Research Article

Digital Security & Media, *1*(1), 45-59

The relationship between high school students' social media usage and Metaverse knowledge levels

Received: 27/09/2023
Revised: 05/12/2023
Accepted: 25/12/2023

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Abstract

Metaverse is the new digital environment to socialize and experience. Builders consider it to be the next step of technological evolution. Social media is used intensively, especially by young people. The aim of this research is to reveal the relationship between high school students' social media usage and Metaverse knowledge levels. A correlational survey model was used in the research. The participants are 568 students studying at different grade levels from different types of high schools in Balıkesir. Data was collected with "personal information form", "Social Media Usage Scale" and "Metaverse Scale." In conclusion; it was revealed that the duration of high school students' engagement with social media and their competence in terms of use are at a medium level and female students are more engaged with social media. It was observed that students who use smartphones and have social media accounts, interact with social media for longer periods of time and more competently. Also, the Metaverse knowledge levels of the participants were above average. Male students have higher levels of knowledge within the scope of digitalization and lifestyle. As the grade level increases, so does the Metaverse knowledge level. Students from two schools that receive students with higher base scores, have higher levels of knowledge. It was observed that using social media both continuously and competently has a positive relationship with Metaverse knowledge levels. To increase the knowledge level, classrooms can be created and Metaverse content added to the curriculum of Computer Science courses.

Keywords: Social Media, Metaverse, High School, Student.

Cite:, Yılmaz, E.; Ünal, C. & Demir, İ. (2024). The relationship between high school students' social media usage and Metaverse knowledge levels. *Digital Security & Media,* 1(1), 45-59.

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INTRODUCTION

The emergence of the Internet has brought new phenomenon. The interest in social media, which is one of these phenomenon's, is increasing. When the statistics in Türkiye are examined, there are 66 million Internet users. Social media, which constitutes the first place of internet usage purposes with 82% (Türkiye Statistical Institute, 2016); refers to computer-based technology that allows ideas, information, and personal content to be shared within virtual communities. Social media includes social networking sites such as Facebook and Google+, micro blogging sites such as Twitter, photo and video sharing sites such as Instagram, Snapchat and YouTube (Smith, Leonis and Anandavalli, 2021). Today students, who make up a large part of society, also spend most of their time on social media. As a result of the research conducted by Otrar and Argın (2014), it has been revealed that 94% of students have at least one social media account. One of the phenomena that emerged with the development of technology after the invention of the computer, mobile phone, Internet and then social media, is the Metaverse. The Metaverse refers to an immersive digital environment in which one can interact with virtual identities i.e. avatars in the virtual universe (Suh and Ahn, 2022). The Metaverse is a virtual world that allows socioeconomic activities similar to those in the real world (Lee, Woo and Yu, 2022). This concept was first used 30 years ago in the dystopian science fiction novel "SnowCrash" written by science fiction writer Neal Stephenson in 1992 (Köse, 2021). The Metaverse became popular through the Facebook's change of name to Meta and Mark Zuckerberg's statements. For this reason, there has been an interest in the Metaverse in the community and social media users (Sönmezer and Büyükbaykal, 2022). In a survey of 628 people conducted by Twentify (2022), it was observed that 63% of the participants had some ideas about the Metaverse, although they were not very sure, but only 21% were confident in explaining the concept of the Metaverse. As can be seen from this data, most people's knowledge of the Metaverse remains limited. Since social media is more widely used than the Metaverse, individuals are more interested in social media. Because of the fact that the Metaverse will greatly influence future social media usage, it is important to examine the relationship between these two concepts. In this context, the aim of the study is to reveal the relationship between high school students' social media use and Metaverse knowledge levels. In line with this general purpose, the following questions were sought to be answered: 1. High school students' social media usage and Metaverse knowledge levels; Does it differ according to their gender, grade level, school types, smartphone use status, social media account status? 2. Is there a relationship between high school students' social media usage and Metaverse knowledge levels?

BACKGROUND

In 2023, nearly half of the world population have social media and spend lots of their time with it. For instance; in Türkiye, people spend 3 hours a day with social media. Additionally, females' social media addiction levels are higher than males and "Generation Z" uses social media more competently than "BabyBoomers". With the evolution of technology, after smart phones and social media, there is a new digital environment: Metaverse. Many searchers mentioned and defined the Metaverse phenomena through years. They grouped experiences obtained from the Metaverse and conducted surveys about it. However, there aren't many studies about Metaverse compared with social media.

The Global Review Report showed that 4 billion people in the world use the Internet and more than 3 billion people use social media every month. 90% of these users access the Internet via mobile devices. In Türkiye, an average of 7 hours of the Internet is used in a day and approximately 3 hours of these 7 hours are spent on social media channels (WeAreSocial, 2018).

As a result of another research, the level of social media usage by the participants was determined as 98%. The most commonly used social networks among the participants are

Facebook and Twitter. Depending on the results of the participants using social networks almost every day, it is seen that they spend an average of 1-3 hours a day on these social networks.

Another result of the study was that they were affected by social media at a rate of 55% (Solmaz, Tekin, Herzem and Demir, 2013). Moreover, Güney ve Taştepe (2020) concluded that the dispersion of social media addiction levels of adolescents participating in the study was predominantly moderate (56%).

Furthermore, according to the genders, it was determined that females' social media addiction levels were higher than males, and that grade level was not a significant variable in determining the level of addiction according to Kuss and Griffiths (2011).

Despite this, in Üstündağ's (2021a) research, the analysis of extracurricular screen usage time showed that girls had 3-4 hours of screen use and boys had screen time between 7-8 hours. On the other hand, according to the generations, a series of scale development studies have been carried out in order to reveal the behaviours and values of different generations in terms of social media usage, working life and acceptance of differences. In the scales where it is revealed that the high score is competent in terms of the person's social media use, the differences are accepted at a greater rate and a job where discipline is dominant is not preferred, the high score is Generation Z; it was determined that the low score showed the characteristics of "BabyBoomers" (Deniz, Tutgun and Ünal, 2019).

Additionally, according to the research conducted by Koçyiğit and Koç (2021), the top three most used social media applications among young people were determined as Instagram, WhatsApp and Twitter. Recently, for the social media users, Metaverse is a new and different environment to join. Social media users have many definitions and ideas about the new phenomenon: Metaverse. With regard to Bozkurt and Gümüş (2022), the Metaverse is a concept that refers to three- dimensional virtual environments and interacting with digital twins in these environments. They mentioned their positive and critical view of the Metaverse and compared it to Meta entrepreneurship. Yüksel (2022) touched upon the definition of the Metaverse, its relationship with games, its place in Internet technology and predictions about the Metaverse.

The analyses made as a result of the interviews conducted in a study indicated that the experiences obtained from Metaverse event participation can be grouped under eight themes (illusion being, not to be ignorant based on FOMO, escape, flow, instant pleasure, horizon line, spirit realm and virtual symptomatic) (Argan, Argan and Dinç, 2022). Also, it was determined that the countries that invest in the dimensions of the Metaverse and the schools that combine teaching and technology effectively will make the greatest contribution to the well-equipped education of new generations, and that the Metaverse studies focused on educational sciences and teaching are generally low (Göçen, 2022).

METHOD

Research Design

A correlational survey model was used in the research. Survey models are models that aim to depict a situation that existed or existed in the past in its current form. The event, individual or object that is the subject of the research is tried to be defined within its own conditions and as it is. Correlational survey models are considered appropriate for such research since they are used for research models aiming to determine the presence or degree of co-change between two or more variables (Karasar, 2006). In the study, high school students' social media use and Metaverse knowledge levels were determined and examined in terms of various variables.

Participants

The population of the study consists of students studying in public and private schools affiliated to the Ministry of National Education in Balıkesir in the 2022-2023 academic year. In the study, convenience sampling method was used from the purposeful sampling methods. According to Yıldırım and Şimşek (2013), the aim of creating a maximum diversity-based sample is to try to find the existence of common or divergent aspects among the various situations and to describe the problem in a broader framework according to this diversity. Accordingly, 568 students from 9th, 10th, 11th and 12th grades from three different high schools selected from different types constitute the sample of the research. Personal information of the participants in the research is given in Table 1.

Table 1. *Personal information of the Participants*

Variable	Category	f	%
Gender	Female	322	57
	Male	246	43
Grade Level	9	192	34
	10	112	20
	11	145	26
	12	119	21
School Type	1	213	38
	2	220	39
	3	135	24
Smartphone	Yes	563	99
	No	5	1
Use of Social Media	Yes	523	92
	No	45	8

According to Table 2, the majority of the students (57%) participating in the study were female students and 9th graders are the majority (34%). Smartphone (99%) and social media (92%) users make up the vast majority. Students from 3 different types of schools located.

Data Collection Techniques

A three-part data collection tool was used to determine the relationship between high school students' social media usage and Metaverse knowledge levels. The necessary permissions were obtained from the Balıkesir Provincial Directorate of National Education and applied online to the students within the scope of the research. In the process of analysing the data, the data of 16 participants were not evaluated because they contained outlier values. The analyses were carried out with 568 data collection tools. With the personal information form in the first section, the gender, grade level, school type, smartphone usage status, and social media account status of high school students were obtained.

In the second part, the Social Media Usage Scale developed by Deniz and Tutgun-Ünal (2019) was used to determine the social media usage situations of the students. This scale consists of 8 items and 2 factors (continuity and competence). The continuity dimension includes the person's intense engagement with social media activities and continuous presence in social media, while the competence dimension includes being sufficient to do various daily life activities that can be performed in the social media environment. Responses to the scale items range from "Strongly agree" (5 points) to "Strongly disagree" (1 point). The high score from the scale reveals that the person is more engaged with social media and is competent in terms of use. In the application made with 516 people during the development phase, the Cronbach Alpha (α) internal consistency coefficient of the scale is .824. The reliability coefficients of the factors are .721 for continuity and .734 for competence.

In the third section, The Metaverse Scale was used developed by Süleymanoğulları, Özdemir, Bayraktar and Vural (2022). This scale consists of 15 items and 4 factors (technology, digitalization, social, and lifestyle). The answers to the items of the scale range from "I agree" (5 points) to "Disagree" (1 point). A maximum of 75 and a minimum of 15 points can be obtained from the scale. As the scores obtained from the scale increase, the level of knowledge, attitude, and awareness of the Metaverse concept also increases. In the application carried out with 593 university students, the Cronbach Alpha (α) internal consistency coefficient of the scale is .813. In this study, Cronbach Alpha (α) internal consistency coefficients were calculated as .858 for the Social Media Use Scale and .931 for the Metaverse Scale in line with the data obtained from the participants. When the obtained internal consistency coefficients are evaluated according to the ranges recommended by Özdamar (2004), it can be said that the measurement results are quite reliable.

Frequency and percentage distributions were used for the total scores obtained from the scales where the personal information of the students and the usage permits were obtained. The total scores obtained from the scales were tested according to independent variables. The obtained data were analysed by quantitative data analysis methods using SPSS 16.0 statistical software.

Data Analysis

Data normality was assessed to determine the suitability of the scores obtained from the scale for the planned test statistics. Histogram graphs of the scales were inspected, revealing symmetrical distributions for both curves. Moreover, central tendency measures for the total scores were considered and presented in Table 2.

Table 2. *Central Tendency Measures*

	$\bar{X}$	Median	Mode	Skewness	Kurtosis
Social Media Usage	22.88	23	16	.143	-.301
Metaverse	47.76	49	45	-.616	.296

When Table 2 is examined, for the Social Media Usage scale, x̄=22.88, median is 23, mode is 16, skewness is .143, and kurtosis is -.301. For the Metaverse scale, x̄=47.76, median is 49, mode is 45, skewness is -.616, and kurtosis is .296. According to Büyüköztürk (2011), if the mean, median and mode values are close to each other and the skewness and kurtosis values are between -1 and +1, it can be said that the data follows a normal distribution, and parametric tests can be used. Therefore, it was observed that the data collected from the scales followed a normal distribution, and parametric statistical methods were used in the analysis. The relationship between high school students' social media usage and Metaverse knowledge levels was determined based on the scores obtained from the scales and compared according to various variables. Independent sample t-tests were conducted to investigate differences in variables with two subgroups, and one-way analysis of variance (ANOVA) was used for variables with more than two subgroups. The homogeneity of variances was determined based on Levene Statistic values. LSD post hoc follow-up tests were used to determine the groups causing the differences. The Pearson correlation coefficient was calculated to determine the relationship between the two measurements. In correlation analyses, the intervals specified by Büyüköztürk (2011) were used to assess the strength of the relationships: 1.00-.70 as high, .69-.30 as moderate, and .29-.00 as low. The significance level for all analyses was set at .05.

FINDINGS

In this section, it was examined how the total scores obtained from the scales used in the research change according to demographic variables. Then, the relationship between the participants' social media usage and their Metaverse knowledge levels was analysed.

Findings on Social Media Use

In this section, participants were asked to complete a "Social Media Use Scale." Mean and standard deviations of the total scores both obtained from this scale. Then the differences according to demographic variables were examined.

Table 3. *Social Media Use*

	$\bar{X}$	sd
Continuity	10.88	3.85
Competency	12.00	3.91
Scale Wide	22.88	6.97

In Table 3, students' continuity of social media use ($\bar{X}$=10.88), competencies ($\bar{X}$=12.00) and scale wide ($\bar{X}$=22.88) average scores are shown. It can be said that participants' amount of time they spend engaging with social media, being proficient in terms of usage and also scale wide are moderate level. A maximum of 40 and a minimum of 8 points can be obtained from the Social Media Use scale. Because of that 22.88 score is moderate. Students' use of social media t-test results on whether there is a significant difference according to gender. It is given in Table 4.

Table 4. *Social Media Use by Gender*

	Gender	N	$\bar{X}$	sd	t	df	p
Continuity	Female	322	11.42	3.92	3.901	566	.000*
	Male	246	10.16	3.64			
Competency	Female	322	11.89	3.91	-.736	566	.462
	Male	246	12.14	3.91			
Social Media	Female	322	23.31	7.15	1.719	566	.086
	Male	246	22.30	6.70			

* p<.05

In Table 4, when students' social media use is examined according to gender; t-test result in continuity sub-dimension [t(566)=3.901, p=.000] was statistically significant. There is a difference (p<.05). Accordingly, it can be said that female students are more engaged with social media. There was no statistically significant difference between the mean scores of females and males in the competency sub-dimension and the overall scale (p>.05). In other words, students' level of competent use of social media depends on gender but does not change accordingly. Student's social media usage is significant according to grade level ANOVA results on whether they differ or not are given in Table 5.

Table 5. *Social Media Use by Grade Level*

	Source of variance	Sum of squares	df	Average of squares	F	p	Significant difference
Competency	Between groups	197.963	3	65.988	4.532	.004*	11>9
	Within groups	8212.162	564	14.561			12>9
	Total	8410.125	567				
Continuity	Between groups	121.532	3	40.511	2.676	.046*	10>9
	Within groups	8538.468	564	15.139			11>9
	Total	8660.000	567				
Social Media	Between groups	593.478	3	197.826	4.139	.006*	11>9
	Within groups	26958.647	564	47.799			
	Total	27552.125	567				

*p<.05

When the social media usage of the students was examined according to the grade level, a statistically significant difference was seen in the sub-dimensions of continuity [F(3-564)=4.532, p=.004], competence [F(3-564)=2.676, p=.046] according to the ANOVA result and [F(3-564)=4.139, p=.006] in the overall scale (p<.05). According to the results of the LSD test to reveal the source of the difference between the groups; 11th and 12th graders use social media for longer than 9th graders. 10th and 11th graders are more proficient in social media than 9th graders. 11th graders use social media more than 9th graders, both in terms of duration and competence. When the social media usage of the students was examined according to the type of school, there was no statistically significant difference in the ANOVA result. The t-test results on whether the students' social media use differed significantly according to their smartphone use situations are given in Table 6.

Table 6. *Social Media Use According to Smartphone Use*

	Smart Phone	N	$\bar{X}$	sd	t	df	p
Competency	Yes	563	10.91	3.84	2.505	566	.013*
	No	5	6.60	2.19			
Continuity	Yes	563	12.03	3.90	2.191	566	.029*
	No	5	8.20	2.86			
Social Media	Yes	563	22.95	6.95	2.615	566	.009*
	No	5	14.80	4.32			

* p<.05

When the social media usage of the students participating in the research was examined according to their smartphone usage situations; As a result of the t-test, a statistically significant difference was observed in the sub-dimensions of continuity [t(566)=2.505, p=.013], competence [t(566)=2.191, p=.029] and in the overall scale [t(566)=2.615, p=.009] (p<.05). Accordingly, it can be said that students who use smartphones use social media for longer periods of time and more competently. The t-test results on whether the students' social media use showed a significant difference according to their social media account status are given in Table 7.

Table 7. *Social Media Use According to Social Media Account Status*

	Account	N	$\bar{X}$	sd	t	df	p
Competency	Yes	523	11.08	3.86	5.723	58.85	.000*
	No	45	8.47	2.85			
Continuity	Yes	523	12.20	3.88	4.277	566	.000*
	No	45	9.64	3.51			
Social Media	Yes	523	23.28	6.94	5.995	57.20	.000*
	No	45	18.11	5.42			

* p<.05

In Table 7, when the social media usage of the students is examined according to their social media account; As a result of the t-test, a statistically significant difference was observed in the sub-dimensions of continuity [t(58.85)=5.723, p=.000], competence [t(566)=4.277, p=.000] and in the overall scale [t(57.20)=5.995, p=.000] (p<.05). Accordingly, it is observed that students with social media accounts use social media for longer periods of time and more competently.

Findings on the Metaverse Knowledge Levels

In this section, the mean and standard deviations of the total scores obtained from the Metaverse Scale, in the overall and sub-dimensions of the scale were given, and then the differences according to demographic variables were examined.

Table 8. *Metaverse Knowledge Levels of High School Students*

	$\bar{X}$	sd
Technology	22.41	6.39
Digitalization	9.72	2.84
Social	5.73	2.08
Lifestyle	9.89	2.96
Scale Wide	47.76	12.16

Table 8 shows the average scores of the students on technology ($\bar{X}$=22.41), digitalization ($\bar{X}$=9.72), social ($\bar{X}$=5.73), lifestyle ($\bar{X}$=9.89) sub-dimensions and scale overall ($\bar{X}$=47.76). Accordingly, it can be said that the Metaverse knowledge levels of the participants were above the moderate level in terms of 4 sub-dimensions and also scale wide. A maximum of 75 and a minimum of 15 points can be obtained from the Metaverse scale. Because of that scores are moderate. The t-test results of whether the Metaverse knowledge levels of the students showed significant differences according to gender are given in Table 9.

Table 9. *Metaverse Knowledge Levels by Gender*

	Gender	N	$\bar{X}$	sd	t	df	p
Technology	Female	322	22.02	6.09	-1.689	566	.092
	Male	246	22.93	6.74			
Digitalization	Female	322	9.48	2.82	-2.328	566	.020*
	Male	246	10.04	2.85			
Social	Female	322	5.81	1.99	1.050	566	.294
	Male	246	5.63	2.19			
Lifestyle	Female	322	9.66	2.95	-2.191	566	.029*
	Male	246	10.20	2.96			
Metaverse	Female	322	46.96	12.07	-1.784	566	.075
	Male	246	48.80	12.24			

* p<.05

When the Metaverse knowledge levels of the students were examined according to gender; as a result of the t-test, a statistically significant difference was observed in the sub-dimensions of digitalization [t(566)=-2.328, p=.020] and lifestyle [t(566)=-2.191, p=.029] (p<.05). Accordingly, it can be said that boy students have higher Metaverse knowledge levels within the scope of digitalization and lifestyle. There was no statistically significant difference between the average scores of females and males in the technology and social sub-dimensions and in the overall scale (p>.05). ANOVA results on whether the Metaverse knowledge levels of the students showed significant differences according to the grade level are given in Table 10.

Table 10. *Metaverse Knowledge Levels by Grade Level*

	Source variance	Sum of squares	df	Average squares	F	p	Significant difference
Technology	Between groups	192.898	3	64.299	1.580	.193	
	Within groups	22952.875	564	40.697			
	Total	23145.773	567				
Digitalization	Between groups	57.527	3	19.176	2.389	.068	
	Within groups	4526.964	564	8.027			
	Total	4584.491	567				
Social	Between groups	15.836	3	5.279	1.226	.299	
	Within groups	2427.951	564	4.305			
	Total	2443.787	567				
Lifestyle	Between groups	122.004	3	40.668	4.723	.003*	11>9
	Within groups	4856.445	564	8.611			12>9
	Total	4978.449	567				11>10
Metaverse	Between groups	1088.869	3	362.956	2.472	.061	
	Within groups	82805.603	564	146.818			
	Total	83894.472	567				

*p<.05

When the Metaverse knowledge levels of the students were examined according to grade level, a statistically significant difference was seen in the solitary lifestyle sub-dimension [F(3-564)=4.723, p=.003] according to the ANOVA result (p<.05). According to the results of the LSD test to reveal the source of the difference between the groups; It can be said that 11th and 12th grades have a higher level of knowledge in terms of lifestyle than 9th grade, 11th grade 10th grade. ANOVA results on whether the Metaverse knowledge levels of the students showed significant differences according to the type of school are given in Table 11.

Table 11. *Metaverse Knowledge Levels by School Type*

	Source variance	Sum of squares	df	Average squares	F	p	Significant difference
Technology	Between groups	393.939	2	196.969	4.891	.008*	1>3
	Within group	22751.834	565	40.269			2>3
	Total	23145.773	567				
Digitalization	Between groups	111.872	2	55.936	7.066	.001*	1>3
	Within group	4472.619	565	7.916			2>3
	Total	4584.491	567				
Social	Between groups	8.605	2	4.303	.998	.369	
	Within group	2435.182	565	4.310			
	Total	2443.787	567				
Lifestyle	Between groups	169.607	2	84.803	9.964	.000*	1>3
	Within group	4808.842	565	8.511			2>3
	Total	4978.449	567				
Metaverse	Between groups	1952.494	2	976.247	6.731	.001*	1>3
	Within group	81941.978	565	145.030			2>3
	Total	83894.472	567				

*p<.05

When the Metaverse knowledge levels of the students were examined according to the school type, a statistically significant difference was seen according to the ANOVA result (F(2-565)=4.891, p=.008], digitalization [F(2-565)=7.066, p=.001], lifestyle [F(2-565)=9.964, p=.000] and [F(2-565)=6.731, p=.001] in the overall scale (p<.05). According to the results of the LSD test to reveal the source of the difference between the groups; it is seen that the students of schools 1 and 2 have higher levels of knowledge in these 4 sub-dimensions than the students of school number 3. Accordingly, considering that school 1 and 2 receive students with higher base scores, it can be said that academic achievement is effective at the Metaverse knowledge level. The t-test results of whether the Metaverse knowledge levels of the students

showed significant differences according to their smartphone use situations are given in Table 12.

Table 12. *Metaverse Knowledge Levels by Smartphone Use*

	Smart phone	N	$\bar{X}$	sd	t	df	p
Technology	Yes	563	22.46	6.36	1.908	566	.057
	No	5	17.00	8.03			
Digitalization	Yes	563	9.74	2.84	1.360	566	.174
	No	5	8.00	3.39			
Social	Yes	563	5.74	2.07	1.658	566	.098
	No	5	4.20	2.17			
Lifestyle	Yes	563	9.90	2.95	.525	566	.600
	No	5	9.20	4.92			
Metaverse	Yes	563	47.84	12.09	1.731	566	.084
	No	5	38.40	17.64			

When the Metaverse knowledge levels of the students participating in the research were examined according to their smartphone usage situations; as a result of the t-test, there was no statistically significant difference in both the sub-dimensions and the overall scale (p>.05). Accordingly, it can be said that the use of smartphones has no effect on the Metaverse knowledge levels of the students. The t-test results of whether the Metaverse knowledge levels of the students showed significant differences according to their social media account status are given in Table 13.

Table 13. *Metaverse Knowledge Levels According to Social Media Account Status*

	Account	N	$\bar{X}$	sd	t	df	p
Technology	Yes	523	22.55	6.42	1.745	566	.082
	No	45	20.82	5.90			
Digitalization	Yes	523	9.75	2.84	.841	566	.401
	No	45	9.38	2.85			
Social	Yes	523	5.79	2.09	2.244	566	.025*
	No	45	5.07	1.86			
Lifestyle	Yes	523	9.88	2.96	-.306	566	.760
	No	45	10.02	3.09			
Metaverse	Yes	523	47.97	12.18	1.420	566	.156
	No	45	45.29	11.88			

* p<.05

When the Metaverse knowledge levels of the students are examined according to their social media account status; as a result of the t-test, a statistically significant difference was observed in the social sub-dimension [t(566)=2.244, p=.025] (p<.05). Accordingly, it can be concluded that students with social media accounts possess a higher level of knowledge in the social domain. A correlation analysis was performed to reveal whether there is a significant relationship between high school students' social media use and Metaverse knowledge levels. According to Büyüköztürk (2011), the correlation coefficient ranges between 1.00 and -1.00. The correlation coefficient between .70-1.00 is high; between .69-.30 is medium; and the correlation coefficient between .29-.00 is an indication of a low level of relationship. 0 indicates there is no relationship. Since the data have a normal distribution and both variables are continuous, the Pearson correlation coefficient was calculated. The analysis results are presented in Table 14.

Table 14. *The Relationship between Social Media Use and Metaverse Knowledge Levels*

		Technology	Digitalization	Social	Lifestyle	Metaverse
Continuity	r	.383**	.352**	.331**	.214**	.392**
	p	.000	.000	.000	.000	.000
Competency	r	.504**	.462**	.414**	.277**	.511**
	p	.000	.000	.000	.000	.000
Social media	r	.494**	.453**	.415**	.273**	.503**
	p	.000	.000	.000	.000	.000

*p<.05

When examining the correlation analyses in Table 14, it was found that both consistent and proficient use of social media had a positive relationship with all sub-dimensions of Metaverse knowledge levels. With continuous social media usage, there was a moderate-level relationship between technology, digitalization, social sub-dimensions, and the overall Metaverse knowledge level. However, a low-level relationship was observed with the lifestyle dimension. With proficient social media usage, there was a moderate-level relationship between technology, digitalization, social sub-dimensions, and the overall Metaverse knowledge level. However, a low-level relationship was identified with the lifestyle dimension. With general social media use, there was a moderate-level relationship between technology, digitalization, social sub-dimensions, and the overall Metaverse knowledge level. However, a low-level relationship was noted with the lifestyle dimension. Therefore, it can be said that high school students' prolonged and competent use of social media leads to a significant change in their Metaverse knowledge levels.

CONCLUSION AND DISCUSSION

In this research, the total scores obtained from the scales were analysed and the relationship between high school students social media use and Metaverse knowledge levels was examined according to different variables. It was revealed that the duration of the students participating in the research and their competence in terms of social media were moderate and female students were more engaged with social media. Similarly, some researchers found that females social media addictions are higher than males (Güney and Taştepe, 2020; Demircan, Işık and Gürhan, 2022; Bozkurt and Bozkurt, 2021). However, Çalapkulu and Sarı (2022) emphasized that individuals' social media addiction does not show a significant difference according to gender, but only differentiation in the sub-dimension of busyness. In addition, according to Güney and Taştepe (2020), there is no difference in the sub-dimension of competence and general social media use according to gender.

When students' social media usage was examined according to grade level; grades 11 and 12 use social media longer than 9th graders. 10th and 11th grades use social media more proficiently than 9th graders. 11th graders use social media more than 9th graders, both in terms of duration and competence. In support of these findings, Hazar (2011) and Çetinkaya (2013) stated that internet-based addictions differ according to grade level; by contrast with Güney and Taştepe (2020), who reached a different conclusion, concluded that adolescent's social media addictions do not change according to grade level.

In this research, there is no statistically significant difference according to school type. Also Akyürek (2020) stated that high school students perceptions of their attitudes towards social media did not change significantly depending on the school type variable.

It has been revealed that students who use smartphones and have social media accounts use social media for longer periods of time and more competently. As a result of his research,

again similarly, Üstündağ (2022b) concluded that there is a significant and positive relationship between smartphone use and both social media and game addiction.

As a result of the research, the level of knowledge of the participants in Metaverse was above the average level in all 4 sub-dimensions. Avcu, Tilki, Dereli and Aksoy (2023) also revealed that students' levels of Metaverse knowledge, skills, and awareness are at a high level.

In terms of gender, male students have higher levels of knowledge of Metaverse within the scope of digitalization and lifestyle. Supporting this conclusion; Aburbeian, Owda and Owda (2022) found that males are more interested in the Metaverse than females. In the research conducted by Karababa, Turan and Savaş (2022) with pre-service teachers, it was determined that the Metaverse knowledge levels of male pre-service teachers were significantly higher than females. There is no difference between male and female students in the sub-dimensions of technology and social and in the scale in general.

In the examination made by grade level, 11th and 12th grades have a higher level of Metaverse knowledge than 9th grades, and 11th grades have a higher level of Metaverse knowledge within the scope of lifestyle than 10th grades. Karababa et al. (2022) stated that in their research, students' Metaverse knowledge levels regarding classroom situations did not have any statistically significant difference in all sub-dimensions and total scores.

Considering the school type of the students participating in the research, the Metaverse knowledge levels of the students of the two schools that accept students with higher base scores are higher. Similarly, Aksak (2017) and Çap (2017) found that there was a significant variable according to the type of school. However, unlike these findings, no significant difference was found in the research conducted by Akyürek (2020).
In the research, it was revealed that while the use of smartphones did not have an effect on the Metaverse knowledge levels of the students, the students with social media accounts had a higher level of knowledge in the social context.

According to another result of the research, both continuous and competent use of social media has a positive relationship with all sub-dimensions of Metaverse knowledge levels. With the continuous use of social media; there is a moderate relationship between technology, digitalization, social sub-dimensions and the general Metaverse knowledge level, and a low level of relationship between the lifestyle dimensions. Conversely, in the research conducted by Karababa et al. (2022), no statistically significant difference was found in all sub-dimensions of the Metaverse knowledge levels regarding daily internet usage situations and in the total score.

With the competent use of social media; there is a moderate relationship between technology, digitalization, social sub-dimensions and the general Metaverse knowledge level, and a low level of relationship between the lifestyle dimensions. With general use of social media; there is a moderate relationship between technology, digitalization, social sub-dimensions and the general Metaverse knowledge level, and a low level of relationship between the lifestyle dimensions. Accordingly, it is thought that high school students' use of social media for a long time and competently causes a change in their Metaverse knowledge levels.

Suggestions

Support can be obtained from school counseling services for female students who spend more time on social media. Especially considering that students who have reached the 11th and 12th grades and will take the higher education transition exam use social media more competently; this situation can be turned into an advantage. Practice exams, sample question solutions, etc. can be given via social media. Group features in social media environments can be used in group work and activities. At the same time, trainings for teachers can be organized and information can be given about how to use social media more effectively in their lessons

and in-school work. Projects can be prepared to raise awareness about the problematic use of social media.

Seminars for students and parents can be planned in order to correctly perceive the concept of Metaverse, which is one of the newest technologies of today and will be encountered in every field in the near future. Content for the concept of the Metaverse can be added to the curriculum of the Computer Science course taught in high schools. Virtual educational environments can be designed where each student has an avatar. In order not to fall behind the Industry 4.0 industrial revolution, a new generation of classrooms can be created that will shape the future and where high school students will use technology effectively. Future research may reach different conclusions using different variables that may influence social media usage and Metaverse knowledge levels at different grade levels and school types. Qualitative research can be carried out in which more in-depth data can be collected.

Statement of Researchers

Researchers contribution rate statement:

Study conception and design: Eray Yılmaz; data collection: Ceren Ünal and İremnur Demir; analysis and interpretation of results: Eray Yılmaz; draft manuscript preparation: Ceren Ünal and İremnur Demir. All authors reviewed the results and approved the final version of the manuscript.

Conflict statement:

First Author declares that he/she has no conflict of interest.
Second Author declares that he/she has no conflict of interest.
Third Author declares that he/she has no conflict of interest.

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