individuals must have regarding the digital world have begun to be included in the curriculum (Gelen, 2017). These innovation efforts, which began in the 2000s, also manifested themselves in the field of Social Studies. Creating the educational opportunities that the new generation must have in order to sustain democracy in terms of knowledge, skills, and basic citizenship values is at the heart of Social Studies education (Aslan, 2016). With the change of curriculum, Social Studies and some skills that students needed to acquire were added. One of these skills is digital literacy, which integrates with 21st-century information, media, and technology skills.

The concept expressed as digital literacy means conducting research, collecting information, and evaluating information gathered through the use of the internet and various digital technologies (Ozerbas & Kuralbayeva, 2018). Paul Gilster first used the concept of digital literacy in his book: Digital Literacy in 1997, but avoided making a single definition of digital literacy. Gilster (1997) defines the concept of digital literacy as the ability to critically analyze and use information

presented from sources in multiple electronic formats, such as computers and especially the Internet. It states that people should have the ability to access and use networked computing resources. In short, he emphasized critical thinking and critical evaluation rather than technical mastery on the Web. He also emphasized that digital literacy is more than skills or competencies, it is the relevant use of skills in our lives.

Beyond the use of digital devices or software, digital literacy also includes the complex cognitive, social, and emotional skills needed for users to be effective and efficient in digital environments. To have digital literacy, it is necessary to have critical thinking skills such as researching, analyzing, solving problems, questioning, evaluating, and making decisions (Garavit, J. et al 2021b)

Digital literacy is the knowledge, skills, and attitudinal patterns needed to participate in digital society, participate in digital life, be informed, and work. People need digital literacy skills and the internet to obtain information in the digital world it is considered important for students to develop strategies for searching, searching, and interpreting information in the computer environment (MEB, 2018).

A digitally literate person has the skills to efficiently and accurately search the internet and other digital tools, to select accurate and reliable information and content from the flow of information contamination, to comply with ethical rules that must be followed in the digital environment, and educational, to choose persuasive texts between written and visual texts. (Garavit, J. et al 2021)

It is necessary to be aware of the concept of digital literacy in order to understand the place of information and communication technologies in our lives and to take appropriate measures. Individuals, both in our country and around the world, have access to all the information they need through the internet. Especially in recent years, the State's emphasis on implementing many works and transactions in electronic environments (e-government, e-pulse, etc.) makes it mandatory for individuals to have knowledge of digital tools. It can be observed that digital literacy skills aim to improve the positive aspects of the internet, media, and technology, while minimizing the negative aspects. In this way, it is intended to increase the efficiency and quality of the time people spend on the Internet. Because digital literacy gives people the ability to know digital technologies and use them. (Aparicio Ayala, E. et al 2023)

The people most affected by the rapid changes and transformations of digital technologies are students, teachers, educational programs, administrators, etc. Within the school system it has happened that education systems must be prepared to ensure the active use of digital resources and that the digital literacy curriculum must be designed in a way that students build relationships and respond to this great digital transformation and that they can apply the information they learn in the classroom and outside of school. Valera Restrepo, R.E. et al 2023)

Since the use of digital tools reaches the lowest levels of education, basic education is important in terms of acquiring digital literacy skills. Considering that individuals have to adapt to the digital world of the time, this skill must be taught in a planned and gradual manner, starting from the basic education level (Altun, 2019). Because, through effective education at the basic education stage, individuals must be provided with the knowledge, skills, attitudes and values necessary to behave in the new digital environments created by information and communication technologies and to live in harmony with other members of society. (Karaduman & Ozturk, 2014). Based on this, this study focused on high school students in the basic education stage. Consequently, this research sought answers to the following research questions:

- Do high school students' digital literacy skill levels differ by gender?
- Do high school students' digital literacy skill levels differ by grade levels?
- Do high school students' digital proficiency levels differ based on whether they have an internet connection at home?
- Do high school students' digital literacy levels differ depending on whether they have a computer or tablet at home?
- Do high school students' digital literacy skill levels differ based on their internet usage purposes?
- Do high school students' digital literacy skill levels differ based on frequency of internet connection?

METHOD

The research was conducted in the survey model. This allows the quantitative or numerical description of trends, attitudes or opinions throughout the universe, based on studies carried out through a given sample from a universe. With the screening model, inferences are made about the universe with the data obtained from the sample (Creswell, 2017). The goal of the scanning model is to describe the subject under investigation without changing their existing position (Karasar, 2011).
The research study group is made up of 632 high school students who are in grades 6, 7 and 8 in public schools of low, medium and high socioeconomic levels in the central secretariats of the Caribbean zone, in the academic year 2020-2021. In this research, a convenient sample was used to determine the easily accessible study group. This sampling method was preferred because it is accessible, easy to access, and adds quality, speed, and practicality to the research (Yıldırım & Simsek, 2013).

Table 1. Distribution of participants according to socioeconomic level of the school

		Frequency	Percentage	Valid Percentage
	Lower socioeconomic status	384	60.7	60.7
	Average Socioeconomic Level	158	25	25
	Higher socioeconomic status	90	14.2	14.2
	Total	632	99.4	100.0
Lost data		4	6	
Total		636	100.0	

Author's own -2023

An examination of Table 1 shows that among the schools where the study was conducted, the highest student participation was in secondary schools of low socioeconomic status (60.7% (384), while the lowest student participation was in higher education. secondary schools of socioeconomic status with 14.2% (90).

Data collection tools.

Personal Information Form: The researchers developed a personal information form based on expert opinions in order to obtain various information about the students who participated in the study. The form included questions that were thought to serve the purpose of the study. In the form of personal data of the students; Questions about school, class, gender, whether they have a computer/tablet at home, whether they have an internet connection at home, the frequency of internet connection, and the purpose of internet use were included.

Digital Literacy Scale - DAL: The developed Digital Literacy Scale was used in this study. The scale, which consists of 27 items, is rated as Always = 5, Most of the time = 4, Sometimes = 3, Rarely = 2, and Never = 1. There are no negative items on the scale. Factor analysis was performed to analyze the construct validity of the scale. To perform factor analysis of the data, Kaiser-Mayer-Olkin coefficient (KMO) and Bartlett sphericity test were analyzed. The KMO value was found to be 0.82 and the Bartlett sphericity test value was 1117.603 ($p<0.01$, SD=210).
The principal component analysis method was used in the study. In addition, the varimax rotation technique was applied to clarify the factors. As a result of the analysis, it was determined that all items were above the .30 value on the Digital Literacy Scale. After EAD, it was also applied to the scale, the relationship (model) between the items was tested, and the t-values that give the level of significance of the standardized loads were examined. The t-values obtained ranged from 13.21 to 19.55. In this regard, it was determined that all t-values were significant at the .01 level because they were greater than 2.56. In the adjustment indices, excellent and acceptable fit values were determined among the factors.
For the reliability of the scale, the internal consistency coefficient Cronbach's alpha was calculated, the Cronbach's alpha coefficient for the Information Processing subdimension is: .71, the coefficient

for the subdimension: Communication is .73, the coefficient for the subdimension: Security The subdimension is 0.78 and the subdimension Problem Solving: is 0.78. The scale coefficient was found to be 0.75 and the total scale coefficient was 0.87. Since the Cronbach's alpha reliability coefficient of the Digital Literacy Scale and its subdimensions was greater than .70, the scale and its subdimensions were seen to be at a sufficient level in terms of reliability. In addition, approximately three weeks after the application, the same test was applied again to 45 students who were piloted using the test-re-test method to determine the reliability coefficient of the test and the correlation coefficient between the two applications was determined. As: .72. This coefficient shows that the test is consistent. In this study conducted with students in 6th, 7th and 8th grades, Cronbach's alpha reliability coefficient for the general scale was calculated as: .82. This shows that the scale applied in the study is a reliable scale.

Data analysis

The analysis of the data obtained in the study was carried out using the SPSS 22.0 (Statistical Package for Social Science for Personal Computers) program. In the study, in addition to descriptive statistics such as frequency, percentage and mean, non-parametric tests such as the Mann-Whitney U test and the Kruskal Wallis H test were performed, since the distribution of the data did not show normality.

RESULTS

Digital Literacy Skills of High School Students

In the study, the Digital Literacy Scale was used to determine the digital literacy levels of high school students. According to the results of the descriptive analysis, the digital literacy levels of secondary school students are shown in Table 2.

Table 2. Digital Literacy Levels of High School Students

	Computer science	Communication	Safety	Problem Solving	Overall Average
Average	**3,2888**	**2,4970**	**3,6499**	**2,9584**	**3,1228**
N	**632**	**632**	**632**	**632**	**632**

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It was found that the digital literacy level scores of high school students were 3.29 in the information processing subdimension of the scale. Considering the scores they received in the information processing subdimension of the 4-point Likert digital literacy scale, it can be interpreted that the participants' digital literacy levels are very high in the information processing subdimension.

The digital literacy level scores of high school students were determined to be 2.50 in the communication subdimension of the scale. Considering the scores they received in the communication subdimension of the 4-point Likert digital literacy scale, it can be interpreted that the participants' digital literacy levels are at an average level in the communication subdimension.

High school students' digital literacy level scores were found to be 3.65 on the safety subdimension of the scale. Considering the scores they received in the safety subdimension of the 4-point Likert digital literacy scale, it can be interpreted that the participants' digital literacy levels are very high in the safety subdimension.

High school students' digital literacy level scores were found to be 2.96 on the problem-solving subdimension of the scale. Considering the scores they received in the problem-solving subdimension of the 4-point Likert digital literacy scale, it can be interpreted that the participants' digital literacy levels are at an average level in the problem-solving subdimension.

The digital literacy level scores of secondary school students were found to be 3.12 on the overall scale. Considering the overall scores of the 4-point Likert digital literacy scale, it can be interpreted that the participants' digital literacy levels are very high on the general scale.

Students' Digital Literacy Skills by Gender

The differentiation of the digital literacy scale scores of secondary school students according to gender was investigated and the results of the analysis are shown in Table 3.

Table 3. U-test results for the difference in high school students' digital literacy scores by gender.

	Gender	N	Average Ranking	Total Ranking	Or	P
Computer science	Male	287	312.68	89739.50	48411.500	.721
	Female	343	317.86	109025.50		
	Total	630				
Communication	Male	287	349.74	100375.00	39394.000	.052
	Female	343	286.85	98390.00		
	Total	630				
Safety	Male	287	300.13	86136.00	39394.000	.000
	Female	343	328.36	98390.00		
	Total	630				
Problem Solving	Male	287	345.94	99285.50	40483.500	.000
	Female	343	290.03	99479.50		
	Total	630				
Overall Average	Male	287	332.24	95354.00	44415.000	.035
	Female	343	301.49	103411.00		
	Total	630				

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An examination of Table 3 shows that the scores received by secondary school students on the digital literacy scale do not show a significant difference in the subdimension of information processing according to the gender variable [U=48411.500; p>0.5]. This result can be interpreted to mean that the digital literacy levels of secondary school students do not vary by gender in the information processing subdimension of the scale.

An examination of Table 3 shows that the scores received by secondary school students on the digital literacy scale show a significant difference in the communication subdimension according to the gender variable [U=39394,000; p<0.5]. Considering the range averages and study group totals, it is seen that this difference favors male students. This finding can be interpreted to mean that the female student levels of secondary school students are lower than those of boys in the communication subdimension of the digital literacy scale.

An examination of Table 3 shows that the scores received by secondary school students on the digital literacy scale do not show a significant difference in the safety subdimension according to the gender variable [U=44808.000; p>0.5]. This finding can be interpreted to mean that high school students' digital literacy levels do not vary by gender in the safety subdimension of the scale.

An examination of Table 3 shows that the scores received by secondary school students on the digital literacy scale show a significant difference in the subdimension of problem solving according to the gender variable [U=40483,500; p<0.5]. Considering the range averages and study group totals, it is seen that this difference favors male students. This finding can be interpreted to mean that the female student levels of secondary school students are lower than those of boys in the problem-solving subdimension of the digital literacy scale.

An examination of Table 3 shows that the scores received by secondary school students on the digital literacy scale show a significant difference in the general scale according to the gender variable [U=44415,000; p<0.5]. Considering the range averages and study group totals, it is seen that this difference favors male students. This finding can be interpreted to mean that the overall digital literacy scale of high school students is lower than that of female students.

Findings on Students' Digital Literacy Skills by Grade Level The differentiation of high school students' digital literacy scale scores according to grade levels was investigated and the results of the analysis are shown in Table 4.

Table 4. Kruskal Wallis H test results for the difference in digital literacy levels of high school students according to grade levels.

	Class	N	Average Range	X2	P	U Difference
Computer science	6th Grade	195	282.89	8.408	.015	2-1 3-1
	7th Grade	214	327.06			
	8th Grade	218	329.01			
	Total	627				
Communication	6th Grade	195	293.15	5.554	.062	
	7th Grade	214	311.68			
	8th Grade	218	334.93			
	Total	627				
Safety	6th Grade	195	261.30	24.378	.000	2-1 3-1
	7th Grade	214	341.75			
	8th Grade	218	332.92			
	Total	627				
Problem Solving	6th Grade	195	284.15	7.937	.019	2-1 3-1
	7th Grade	214	331.57			
	8th Grade	218	323.45			
	Total	627				
Overall Average	6th Grade	195	268.50	17.890	.000	2-1 3-1
	7th Grade	214	333.16			
	8th Grade	218	335.89			
	Total	627				

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The results of the Kruskal Wallis H test regarding the digital literacy levels of participants in different classes are shown in Table 4.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the subdimension of information processing according to their grades [x2(sd=2; n=627) = 8.408; p<.05]. This finding shows that participants' digital literacy levels to different degrees differ in the information processing subdimension. Considering the range averages of the grade levels, it is seen that the level of digital literacy is highest in the eighth grade, followed by the seventh and sixth grades, respectively.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; A significant difference was found between 6th grade (282.89), 7th grade (327.06), and 8th grade (329.01) in favor of 8th grade. This finding can be interpreted to mean that digital literacy levels increase as grade levels increase in the information processing subdimension.

According to the results of the analysis, it is observed that the digital literacy levels of the participants do not show a significant difference in the subdimension of communication according to their grades [x2(sd=2; n=627) = 5.554; p>.05].

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the subdimension security according to their grades [x2(sd=2; n=627) = 24,378; p<.05]. This finding shows that participants' digital literacy levels to different degrees differ in the safety subdimension. Considering the range averages of grade levels,

it is seen that digital literacy levels are highest in the eighth grade, followed by the seventh and sixth grades, respectively.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; A significant difference was found between 6th grade (261.30), 7th grade (342.75), and 8th grade (332.92) in favor of 6th grade. This finding can be interpreted as an increase in digital literacy levels as grade levels in the safety subdimension increase.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the subdimension of problem solving according to their grade [x2(sd=2; n=627) = 7.937; p<.05]. This finding shows that participants' digital literacy levels to different degrees differ in the safety subdimension. Considering the range averages of the grade levels, it is seen that the level of digital literacy is highest in the seventh grade, followed by the eighth and sixth grades, respectively.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; A significant difference was found between the 6th grade (284.15), 7th grade (331.57) and 8th grade (323.45) groups in favor of the 7th grade. This finding can be interpreted to mean that digital literacy levels increase as grade levels increase in the problem-solving sub-dimension.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the general scale according to their grades [x2(sd=2; n=627)=17,890; p<.05]. This finding shows that participants' digital literacy levels differ to different degrees. Considering the range averages of the grade levels, it is seen that the level of digital literacy is highest in the sixth grade, followed by the sixth and seventh grades, respectively.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; A significant difference was found between the 6th grade (268.50), 7th grade (333.16) and 8th grade (335.89) groups in favor of the 8th grade students. This finding can be interpreted as increasing levels of digital literacy as grade levels increase.

Digital Literacy Skills of Students According to Internet Connection at Home The differentiation of the scores of the digital literacy scale of high school students according to whether they have an Internet connection at home was investigated, and the results of the analysis are shown in Table 5.

Table 5. U test results for the difference in the digital literacy scores of high school students according to the variable having an internet connection at home.

	Internet connection in your home?	N	Average Rank	Total Ranking	Or	P
Computer science	YES	405	339.20	1337377.50	33532.500	.000
	NO	219	263.12	57622.50		
	Total	624				
Communication	YES	405	333.69	135144.00	35766.000	.000
	NO	219	273.32	59856.00		
	Total	624				
Safety	YES	405	328.50	133043.00	37867.000	.003
	NO	219	282.91	61957.00		
	Total	624				
Problem Solving	YES	405	320.90	12996.50	40947.500	.113
	NO	219	296.97	65037.50		
	Total	624				
Overall Average	YES	405	335.69	135954.00	34956.000	.000
	NO	219	269.62	59046.00		

Total	624

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An examination of Table 5 shows that the scores obtained by high school students on the digital literacy scale are related to the question: Do you have an internet connection at home? It is observed that there is a significant difference in the subdimension of information processing according to the variable [U=33532.500; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have an internet connection at home. This finding can be interpreted to mean that the digital literacy levels of high school students who have an internet connection at home on the computer subdimension of the digital literacy scale are better than those of students who do not have an internet connection at home.

An examination of Table 5 shows that the scores obtained by high school students on the digital literacy scale are related to the question: Do you have an internet connection at home? It is observed that there is a significant difference in the communication subdimension according to the variable [U=35766.000; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have an internet connection at home. This finding can be interpreted to mean that the digital literacy levels of high school students who have an internet connection at home in the communication subdimension of the digital literacy scale are better than those of students who do not have an internet connection at home.

An examination of Table 5 shows that the scores obtained by high school students on the digital literacy scale are related to the question: Do you have an internet connection at home? It is observed that there is a significant difference in the safety subdimension depending on the variable [U=37867.000; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have an internet connection at home. This finding can be interpreted to mean that the digital literacy levels of high school students who have an internet connection at home on the safety subdimension of the digital literacy scale are better than those of students who do not have an internet connection at home.

An examination of Table 5 shows that the scores obtained by high school students on the digital literacy scale are related to the question: Do you have an internet connection at home? It is observed that there is no significant difference in the subdimension of problem solving according to the variable [U=46216.000; p>0.5]. This finding shows that high school students' digital literacy levels are affected by the question Do you have an internet connection at home? in the problem-solving subdimension of the scale. It can be interpreted that the question does not change according to the variable.

An examination of Table 5 shows that the scores obtained by high school students on the digital literacy scale are related to the question: Do you have an internet connection at home? It is observed that there is a significant difference in the global scale according to the variable [U=34956,000; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have an internet connection at home. This finding can be interpreted to mean that the level of digital literacy of high school students who have an internet connection at home is generally better than that of students who do not have an internet connection at home.

Digital literacy skills of students depending on whether they have a computer or tablet at home

We investigated the differentiation of high school students' digital literacy scale scores according to whether they have a computer or tablet at home and the results of the analysis are shown in Table 6.

Table 6. Results of the U test of difference in digital literacy scores of high school students according to the variable having a computer or tablet at home.

	Do you have a computer or tablet at home?	N	Average Rank	Total Ranking	Or	P
Computer science	YES	340	334.17	166960.00	42115.000	.003
	NO	279	290.95	81175.00		
	Total	629				
Communication	YES	340	332.73	116456.00	42619.000	.006
	NO	279	292.76	81679.00		
	Total	629				
Safety	YES	340	330.63	115722.00	43353.000	.015
	NO	279	295.39	82413.00		
	Total	629				
Problem Solving	YES	340	322.45	112859.00	46216.900	.248
	NO	279	305.65	85276.00		
	Total	629				
Overall Average	YES	340	334.79	117175.50	41899.500	.002
	NO	279	290.18	80959.50		
	Total	629				

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When Table 6 is examined, it is seen that high school students' scores on the digital literacy scale are based on the question "Do you have a computer or tablet at home?" It is observed that there is a significant difference in the information processing subdimension depending on the variable [U=42115.000; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have computers/tablets at home. This finding can be interpreted to mean that the digital literacy levels of high school students who have a computer/tablet at home on the computer subdimension of the digital literacy scale are better than those of students who do not have a computer/tablet at home.

When Table 6 is examined, it is seen that high school students' scores on the digital literacy scale are based on the question "Do you have a computer or tablet at home?" It is observed that there is a significant difference in the communication subdimension according to the variable [U=42619,000; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have computers/tablets at home. This finding can be interpreted to mean that the digital literacy levels of high school students who have a computer/tablet at home in the communication subdimension of the digital literacy scale are better than students who do not have a computer/tablet at home.

When Table 6 is examined, it is seen that high school students' scores on the digital literacy scale are based on the question "Do you have a computer or tablet at home?" It is observed that there is a significant difference in the safety subdimension depending on the variable [U=43353.000; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have computers/tablets at home. This finding can be interpreted to mean that the digital literacy levels of high school students who have a computer/tablet at home on the safety subdimension of the digital literacy scale are better than those of students who do not have a computer/tablet at home.

When Table 6 is examined, it is seen that high school students' scores on the digital literacy scale are based on the question "Do you have a computer or tablet at home?" It is observed that there is no significant difference in the subdimension of problem solving according to the variable [U=46216.000; p>0.5]. This finding can be interpreted to mean that high school students' digital literacy levels do

not change based on the question variable Do you have a computer or tablet at home? in the problem-solving subdimension of the scale.

When Table 6 is examined, it is seen that high school students' scores on the digital literacy scale are based on the question "Do you have a computer or tablet at home?" It is observed that there is a significant difference in the global scale according to the variable [U=41899.500; p<0.5]. Considering the range and total averages of the study group, it is seen that this difference favors students who have computers/tablets at home. This finding can be interpreted to mean that the level of digital literacy of high school students who have a computer/tablet at home is generally better than that of students who do not have a computer/tablet at home.

Digital Literacy Skills of Students Based on Their Internet Use Purposes

The differentiation of high school students' digital literacy scale scores according to their purposes of Internet use was investigated and the results of the analysis are shown in Table 7.

Table 7. Results of the Kruskal Wallis H test to determine the difference in the digital literacy levels of high school students according to their purposes of internet use

	Do you have a computer or tablet at home?	N	Average Rank	X2	P
Computer science	Research - Doing Homework	455	303.97	5.576	.350
	Reading news	26	286.08		
	Play a game	44	328.34		
	Watch TV Series/Movies	32	355.30		
	Listen to music	25	265.12		
	Using Social Media	27	279.78		
	Total	609			
Communication	Research - Doing Homework	455	308.87	11.051	.050
	Reading news	26	383.17		
	Play a game	44	269.86		
	Watch TV Series/Movies	32	302.80		
	Listen to music	25	287.80		
	Using Social Media	27	240.33		
	Total	609			
Safety	Research - Doing Homework	455	301.83	5.086	.405
	Reading news	26	305.06		
	Play a game	44	314.70		
	Watch TV Series/Movies	32	362.34		
	Listen to music	25	264.28		
	Using Social Media	27	312.24		
	Total	609			
Problem Solving	Research - Doing Homework	455	312.92	8.192	.146
	Reading news	26	254.71		
	Play a game	44	271.78		
	Watch TV Series/Movies	32	300.66		
	Listen to music	25	337.20		
	Using Social Media	27	249.48		
	Total	609			
Overall Average	Research - Doing Homework	455	308.16	4.676	.457
	Reading news	26	304.96		
	Play a game	44	294.51		
	Watch TV Series/Movies	32	339.86		

Listen to music	25	280.84
Using Social Media	27	249.94
Total	609	

Author's own 2023

The results of the Kruskal Wallis H test regarding the digital literacy levels of the participants according to their purposes of Internet use are shown in Table 7.

According to the results of the analysis, it is observed that the digital literacy levels of the participants do not show a significant difference in the subdimension of information processing according to their purposes of Internet use [x2(sd=2; n=609) = 5.576; p>.05].

According to the results of the analysis, it is observed that the digital literacy levels of the participants do not show a significant difference in the subdimension communication according to their purposes of internet use [x2(sd=2; n=609) = 11,051; p>.05].

According to the results of the analysis, it is observed that the digital literacy levels of the participants do not show a significant difference in the subdimension of security according to the u Purpose Internet usage [x2(SD=2; n=609) = 5,086; p>.05].

According to the results of the analysis, it is observed that the digital literacy levels of the participants do not show a significant difference in the subdimension of problem solving according to their purposes of Internet use [x2(sd=2; n=609) = 8.192; p>.05].

According to the results of the analysis, it is observed that the digital literacy levels of the participants do not show a significant difference according to the purposes of internet use in the general scale [x2(sd=2; n=609) = 4.676; p>.05].

These findings can be interpreted to mean that the purposes of internet use have no effect on the digital literacy levels of high school students.

Digital literacy skills of students based on the frequency of daily internet access, in addition to VLE and live classes

The differentiation of the digital literacy scale scores of secondary school students according to the frequency of Internet connection was investigated and the results of the analysis are shown in Table 8.

Table 8. Results of the Kruskal Wallis H test for the difference in the digital literacy levels of high school students according to the frequency of daily internet access, in addition to live lessons and VLE (Virtual Learning Environments)

	Aside from virtual lessons, how often do you visit the internet on a daily basis?	N	Average Rank	X2	P	U Difference
Computer science	None	109	228.67	31.604	.000	2-1 3-1 5-1
	Less than 1 hour	210	323.91			
	Between 1-3 hours	233	344.60			
	4 hours and more	76	319.32			
	Total	628				
Communication	None	109	230.47	44.611	.000	2-1 3-1 5-1 *4-2 *3-2
	Less than 1 hour	210	293.82	*		
	Between 1-3 hours	233	361.78			
	4 hours and more	76	347.21			
	Total	628				
Safety	None	109	246.89	18.687	.000	2-1 3-1 5-1
	Less than 1 hour	210	333.94			
	Between 1-3 hours	233	324.91			

	4 hours and more	76	325.82			
	Total	628				
Problem Solving	None	109	280.12		.000	3-1 3-2
	Less than 1 hour	210	300.31			
	Between 1-3 hours	233	341.49			
	4 hours and more	76	320.25			
	Total	628				
Overall Average	None	109	223.93	38.237	.000	2-1 3-1 5-1 3-2
	Less than 1 hour	210	312.24			
	Between 1-3 hours	233	352.15			
	4 hours and more	76	335.24			
	Total	628				

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The results of the Kruskal Wallis H test regarding participants' digital literacy levels according to their frequency of daily internet use, apart from live lessons and EVA, are shown in Table 8.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the information processing subdimension depending on whether they access the Internet beyond the daily live lessons and VAS [x2(sd=2; n= 628) = 31.604; p<.05]. This finding shows that the digital literacy levels of participants who have different internet access in addition to daily live lessons and VAS are different in the information processing subdimension. Considering the ranking averages of daily live lessons and internet access in addition to EVA, digital literacy levels are those who use the internet outside of live classes and VLE for a maximum of 1-3 hours, followed by those who use the internet for less than 1 hour, 4 hours or more and those who use the internet other than EVA, respectively, are seen to be followed by those who do not access the internet except for lessons and EVA.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; Those who do not use the internet except for (228.67) live lessons and VLE per day, those who use it for less than 1 hour (323.91), those who use it for 1-3 hours (344.60), those who use live internet lessons and VLE of 4 hours or more (319.32), a significant difference was found between those who accessed the internet except live lessons and those who never accessed the internet except EVA, to the detriment of those who never accessed the internet. This finding can be interpreted as the digital literacy levels of those who have never accessed the internet other than daily live lessons and VLE in the IT sub-dimension compared to other groups. In other words, it can be said that accessing the internet increases the level of digital literacy.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the communication subdimension depending on whether they access the Internet beyond the daily live lessons and VAS [x2(sd=2; n=628) = 44,611; p<.05]. This finding shows that the digital literacy levels of participants who have different internet access in addition to daily live lessons and VLE are different in the communication subdimension. Considering the ranking averages of daily live lessons and non-EVA internet access, digital literacy levels are those that connect for 1-3 hours maximum, apart from live and EVA classes, followed by those that connect to the internet for 4 hours or more, less than 1 hour and those who access the internet other than EVA, respectively, are seen to be followed by those who do not access the internet other than live lessons and EVA.

Pairwise comparisons were performed to determine which groups had significant differences, based on the results of the Mann-Whitney U pairwise comparison test; Those who do not use the internet more than any (230.47) live lessons and VLE daily, those who use it for less than 1 hour (293.82), those who use it for 1-3 hours (361.78), those who use live lessons and EVA for 4 hours or more (347.21) against those who have never accessed the internet other than EVA, and against those who have never accessed the non-EVA internet; Among those who took less than 1 hour of live lessons and

accessed the internet other than VLE (293.82), those who attended between 1 and 3 hours (361.78), those who attended 4 hours or more (347.21) of live lessons and accessed the internet other than EVA, those who attended less than 1 hour live were found to have a significant difference versus those who accessed the internet outside of the course and EVA. This finding can be interpreted to mean that the digital literacy levels of those who use the internet less in the communication subdimension, except for daily live lessons and EVA, are lower than those of other groups. In other words, it can be said that accessing the internet increases the level of digital literacy.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the subdimension of security depending on whether they access the Internet beyond the daily live lessons and VAS [x2(sd=2; n=628) = 18.687; p<.05]. This finding shows that the digital literacy levels of participants who have different internet access in addition to daily live lessons and EVA are different in the safety subdimension. Considering the average daily live lesson rankings and non-EVA internet access, the highest levels of digital literacy are those who spend less than 1 hour of live lessons and access non-EVA internet, followed by 4 hours or more, 1-3 hours of non-EVA lessons, and those who access the non-EVA internet, and those who don't use the internet at all, respectively, are seen to be followed by those who don't access the internet other than live lessons and EVA.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; Those who do not use the internet except for some (246.89) live lessons and VLE per day, those who use it for less than 1 hour (333.94), those who use it for 1-3 hours (324.91), those who use live internet lessons and VAS for 4 hours or more (325.82). A significant difference was found between those who accessed the non-EVA internet for any live lesson, and between those who never accessed the non-EVA internet, versus those who never accessed the internet. This finding can be interpreted to mean that the digital literacy levels of those who never access the internet other than daily live lessons and VAS in the safety subdimension are lower than those of other groups. In other words, it can be said that accessing the internet increases the level of digital literacy.

According to the results of the analysis, it is seen that the digital literacy levels of the participants show a significant difference in the subdimension of problem solving depending on whether they access the Internet in addition to the daily live lessons and VAS [x2(sd=2; n= 628) = 10,474; p<.05]. This finding shows that the digital literacy levels of participants who have different internet access in addition to daily live lessons and VAS are different in the problem-solving sub-dimension. Taking into account the ranking averages of daily live lessons and internet access in addition to EVA, digital literacy levels are highest among those who use the internet outside of live classes and EVA for 1 to 3 hours, followed by those who use the internet for 4 hours. or more, less than 1 hour, and those using the non-EVA internet for 1-3 hours, respectively, followed by those who do not access the internet except live lessons and EVA.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; Among those who use the Internet except live lessons and VLE for 1 to 3 hours per day (341.49), those who do not access the Internet except live lessons and VLE for 1 to 3 hours per day (280,12), and those who use the Internet other than live lessons and VLE for less than 1 hour (300,31), 1 A significant difference was found in favor of those who accessed the internet other than live lessons and VLE for -3 hours. This finding can be interpreted as the problem-solving sub-dimension that the digital literacy levels of those who use the internet for 1 to 3 hours daily, except for live lessons and EVA, are higher than those who do not access the internet except for live lessons and VLE for less than 1 hour. and those who use the internet for less than 1 hour of live and non-EVA lessons. In other words, it can be said that accessing the internet increases the level of digital literacy.

According to the results of the analysis, it is observed that the digital literacy levels of the participants show a significant difference in the overall scale depending on whether they access the Internet in addition to the daily live lessons and VAS [x2(sd=2; n=628) = 38.237; p<.05]. This finding shows that the digital literacy levels of the participants, who have different internet access in

addition to daily live lessons and EVA, are different across the scale. Taking into account daily live lesson ranking averages and non-EVA internet access, digital literacy levels are highest among those who spend 1-3 hours of live lessons and access non-EVA internet, followed by those who spend 4 hours or more. , less than 1 hour of live lectures and non-EVA internet access, and those who use non-EVA internet for 4 hours or more, respectively, are seen to be followed by those who do not access the internet except for lessons.

Pairwise comparisons were made to determine which groups had significant differences. Based on the results of the Mann-Whitney U pairwise comparison test; Those who do not use the internet except for (223.93) live lessons and VLE per day, those who use it for less than 1 hour (312.24), those who use it for 1-3 hours (352.15), those who use live internet lessons and EVA for 4 hours or more (335.24) against those who have never accessed the internet other than EVA, and against those who have never accessed the non-EVA internet; A significant difference was found between those who used live lessons and non-VAS internet for 1 to 3 hours (352.15) and those who used live lessons and non-VAS internet for less than 1 hour (312.24) in favor of those who used live lessons and non-VAS internet for less than 1 hour (312,24). lessons and internet other than EVA for 1-3 hours. On this scale, the digital literacy levels of those who have never accessed the internet beyond daily live lessons and VAS can be interpreted to be lower than those of other groups. In other words, it can be said that accessing the internet increases the level of digital literacy.

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

In this study, the digital literacy levels of sixth, seventh, and eighth grade students were examined using survey design, one of the quantitative research methods. The research study group consisted of six hundred and thirty-two high school students who studied in the secretaries of schools in the Caribbean area in the 2020-2021 academic year.

As a result of the study, it was determined that the digital literacy levels of the students participating in the research were high. Nowadays, students' digital literacy levels are increasing day by day due to students' increased access to technological developments such as mobile access, digital tools and equipment, digital media, information and communication technologies, internet, virtual environments and media. and creating environments that enhance digital literacy skills in schools. This result is similar to the studies by Pala (2019), Kaya (2020), Kozan (2018), Arslan (2019), Korkmaz (2020), on the subject.

As a result of the research, it was determined that the scores received by students on the Digital Literacy Scale showed a significant difference in the general scale according to the gender variable and that this difference was in favor of male students. Based on this, when we look at the overall scale of digital literacy, it can be said that the digital literacy levels of female students are lower than the digital literacy levels of male students. When examining the literature, there are studies that indicate that there is a significant gender difference in digital literacy, media literacy, use of the internet and technology, digital environment, and search for information in the digital environment (Kaya, 2020; Kıyıcı, 2008; Ozturk, 2020). However, Kara (2021), Pala (2019) and Kozan (2018) stated in their studies that the gender factor has no effect on digital literacy levels. It can be said that this situation is due to changes in the results obtained in the research, such as the date of the research, differences in the research groups, population, sample and characteristics of the participants.

According to the school grade variable, there is a significant difference in students' digital literacy levels throughout the scale, except in the communication subdimension. When looking at the scores obtained from the Digital Literacy Scale, it can be said that there is a significant difference in the digital literacy levels of students versus 6th graders. When the results obtained are examined, it can be interpreted that as students' grades increase, their levels of digital literacy increase. The reason for this is that the digital literacy skill is a skill that is taught directly in the sixth-grade Science, Technology, and Society learning field, and the contents of the subjects in this learning field are prepared based on the spiral approach of the Social Studies course curriculum at the 6th and 7th grade levels (MEB, 2018), it can be thought that this may be because it provides students with greater

opportunities for reinforcement in the upper grades. In his study with future teachers, Kozan (2018) stated that the digital literacy levels of prospective teachers vary according to the grade in which they study, and as the grade level increases, their digital literacy levels also increase.

When the data obtained from the Digital Literacy Scale were analyzed according to the variable having an internet connection at home, it was determined that there was a significant difference in the general scale, except in the subdimension of problem solving, in favor of the students. that I had an internet connection at home. The digital literacy levels of students who had an internet connection at home were found to be significantly higher than the digital literacy levels of students who did not have an internet connection at home. This result is similar to the studies by Kara (2021), Ozerbaş and Kuralbayeva (2018), Pala (2019) and Korkmaz (2020). In the 21st century, where digitalization is constantly increasing, a home without the Internet is unthinkable. For this reason, individuals, and especially students, use digital tools and must be able to use the environment effectively requires them to be digital citizens and therefore people with high digital literacy skills.

When the data obtained from the Digital Literacy Scale were analyzed according to the variable having a computer or tablet at home, it was determined that there was a significant difference in the general scale, except in the subdimension of problem solving, in favor of students who had a computer or tablet at home. Based on this finding, it can be said that the digital literacy levels of high school students who have computers or tablets at home are higher than the digital literacy levels of students who do not have computers or tablets at home. Pala (2019) comes to a similar conclusion in his study and states that this is because students who have tablets and computers at home spend more time in the digital environment and, in parallel, gain more experience.

When data obtained from the Digital Literacy Scale were analyzed according to the variable purpose of Internet use of high school students, it was determined that students' digital literacy levels did not show a significant difference in all subdimensions of the scale. according to your purpose of use of the Internet. Based on this, it can be stated that the purposes of internet use have no effect on the digital literacy levels of high school students. When different studies on the subject were examined, Kara (2021) stated in her study that the digital literacy strategies and search and interpretation of information of future teachers on the web showed a significant difference according to the variable purpose of Internet use.

The variable of frequency of internet connection of secondary school students was examined, taking into account the Covid-19 pandemic process, which was on the global agenda in 2020 and directly affected the educational process since students received the 2020-2021 academic year. As a distance education, their internet access was examined in addition to EVA and live lessons. When data obtained from the Digital Literacy Scale were analyzed, it was determined that students' digital literacy levels and their access to the internet other than VLE and live lessons showed a significant difference in all subdimensions of the scale. Examining different studies on the topic, Kaya (2020) and Pala (2019) found that digital literacy skill levels have an impact on students' internet connection frequency, and in general, as the time they spend on the internet increases daily, digital literacy levels also increase.

Based on the research data, it was determined that students' Digital Literacy Scale scores differ significantly according to their gender, grade, home internet connection, presence of a computer or tablet at home, and frequency of internet connection; According to the purposes of Internet use, no significant difference could be determined between the data obtained from the Digital Literacy Scale. According to the results obtained from the research, it was concluded that the digital literacy levels of secondary school students were generally high.

Some suggestions are presented based on the data obtained as a result of the study, consequently, firstly, the digital literacy levels of students in lower grades can be improved by including topics and activities that enhance digital literacy skills in the course content of the lower grades. In addition, it is necessary to coordinate the school climate to improve digital literacy skills. Schools must have the necessary equipment for the Internet and digital tools (such as computer labs). Since the frequency of internet connection is an effective variable in the level of digital literacy, seminars and lectures can be given to students in schools about the risks they will encounter in activities such as searching,

finding, and using information on the internet. sharing information, using social media, and shopping online, and how they can protect themselves from these risks.

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