



University students' digital literacy skills, attitudes to social media use, and social media addictions

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ABSTRACT

This study aims to examine the relationship between university students' digital literacy skills, their levels of social media addiction, and their attitudes toward social media use. A quantitative research method was employed, utilizing a correlational survey design. The sample included a total of 412 students from three different universities who responded to online forms. Data were collected using three standardized measurement tools in addition to a participant information form: the Bergen social media addiction scale, the social media attitude scale, and the digital literacy scale. The data were analyzed using SPSS and the adapted PROCESS macro version 4.2. Independent samples t-test, analysis of variance, Pearson correlation analysis, and moderation analysis were conducted. The findings reveal that students' positive attitudes toward social media may increase their levels of social media addiction, whereas higher levels of digital literacy appear to reduce addiction. Furthermore, it was determined that social media attitude positively affects digital literacy, and digital literacy has a suppressive effect on social media addiction. Analyses based on gender, academic year, and field of study indicate that male students exhibit higher levels of digital literacy and more positive attitudes toward social media; engineering students demonstrate greater competence in digital skills; and digital literacy improves significantly as academic level increases. In this regard, it is recommended that university administrations implement educational programs aimed at enhancing digital literacy and develop supportive interventions, particularly for first-year and social sciences students. Promoting content that encourages students to use social media in a more conscious, productive, and critical manner may be beneficial for both reducing addiction and increasing digital competence. Additionally, future research should support quantitative findings with

qualitative data, replicate studies across different cultural contexts, and incorporate current variables related to the use of technological tools into the model.

Keywords: digital literacy, social media addiction, student attitudes, technology use, digital behavior

INTRODUCTION

Today, many people believe that digital technologies have brought information overload to a situation characterized by increased stress and confusion caused by having too much information. Especially young generations draw attention as a generation that is directly exposed to digital technologies and makes these tools an indispensable part of their daily lives. In this context, digital literacy skills stand out as a basic competence area that enables individuals to take an active role in the processes of accessing, evaluating, producing, and sharing information in digital environments (Ayyildiz et al., 2021; Hidayat et al., 2024; Li & Zheng, 2024; Yoo & Pyon, 2026). Attitudes towards the use of social media determine how individuals perceive this medium, for what purpose, and how they use it (Ofem, 2026). Positive attitudes, while supporting beneficial forms of use such as learning, communication, and socialization, negative attitudes can be associated with negative outcomes such as addiction, digital bullying, and information pollution (Anh et al., 2022).

The integration of digital technologies into all areas of life brings with it some risks (Payton & Hague, 2010). In particular, the unlimited accessibility of social media platforms can cause an uncontrolled increase in the time individuals spend on these channels. This situation brings to the fore the phenomenon of social media addiction, which is defined as a behavioral form of addiction in individuals (Al-Hamad et al., 2022). Social media addiction: The individual's inability to control the use of social media is manifested by the increase in the duration of use, and this negatively affects academic, social, or psychological functionality. This phenomenon, which is widely observed especially among young people, directly affects educational processes and students' life satisfaction (Akçöltekin & Genç, 2022).

In this context, the question of how there is a relationship between digital literacy skills, attitude towards social media use, and social media addiction is a prominent issue in the field of social sciences on the basis of today's educational sciences and psychology. It can be argued that individuals with high digital literacy skills are advantageous in consuming social media content more consciously and reducing the risks of possible addiction (Cheng et al., 2022). Likewise, attitudes towards the social media environment are likely to shape the level of social media addiction. This research aims to reveal the relationship between university students' digital literacy skills, attitudes towards social media use, and social media addiction levels.

THEORETICAL FRAMEWORK

Digital Literacy

The term "digital literacy" was first introduced by Gilster (1997) in the late 1990s as "the ability to understand and use information in a multitude of formats from a wide variety of sources when presented through computers." Martin and Grudziecki (2013) on digital literacy. He emphasized that critical thinking, along with technical competence, is the foundation of digital literacy and the critical examination of what is discovered on the Internet beyond the technological capabilities required to access it. According to Reddy et al. (2020), digital literacy; It is defined as the ability of individuals to find and evaluate information, to use this information effectively, to create new content using this information, to share this new information using the right digital technologies, and to talk about this new information. Ng (2012) digital literacy; It is stated as a general term that encompasses the technical, cognitive, and socio-emotional aspects of learning through online and offline digital technologies.

Spires and Bartlett (2012) identify components associated with digital literacy; It is stated that individuals access information effectively in digital environments, produce new content by structuring this information, and finally share these contents through appropriate platforms. Martin and Grudziecki (2013), on the other hand, discuss the development of digital literacy; digital competence, digital use and digital transformation.

While digital competence refers to the basic knowledge and skills related to digital tools; Digital use involves individuals applying these competencies effectively in work, education, or daily life contexts. The last stage, digital transformation, takes place when the use of digital transforms into creative and innovative processes and leads to significant changes at the professional or institutional level. The digital literacy process is a structure that develops randomly according to the needs of individuals and contexts, rather than a sequential progression. According to Payton and Hague (2010), digital literacy consists of eight basic components. Of these, creativity refers to producing original content using technology. Critical thinking is the ability to question and evaluate digital content. Cultural and social awareness requires an understanding of the social and historical context of digital content. Collaboration is the ability to do effective teamwork with digital tools. The ability to find and select information is the ability to access reliable information and choose the right information. Effective communication is being able to express thoughts clearly in a variety of ways. E-safety involves acting safely and consciously in the digital environment. Versatile skills are the ability to use different technologies and adapt to innovations (Ismail et al., 2021).

Digital literacy also contributes to individuals taking active roles in lifelong learning processes. The unlimited sources of information provided by the Internet allow individuals to personalize their learning processes (Deniz & Kazu, 2022). However, reaching meaningful and reliable content among these piles of information is a process that individuals with advanced digital literacy skills can achieve. In this context, digital literacy gives individuals the power not only to access information but also to make sense of information and use it effectively (Nabivi, 2025). Critical thinking, which is one of the key components of digital literacy, enables individuals to develop an inquisitive perspective instead of blindly believing in digital content (Khan et al., 2022; Uzunlar, 2022). Disinformation and manipulative content, especially on social media, increase the importance of critical digital literacy. Evaluating the accuracy and validity of information, as well as accessing information is an important skill expected from individuals in the digital age (Yılmaz & Serin, 2021).

Another important dimension is digital ethics and responsibility. The behavior of individuals in the digital environment has legal responsibilities and societal effects (Aumgri & Apirating, 2023). Issues such as respecting copyrights, avoiding online bullying, and paying attention to the protection of personal data are evaluated within the framework of digital ethics. Digital literacy aims to make individuals not only knowledgeable but also responsible digital citizens (Gümüþ et al., 2024). Digital literacy is a skill that also allows individuals to produce creative content. Production processes such as blog posts, digital storytelling, video content, and social media posts enable individuals to become active producers in the digital world. The ethical and conscious realization of these production processes also contributes to the formation of the digital identity of the individual (El Messaoudi, 2024; Nkansah & Oldac, 2024).

In the globalizing world, digital literacy is also important in terms of intercultural communication. The interaction of individuals from different cultures in the digital environment enables multicultural digital interaction, but at the same time creates new responsibilities in terms of cultural sensitivity and freedom of expression (Hasell & Chinn, 2023; Jansen et al., 2022). Therefore, digital literacy should be considered not only as a technical but also as a cultural and social competence area. In this context, digital literacy is one of the essential life skills that 21st-century individuals should have (Fuchs & Aguilos, 2023; Ntow & Kpotosu, 2025). This skill, which shapes the digital existence of the individual in many areas from education to social participation, from productivity to ethical responsibility, is of strategic importance not only in terms of keeping up with technological developments, but also in terms of directing these developments (Ohme, 2021).

Attitude towards Social Media

Attitudes are learned, relatively persistent tendencies that an individual develops towards an object, phenomenon, or situation (Carl & Worsfold, 2021). Attitudes towards social media are also important indicators that determine how individuals perceive these platforms, how they use them and what kind of inferences they make from this use. Individuals' evaluation of social media as beneficial, fun, risky, or a waste of time is shaped by the attitudes they develop (Arandas et al., 2024).

Individuals who develop positive attitudes see social media as a means of gaining information, socializing, having fun, and expressing themselves (Duncan et al., 2016). These individuals think that social media contributes to democratization, that they can convey their voices to wider audiences and follow the agenda more closely. In this respect, social media is considered both as a source of news and as a platform for

individual expression (Güngören et al., 2022). However, individuals who develop negative attitudes describe social media as a waste of time, a threat to privacy, a cyberbullying environment or a source of information pollution (Lang et al., 2024; Yildiz Durak & Saritepeci, 2019). These individuals argue that social media use weakens real-life relationships, leading to distraction and digital addiction. In particular, the change in the self-perception of young individuals by being affected by social media content can reinforce these negative attitudes (Phuapan et al., 2016; Qerimi et al., 2023).

Individual differences play a decisive role in the formation of attitudes. Variables such as age, gender, education level, socioeconomic status, and digital literacy level are among the main factors affecting individuals' attitudes towards social media (Arono et al., 2022; Rahimi & Yadollahi, 2017). Young individuals use social media more frequently and generally develop more positive attitudes. However, the purpose of use of social media platforms also has an impact on attitudes (Steinrücke et al., 2020). The attitudes of individuals who use social media for information and individuals who only aim to have fun and spend time differ. Research shows that conscious and purposeful use of social media contributes to the development of more positive attitudes (Yilmaz et al., 2025).

Social media attitudes are structures that can change over time. In particular, changes in the algorithms of social media platforms directly affect the user experience, which can reshape the attitudes of individuals (Chen et al., 2020). Today, the increase in advertising content or scandals related to privacy violations can reduce individuals' trust in social media platforms (Hammad & Awed, 2023; Tomczyk, 2020). Attitudes towards social media in the field of education are an important research topic, especially for teachers and students. The use of social media for educational purposes allows individuals to develop more positive attitudes towards this medium (Demir, 2021; Silver et al., 2023). However, the planning of social media-based teaching processes requires the consideration of factors such as pedagogical competence and digital ethics awareness (Meral et al., 2025).

At the institutional and societal level, managing attitudes towards social media can increase the effectiveness of digital media policies. In particular, increasing social media literacy contributes to individuals' more conscious consumption and dissemination of digital content (Thomson et al., 2021). Accordingly, social media users' development of critical thinking and digital responsibility skills supports the promotion of positive attitudes (Zhang et al., 2023). Social media attitudes are also decisive in the construction of digital identity. How individuals express themselves on social media, what kind of content they share, and which digital communities they participate in reveal the nature of their relationship with social media (Imjai et al., 2024; Suherman et al., 2020). Social events and periods of crisis can temporarily or permanently change individuals' attitudes towards social media. During natural disasters, epidemics, or political crises, social media can become an effective channel for rapid information dissemination and social solidarity (Sariyatun et al., 2025). During such periods, an increase can be observed in the positive attitudes of individuals towards social media. In this context, attitudes towards social media have a structure shaped by the social, cultural and psychological conditions of individuals. These attitudes determine not only an individual's use of social media, but also the identities, relationships, and value systems they exhibit in the digital world (Vaishnavi & Ajit, 2023).

Social Media Addiction

Social media addiction is defined as the inability of individuals to control their use of social media, the increasing duration of use, and this negatively affecting daily life functionality (Luo et al., 2021; Ursoniu et al., 2022). This situation translates into a psychosocial problem that threatens both individual well-being and social relations (Horváth et al., 2024).

Social media addiction is a form of behavioral addiction, as in classical types of addiction (Sümen & Evgin, 2021). Unlike alcohol or substance addiction, there is an addiction to a way of behaving, not a physical substance. When the individual does not enter social media platforms, he experiences restlessness, a feeling of incompleteness, and an intense sense of curiosity (Abrosimova, 2020). Many individual and environmental factors are effective in the development of social media addiction. In particular, psychological factors such as low self-esteem, loneliness, social anxiety, and attention deficit can cause excessive use of social media (Zan et al., 2021). In addition, in stages where the search for identity is intense, such as adolescence, social media becomes both an escape area and a means of approval for the individual (Paget, 2024). The algorithmic

structure of social media platforms is also among the factors that trigger addiction (Hoelscher, 2024). Forms of interaction such as likes, comments and sharing create a sense of instant satisfaction in individuals and increase the release of dopamine and reinforce the behavior of entering the platforms repeatedly. This neuropsychological cycle constitutes the neurobiological basis of the addiction process (Yam et al., 2024).

When we look at the effects of social media addiction, the most important of them is the negative effect on the time management of the individual. Addicted individuals become unable to control the time they devote to social media use, and this causes them to disrupt their academic, professional, or social responsibilities (Tanhan et al., 2024). Over time, the individual may lose interest in activities other than social media and begin to withdraw from real life. Social relations are also adversely affected by this process. Individuals with social media addiction may have difficulty in communicating face-to-face, and their social skills may regress. Real friendship relationships are replaced by virtual relationships, and this can create a feeling of loneliness, alienation, and emotional emptiness in the individual (Kalender & Kişı, 2024). Sleep problems are also common problems associated with social media addiction. The use of social media, especially until late at night, disrupts the sleep pattern of the individual, reduces melatonin production and reduces the efficiency of the day with morning fatigue. Sleep deprivation, on the other hand, negatively affects cognitive performance and mood, further deepening addiction (Shen & Rukmini, 2023).

Studies conducted among students reveal that with the increase in the time spent on social media, the time allocated to studying decreases, and distraction and lack of motivation increase. This situation poses serious risks in the educational life of young individuals (Vercruyssen et al., 2023). Among the psychological consequences of addiction, depression, anxiety and low self-esteem are common. Constant comparisons with others on social media cause the individual to feel inadequate. In particular, the presentation of idealized digital identities and perfect lives increases the perception of failure and worthlessness in the individual (Ngoc Dan et al., 2025). Educational institutions should play an important role in the fight against social media addiction. Digital balance training should be given to students, and conscious use skills should be gained within the scope of social media literacy (Aydin & Kus, 2023). Social media addiction is not only an individual but also a social health problem. For this reason, awareness campaigns on digital addiction should be carried out within the scope of health policies, preventive programs should be developed in schools and public institutions, and psychological support mechanisms should be made accessible (Ocaña-Fernández et al., 2020).

Literature Gap and the Importance of Research

Today, the increasing digitalization of educational processes has made it a necessity for individuals to have digital literacy skills (El Messaoudi, 2024). Universities are important institutions where the intellectual, social and emotional development of individuals is shaped. For this reason, the development of students' digital skills and gaining conscious attitudes towards the use of social media is not only for their individual development; It is also strategically important in terms of social welfare, digital ethics and academic sustainability.

Studies in the current literature focus on the digital literacy levels of higher education students; reveals that various demographic variables such as gender, age, education class, and socioeconomic status can influence these levels (Goode, 2010; Usta et al., 2016). The results of the research revealed that university students use information and communication technologies in different fields and have digital literacy skills in areas such as communication and collaborative work to a certain extent (Gamito et al., 2017; López-Meneses et al., 2020). However, digital content production (López-Meneses et al., 2020), critical evaluation of information (Claro et al., 2012; Gabarda Méndez et al., 2017) and using ICTs safely (Hernández-Martín et al., 2020). Numerous studies in the literature gather in a common finding that higher education students do not have the needed level of digital literacy skills (Sánchez-Caballé et al., 2020).

University students, in particular, are in a period that requires an effective presence in digital environments in terms of both their individual development and academic success. University students use technology not only for access to information, but also for social interaction, identity construction and as a part of their daily lives. This intense digital exposure puts you at risk of spending excessive time on social media platforms and becoming addicted to them. This process brings with it the risk of social media addiction (Yam et al., 2024). This situation can negatively affect many areas from academic performance to

psychological health; It can create consequences such as distraction, procrastination behaviors, and low self-discipline. There is increasing evidence in the literature that there are significant relationships between digital literacy and social media addiction. In the study conducted by Arslantaş et al. (2024), it was shown that digital literacy skills are inversely related to Internet addiction. Similarly, Yıldız Durak and Saritepeci (2019) revealed the decisive effect of the level of new media literacy on problematic Internet use in their study. The attitudes that students develop towards the use of social media shape both their relationships with these environments and their digital behavior patterns (Deniz & Kazu, 2022; Fuchs & Aguilos, 2023). Students' attitudes towards social media use can affect not only their individual habits but also their approaches to educational practices. Al-Hamad et al. (2022) stated that positive attitudes towards the integration of social media networks into educational processes can increase students' motivation to learn. This reveals the importance of the pedagogical effects of social media attitudes.

In the current literature, studies in which the relationship between digital literacy and social media addiction are considered holistically together with students' attitudes towards social media use are very limited. In a study conducted by Korkmaz and Kılıç (2024), significant relationships were found between secondary school students' digital literacy skills and social media addictions and social media attitudes. This study is one of the few examples in the literature and reveals the importance of considering these three variables together. First of all, considering three important variables, such as digital literacy skills, social media addiction and social media attitudes together, the research will go beyond the fragmented approaches in the literature and offer a more holistic analysis. In addition, it will contribute to data-based decision processes in terms of developing educational strategies in the digital age.

A robust data infrastructure is needed for higher education institutions to create curricula that meet the requirements of the digital age, to raise awareness of digital risks to students, and to develop strategies to balance the use of social media (Busnawir et al., 2023). This research aims to shed light on these needs; It aims to contribute to the existence of university students as conscious individuals in digital environments. In this respect, the study fills a significant gap in terms of both academic circles and educational policies.

This study aims to examine the relationship between university students' digital literacy skills, social media addiction levels, and attitudes towards social media use. For this purpose, the following research questions (RQs) and hypotheses (Hs) were tested.

1. **RQ1.** What are the digital literacy skills, social media addiction levels and attitudes towards social media use of university students?
2. **RQ2.** Do university students' digital literacy skills, social media addiction levels and attitudes towards social media use differ according to gender variables?
3. **RQ3.** Do university students' digital literacy skills, social media addiction levels and attitudes towards social media use differ according to the discipline?
4. **RQ4.** Do university students' digital literacy skills, social media addiction levels and attitudes towards social media use differ according to grade level?
1. **H1.** There are significant relationships between digital literacy, attitude towards social media use and social media addiction.
2. **H2.** Attitudes towards social media use affect digital literacy positively and significantly.
3. **H3.** Digital literacy negatively and significantly affects social media addiction.
4. **H4.** Attitude towards social media use affects social media addiction positively and significantly.

METHODOLOGY

Research Model

This study was designed in the relational survey model, which is one of the quantitative research models, in order to examine the relationships between university students' digital literacy skills, social media addiction levels and attitudes towards social media use. Relational survey models are models that aim to describe a phenomenon or situation as it is and to explain the multifaceted relationships between variables. The

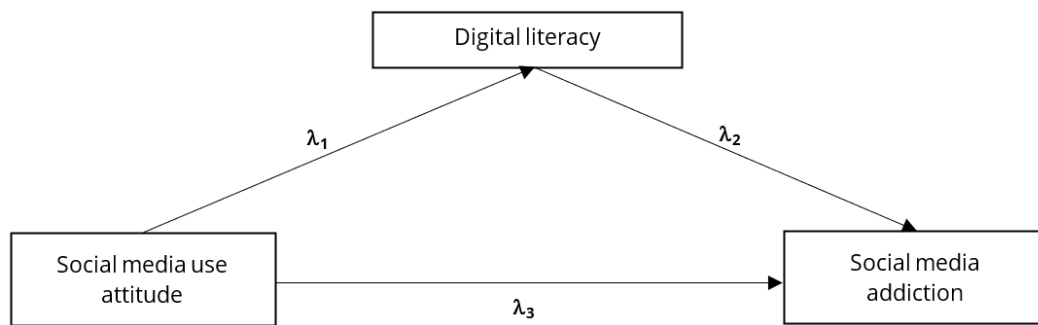


Figure 1. Research variables and design (Source: Created by authors)

Table 1. Demographic information of the sample

Variable	Category	Frequency (f)	Percentage (%)
Gender	Female	215	52.18
	Male	197	47.82
Student discipline	Science	82	19.90
	Social sciences	87	21.12
	Health sciences	86	20.87
	Engineering sciences	79	19.17
	Other sciences	78	18.93
Grade level	Grade 1	110	26.70
	Grade 2	101	24.51
	Grade 3	106	25.73
	Grade 4	95	23.06
Age	M ± SD	23.04 ± 3.12	

phenomena, situations and variables examined are defined as they are in their own conditions (Creswell, 2012). The variables and design of the study are presented in [Figure 1](#).

Independent variable—Social media attitude

Social media attitude refers to individuals' learned and relatively stable evaluative tendencies toward social media platforms, encompassing how they perceive, use, and derive meaning from these environments (Otrar & Argin, 2015).

Mediator variable—Digital literacy

Digital literacy is defined as a multidimensional competency that encompasses the technical, cognitive, and socio-emotional skills required to access, evaluate, produce, and share information effectively through digital technologies (Ng, 2012).

Dependent variable—Social media addiction

Social media addiction is conceptualized as a behavioral form of addiction characterized by an individual's inability to control social media use, progressively increasing time spent on platforms, and consequent impairment in academic, social, or psychological functioning (Andreassen et al., 2017; Luo et al., 2021).

Population and Sample

The population of the study is university students who continue their university education in the Eurasian Region in the 2024-2025 academic year. In this context, a total of 412 students studying at 3 different universities and responding to online forms were included in the study. Demographic information about the students is presented in [Table 1](#).

When the demographic characteristics of the sample participating in the study are examined, it is seen that 52.18% of the participants are female and 47.82% are male. Considering the disciplines in which the students study, 21.12% are in social sciences, 20.87% in health sciences, 19.90% in science, 19.17% in engineering sciences, and 18.93% in other sciences. In the distribution according to grade levels, 26.70% are

first-year, 25.73% are third-year, 24.51% are second-year and 23.06% are fourth-year students. The mean (M) age of the sample group was 23.04 and the standard deviation (SD) was 3.12.

Data Collection Process

The scales in the study were applied to volunteer participants in the sample, face-to-face or electronically, after obtaining the necessary permissions of ethics committee and application. In this study, data obtained from participants were collected using four different psychometric measurement tools. The data were collected in the form of an online form in the spring semester of the 2024-2025 academic year, after obtaining the necessary permissions of application. Before data collection, the participants were informed about the purpose and process of the study. The data collection took 4 weeks.

Data Collection Tools

The data were collected using three standard measurement tools except for the participant information form. These are Bergen social media addiction scale (BSMAS), social media attitude scale (SMAS), and digital literacy scale (DLS).

Personal information form

It is a form developed by the researchers in which the purpose of the study and data security are explained to the participants, and voluntary participation is specified. In addition, information about the age, gender, field of education, and grade level,

Bergen social media addiction scale

The scale developed by Andreassen et al. (2017) consists of 6 items that meet six basic dependency criteria: mental exertion, mood change, tolerance, withdrawal, conflict, and failed attempt to quit. The scale is graded with a 5-point Likert type and the scores that can be obtained from the scale vary between 6 and 30. The increase in the scores obtained from the scale indicates that the level of social media addiction has increased. The internal consistency coefficient of the scale was calculated as Cronbach's alpha coefficient of .88 in Andreassen et al. (2017) and .84 in this study.

Social media attitude scale

The SMAS developed by Otrar and Argın (2013) was used to determine university students' attitudes towards social media. There are four sub-dimensions in the SMAS, which consists of a total of 23 items, designed as a 5-point Likert scale: strongly agree (5), agree (4), undecided (3), disagree (2), strongly disagree (1). The first sub-dimension is the "need for sharing", which consists of eight items, which is explained as the individual sharing articles, situations, photos on social media, liking them and being satisfied with the communication they establish in this way; the second sub-dimension is "social competence", which consists of six items, which is expressed as the individual's establishing relationships through social media, expressing his feelings and seeing himself as sufficient by providing his needs in his perception of himself through this platform. The third sub-dimension is "social isolation", which consists of six items, which is the situation where the individual sees himself away from other people because of social media, and is isolated from others. The fourth sub-dimension is the "relationship with trainers", which consists of three items, which is expressed as the trainers following the person on social media or being followed, liked or liked, and feeling valuable. While the lowest score is 23 from the scale, the highest score is 115. A high score on the scale indicates a high level of attitudes towards social media. The total scores of the students from the SMAS were calculated by back coding the items in the "social isolation" sub-dimension because they consisted of negative statements. In the analysis for reliability, Cronbach's alpha = .88 was calculated for the whole scale. Cronbach's alpha coefficients for sub-dimensions ranged from Cronbach's alpha minimum = .83 to Cronbach's alpha maximum = .87.

Digital literacy scale

The DLS developed by Ng (2012), which consists of 17 items, has a 4-factor structure. The scale consists of attitude, technical, cognitive and social dimensions. There are no items that are scored backwards on a scale that uses a 5-point Likert-type rating of strongly agree (5), strongly disagree (1). The lowest score that can be

Table 2. Descriptive statistics for research variables

	Social media addiction	Social media attitude	Digital literacy
M	3.440	3.910	3.060
SD	0.470	0.780	0.460
Minimum	1.820	1.540	1.620
Maximum	5.000	5.000	5.000
Skewness	-0.230	-0.180	-0.370
Kurtosis	-0.120	-0.360	-0.410
Kolmogorov-Smirnov (tests of normality)	0.058	0.053	0.062
P	0.086	0.098	0.067

obtained from the scale is 7, and the highest score is 35. An increase in scores from the DLS indicates high digital literacy.

Data Analysis

In this study, PROCESS macro version 4.2, developed by Hayes (2022) and adapted to SPSS for Windows 27.0, was used to test the direct and indirect relationships between variables. In the analysis, university students' social media addiction levels were included in the model as the dependent variable, their attitudes towards social media use as the independent variable, and digital literacy skills as the mediating variable. 5,000 resamples were made with the Bootstrap method and all predictions were obtained at a 95% confidence interval (CI).

The basic assumptions that must be met for the validity of multivariate analyses were tested before the analysis. For the study, firstly, the reliability level of the scales was tested and evaluated with the Cronbach's alpha coefficient, and it was determined that the coefficient was above 0.70 and it was found to be sufficient (George & Mallery, 2003). Descriptive findings were presented as M and SD. In terms of the demographic variables of the university students, the scale scores were analyzed and compared with parametric tests, independent sample t-test and analysis of variance (ANOVA) test in order to determine the differences. Post-hoc tests were carried out with Tukey. In addition, the direction and size of the relationship between the variables were tested with Pearson correlation analysis. Afterwards, multiple linearity checks were performed and the correlations between the independent variables were found to be below .80. In addition, the highest inflation of variance factor value is 2.18, and these values are < 3 , indicating that there is no multilinearity problem (Cheng et al., 2022). Within the scope of the normality assumption, it was determined that the skewness and kurtosis values were within acceptable ranges (-2 to +2) (Hahs-Vaughn & Lomax, 2020). These findings show that the data are normally distributed.

The linearity assumption was tested with scatter graphs to assess whether the relationships between the dependent and independent variables were linear. In the graphs obtained, it was seen that the relationships were linear. To mitigate the impact of outliers, Mahalanobis offset values were calculated and no data with outliers were found. Finally, achieving a sample size above the minimum recommended sample size ($n \geq 200$) to achieve sufficient power in intermediary models supports the reliability of the results obtained (Fritz & MacKinnon, 2007). In line with all these evaluations, it was determined that the data set met the assumptions required for multivariate analysis. Thus, it can be said that model analyses carried out are valid and reliable.

FINDINGS

In this section, the findings obtained as a result of the analysis of the research data are included. **Table 2** includes descriptive statistics and Kolmogorov Smirnov test for the research variables. According to **Table 2**, when the descriptive statistics of the research variables are examined, the M of the social media addiction variable is 3.44, which indicates an addiction above the moderate level. The SD of this variable is 0.47. The M of the social media attitude variable was found to be 3.81 and this value indicates a high level of positive attitude; the SD is 0.78. The M score of the digital literacy variable is 3.06, indicating that the digital literacy levels of the participants are partially low; the SD of this variable is 0.46. The minimum and maximum values of the variables ranged from 1.82 to 5.00. The fact that the skewness and kurtosis values are in the range of -2 to +2 indicates that the data are close to the normal distribution. In addition, according to the results of the Kolmogorov-Smirnov normality test, p values were found to be above 0.05 significance level in all variables (p

Table 3. Independent groups in terms of gender variable t-test results

Scale/sub-dimension	Gender	N	M	SD	t	p
Attitude sub-dimension	Female	215	2.89	0.52	-3.14	0.002*
	Male	197	3.15	0.48		
Technical sub-dimension	Female	187	2.95	0.49	-2.87	0.012*
	Male	199	3.22	0.51		
Cognitive sub-dimension	Female	187	2.93	0.44	-2.91	0.009*
	Male	199	3.18	0.46		
Social sub-dimension	Female	187	2.87	0.51	-2.65	0.016*
	Male	199	3.11	0.53		
Digital literacy total	Female	187	2.96	0.49	-3.28	0.001*
	Male	199	3.17	0.41		
The need for sharing	Female	187	3.72	0.81	-2.89	0.018*
	Male	199	4.02	0.76		
Social competence	Female	187	3.68	0.74	-3.12	0.002*
	Male	199	3.98	0.71		
Relationship with instructors/academicians	Female	187	3.79	0.69	-2.67	0.012*
	Male	199	4.01	0.66		
Social isolation (negative)	Female	187	3.92	0.73	-0.24	0.226
	Male	199	3.86	0.68		
Social media attitude total	Female	187	3.76	0.82	-3.41	0.001*
	Male	199	4.04	0.73		
Social media addiction total	Female	187	3.53	0.51	-2.15	0.012*
	Male	199	3.25	0.42		

= 0.086, $p = 0.098$, and $p = 0.067$, respectively). These results reveal that the variables meet the assumption of normal distribution.

The findings on whether university students' digital literacy skills, social media addiction levels, and attitudes towards social media use differ according to the gender variable are presented in **Table 3**. Independent groups, t-test findings reveal that there are significant differences between digital literacy, social media addiction, and social media attitude in terms of the gender variable. It was determined that the digital literacy levels of male participants were significantly higher than female participants ($t [410] = -3.27$, $p < .01$). When the sub-dimensions of digital literacy were examined, significant differences were observed in favor of men in the attitudes ($t [410] = -2.84$, $p < .01$), technical ($t [410] = -2.91$, $p < .01$), cognitive ($t [410] = -2.58$, $p < .05$) and social ($t [410] = -2.45$, $p < .05$) dimensions. In terms of social media addiction level, it was observed that female participants had higher scores ($t [410] = -2.43$, $p < .05$). In the sub-dimensions of social media attitude, the M scores of men were found to be significantly higher in the areas of need to share ($t [410] = -2.87$, $p < .01$), social competence ($t [410] = -2.96$, $p < .01$) and relationship with trainers ($t [410] = -2.73$, $p < .01$). However, there was no significant difference between the genders in the sub-dimension of social isolation ($t [410] = -1.03$, $p > .05$). When these findings are evaluated in general, it can be said that male individuals are more competent in digital environments and exhibit more positive attitudes towards social media use.

The findings on whether university students' digital literacy skills, social media addiction levels, and attitudes towards social media use differ according to the discipline they study are presented in **Table 4**. According to the ANOVA results made according to the discipline variable, significant differences were found in the total score and sub-dimensions of the DLS in terms of groups. It has been observed that engineering faculty students have higher scores compared to other fields. In the attitude sub-dimension, engineering students scored significantly higher than students in other disciplines ($F [4, 387] = 2.84$, $p < .05$). In the technical sub-dimension, engineering students have higher scores than both social sciences ($p < .05$) and other sciences ($p < .05$) ($F [4, 387] = 3.12$, $p < .05$). Similarly, in the cognitive dimension, engineering students scored significantly higher than students in other sciences ($F [4, 387] = 2.67$, $p < .05$).

It was determined that engineering students were significantly higher than students in social sciences and other sciences in the total score of digital literacy ($F [4, 387] = 2.95$, $p < .05$). These findings show that engineering faculty students are more competent in digital skills, access to information, and use of digital tools. A significant difference was found in the total score of social media addiction; students in the social sciences received higher dependency scores than health sciences students ($F [4, 387] = 2.78$, $p < .05$). This may

Table 4. ANOVA results in terms of discipline variable

Scale/sub-dimension	Student discipline	N	M	SD	F	p	Groups with differences
Attitude sub-dimension	Science	82	3.12	0.48	2.84	0.024*	Engineering sciences > other sciences
	Social sciences	87	3.08	0.52			
	Health sciences	86	2.98	0.49			
	Engineering sciences	79	3.15	0.46			
	Other sciences	78	2.89	0.51			
Technical sub-dimension	Science	82	3.11	0.51	3.12	0.015*	Engineering sciences > other sciences
	Social sciences	87	2.95	0.53			
	Health sciences	86	3.02	0.48			Engineering sciences > social sciences
	Engineering sciences	79	3.24	0.47			
	Other sciences	78	2.98	0.55			
Cognitive sub-dimension	Science	82	3.09	0.45	2.67	0.032*	Engineering sciences > other sciences
	Social sciences	87	3.01	0.48			
	Health sciences	86	3.08	0.42			
	Engineering sciences	79	3.18	0.44			
	Other sciences	78	2.92	0.49			
Social sub-dimension	Science	82	3.04	0.53	2.19	0.069	
	Social sciences	87	3.12	0.51			
	Health sciences	86	2.95	0.48			
	Engineering sciences	79	3.08	0.54			
	Other sciences	78	2.89	0.56			
Digital literacy total	Science	82	3.09	0.44	2.95	0.020*	Engineering sciences > other sciences
	Social sciences	87	2.86	0.48			
	Health sciences	86	3.01	0.42			Engineering sciences > social sciences
	Engineering sciences	79	3.26	0.45			
	Other sciences	78	2.92	0.51			
The need for sharing	Science	82	3.85	0.76	1.89	0.111	
	Social sciences	87	4.02	0.82			
	Health sciences	86	3.89	0.74			
	Engineering sciences	79	3.95	0.79			
	Other sciences	78	3.84	0.85			
Social competence	Science	82	3.88	0.71	2.34	0.055	
	Social sciences	87	3.96	0.75			
	Health sciences	86	3.84	0.68			
	Engineering sciences	79	4.01	0.73			
	Other sciences	78	3.79	0.78			
Relationship with instructors/academicians	Science	82	3.92	0.65	1.76	0.137	
	Social sciences	87	3.98	0.69			
	Health sciences	86	3.86	0.63			
	Engineering sciences	79	3.95	0.71			
	Other sciences	78	3.81	0.74			
Social isolation (negative)	Science	82	3.91	0.68	1.45	0.218	
	Social sciences	87	3.97	0.72			
	Health sciences	86	3.89	0.65			
	Engineering sciences	79	3.86	0.71			
	Other sciences	78	4.02	0.75			
Social media attitude total	Science	82	3.89	0.75	1.92	0.106	
	Social sciences	87	3.98	0.81			
	Health sciences	86	3.87	0.72			
	Engineering sciences	79	3.98	0.78			
	Other sciences	78	3.82	0.84			
Social media addiction total	Science	82	3.41	0.45	2.78	0.026*	Social sciences > health sciences
	Social sciences	87	3.62	0.49			
	Health sciences	86	3.18	0.43			
	Engineering sciences	79	3.49	0.47			
	Other sciences	78	3.35	0.51			

indicate that social science students use social media more intensely and perhaps more aimlessly. There was no statistically significant difference between the groups in the other sub-dimensions (need for sharing, social competence, relationship with trainers, social isolation and social media attitude) ($p > .05$).

Table 5. ANOVA results in terms of grade levels

Scale/sub-dimension	Grade	N	M	SD	F	p	Post-hoc
Attitude sub-dimension	Grade 1	110	2.98	0.49	3.21	0.023	Grade 4 > grade 1
	Grade 2	101	3.09	0.47			
	Grade 3	106	3.05	0.45			
	Grade 4	95	3.18	0.43			
Technical sub-dimension	Grade 1	110	2.95	0.52	4.15	0.006**	Grade 4 > grade 1, 2
	Grade 2	101	3.01	0.50			
	Grade 3	106	3.12	0.48			
	Grade 4	95	3.23	0.46			
Cognitive sub-dimension	Grade 1	110	2.92	0.48	3.89	0.009**	Grade 4 > grade 1
	Grade 2	101	3.02	0.46			
	Grade 3	106	3.08	0.44			
	Grade 4	95	3.19	0.42			
Social sub-dimension	Grade 1	110	2.96	0.54	1.67	0.076	
	Grade 2	101	3.01	0.52			
	Grade 3	106	3.05	0.50			
	Grade 4	95	3.14	0.48			
Digital literacy total	Grade 1	110	2.95	0.48	4.32	0.005**	Grade 4 > grade 1, 2
	Grade 2	101	3.02	0.46			
	Grade 3	106	3.09	0.44			
	Grade 4	95	3.29	0.42			
The need for sharing	Grade 1	110	3.78	0.82	2.98	0.031*	Grade 4 > grade 1
	Grade 2	101	3.86	0.79			
	Grade 3	106	3.94	0.76			
	Grade 4	95	4.05	0.74			
Social competence	Grade 1	110	3.82	0.75	2.41	0.067	
	Grade 2	101	3.88	0.73			
	Grade 3	106	3.95	0.71			
	Grade 4	95	4.01	0.69			
Relationship with instructors/academics	Grade 1	110	3.85	0.71	1.89	0.131	
	Grade 2	101	3.91	0.68			
	Grade 3	106	3.96	0.65			
	Grade 4	95	4.02	0.63			
Social isolation (negative)	Grade 1	110	3.98	0.74	1.67	0.174	
	Grade 2	101	3.93	0.71			
	Grade 3	106	3.98	0.68			
	Grade 4	95	3.73	0.65			
Social media attitude total	Grade 1	110	3.83	0.81	2.15	0.094	
	Grade 2	101	3.90	0.78			
	Grade 3	106	3.96	0.75			
	Grade 4	95	4.03	0.72			
Social media addiction total	Grade 1	110	3.35	0.51	1.78	0.114	
	Grade 2	101	3.42	0.48			
	Grade 3	106	3.48	0.45			
	Grade 4	95	3.56	0.42			

The findings on whether university students' digital literacy skills, social media addiction levels and attitudes towards social media use differ according to grade levels are presented in [Table 5](#). The results of the one-way ANOVA performed according to grade levels show that there are significant differences especially in digital literacy and some sub-dimensions. Fourth-graders have significantly higher digital literacy scores compared to first- and second-graders ($F [3, 408] = 4.32, p < .01$). This difference; attitude ($F [3, 408] = 3.21, p < .05$), technical ($F [3, 408] = 4.15, p < .01$) and cognitive ($F [3, 408] = 3.89, p < .01$) sub-dimensions. According to post-hoc analysis, it is seen that fourth-grade students in particular score significantly higher than first-graders. A significant difference was found in the dimension of sharing needs according to grade level, and it was determined that fourth grade students received higher scores than first grade students ($F [3, 408] = 2.98, p < .05$). This finding shows that with the increasing experience in the use of social media over time, sharing behaviors also become stronger.

However, social sub-dimensions ($F [3, 408] = 1.67, p > .05$), social competence ($F [3, 408] = 2.41, p > .05$), relationship with trainers ($F [3, 408] = 1.89, p > .05$), social isolation ($F [3, 408] = 1.67, p > .05$), social media

Table 6. Correlation coefficients of relationships among research variables

Variables	Social media addiction	Social media attitude	Digital literacy
Social media addiction	-		
Social media attitude	0.28*	-	
Digital literacy	-0.39**	0.46**	-

Note. * $p < 0.05$; ** $p < 0.01$; & $N = 412$

**Figure 2.** Comparison of digital literacy, social media attitude, and social media addiction scores by gender, discipline, and grade level (Source: Created by authors)**Table 7.** Direct effects between dependent and independent variables

Independent variable	Dependent variable	B	IF	β	t	p	LLCI	ULCI
SMAt -->	SMAd	0.29	0.06	0.24	4.83	0.00**	0.17	0.41
SMAt -->	DL	0.47	0.05	0.42	9.40	0.00**	0.37	0.57
DL -->	SMAd	-0.38	0.06	-0.34	-6.33	0.00**	-0.50	-0.26

Note. ** $p < .001$; SMAt: Social media attitude; DL: Digital literacy; SMAd: Social media addiction; LLCI: Lower limit of confidence interval; & ULCI: Upper limit of confidence interval

attitude total ($F [3, 408] = 2.15, p > .05$) and social media addiction total score ($F [3, 408] = 1.78, p > .05$). These findings reveal that digital literacy skills improve as the grade level progresses, but there is no significant change in social media addiction or social media attitudes by grade level.

When the correlations between the research variables were examined, it was seen that there was a low positive significant relationship between social media addiction and social media attitude ($r = 0.28, p < 0.05$). There was a moderately significant negative relationship between social media addiction and digital literacy ($r = -0.39, p < 0.01$). On the other hand, a moderately significant positive relationship was found between social media attitude and digital literacy ($r = 0.46, p < 0.01$). These findings show that social media addiction decreases as the level of digital literacy increases, but social media attitude becomes more positive (Table 6).

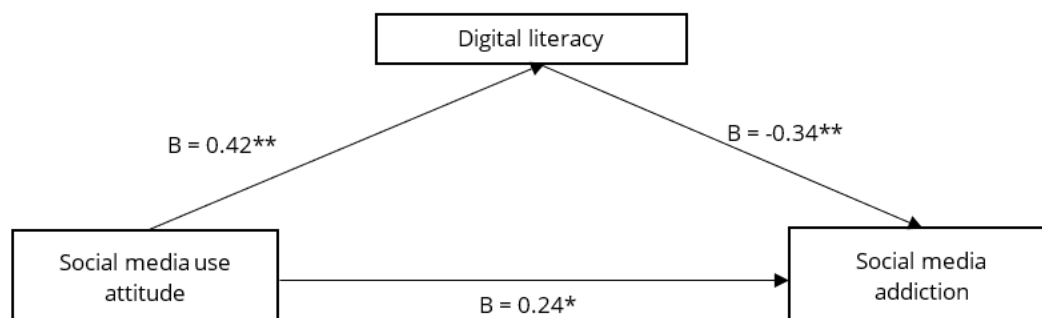
Figure 2 shows the comparison of digital literacy, social media attitude, and social media addiction scores by gender, discipline, and grade level.

When the direct effects in Table 7 are examined, it is seen that the effect of social media attitude on social media addiction is statistically significant ($B = 0.29, p < 0.001$) and this relationship is positive. In other words, as the level of social media attitude increases, the level of social media addiction also increases. Social media

Table 8. Total, direct and indirect effects of social media attitude on social media addiction

Effect type	B	IF	β	T/Z	p	LLCI	ULCI
Total effect (c)	0.29	0.06	0.24	4.83	0.00**	0.17	0.41
Direct effect (c')	0.47	0.07	0.39	6.71	0.00**	0.33	0.61
Total indirect effect	-0.18	0.04	-0.15	-	-	-0.26	-0.10
Indirect effects							
SMA _t --> DL --> SMA _d	-0.18	0.04	-0.15	-	-	-0.26	-0.10

Note. **p < .001; LLCI: Lower limit of confidence interval; & ULCI: Upper limit of confidence interval

**Figure 3.** Mediator model (*p < 0.05; **p < 0.01; & N = 412) (Source: Created by authors)

attitude also had a positive and significant effect on digital literacy ($B = 0.47$, $p < 0.001$). When the direct effects on social media addiction are examined, it is seen that digital literacy has negative effects ($B = -0.38$, $p < .001$). These findings show that as the level of digital literacy increases, the level of social media addiction decreases.

Table 8 presents the total, direct, and indirect effects of social media attitude on social media addiction. The total effect of social media attitude on social media addiction was positive and significant ($B = 0.29$, $\beta = 0.24$, $p < 0.001$). When the mediator variable was included in the model, the direct effect of social media attitude on social media addiction increased ($B = 0.47$, $\beta = 0.39$, $p < 0.001$).

According to the results of the indirect impact analysis, the effect of social media attitude on social media addiction through digital literacy is negative and significant ($B = -0.18$, $\beta = -0.15$, 95% CI [-0.26, -0.10]) (**Figure 3**). This finding shows that social media attitude increases digital literacy, and this reduces social media addiction. The fact that the confidence interval does not include zero supports that the mediation effect is statistically significant. These results reveal that digital literacy has a suppressor effect on the relationship between social media attitude and social media addiction. Because when the intermediary variable was included in the model, the direct effect increased, while the indirect effect occurred in the opposite direction.

DISCUSSION AND CONCLUSION

In the study, the relationship between university students' digital literacy skills, social media addiction levels, and attitudes towards social media use was revealed. According to the findings; The fact that the average level of social media addiction is above the medium level coincides with current studies showing that the time spent in digital environments and the dimension of addiction increase, especially among young individuals (Aydin & Kus, 2023; Sümen & Evgin, 2021). Psychological mechanisms such as constant connection, instant reward loops, and social comparison provided by social media platforms are important factors that support the development of addiction (Chen et al., 2020). According to Hammad and Awed (2023), especially in individuals in adolescence and early adulthood, the desire to have psychological needs met through social media triggers this addiction.

The fact that the average of the social media attitude variable is slightly higher reveals that the participants have a positive perspective towards social media. This positive attitude can be explained by the fact that social media has gained an important place in individual life with functions such as not only communication but also information, entertainment and identity construction (Akdağ & Ünsal, 2024; Ngoc Dan et al., 2025). The low level of digital literacy indicates that although the participants have basic digital skills, their competencies in producing, evaluating and using digital information critically may not be sufficiently developed (El Messaoudi,

2024). The necessity of gaining more qualified digital skills, especially at the university level, is important at this point (Carl & Worsfold, 2021).

According to the findings obtained in terms of gender variable, the fact that the digital literacy levels of male participants were significantly higher than women can be associated with interest in technological fields, gender roles, and early tendencies towards digital skills (Nkansah & Oldac, 2024; Siddiq et al., 2017; Temirkhanova et al., 2024; Yilmaz et al., 2025). This can also be explained by the fact that male individuals are more exposed to digital technologies and interact more frequently. The findings obtained at the level of sub-dimensions show that men exhibit a higher level of competence than women in the cognitive, technical, attitudinal and social components of digital literacy. These findings suggest that different gender-based approaches are adopted in the use of digital tools in education and that men can use digital materials more intensively (Zan et al., 2021). It is important to situate this finding within the broader context of gender and digital skills research. The observed gender gap in digital literacy in the present sample may reflect not only differences in access to or interest in technology, but also deeply embedded sociocultural expectations that associate technical digital competence more strongly with male identity. In many educational systems, including those in the Eurasian context of this study, male students tend to be steered toward STEM-related activities from an early age, which may cumulatively reinforce their digital skill development by the time they enter university. At the same time, it is worth noting that this gap may not be universal; recent studies have documented contexts where gender differences in digital skills are narrowing or even reversing, particularly when digital use is measured in terms of communication and social dimensions rather than technical proficiency alone (Bipasha et al., 2025; Hall et al., 2013; Pöhn & Hommel, 2024). The present findings therefore reflect the specific sociodemographic and institutional characteristics of the sample, and caution should be exercised against overgeneralization.

When the level of social media addiction is examined, the fact that female participants received higher scores than men shows that social media use is preferred more frequently for emotional and social bonding, in line with the previous literature (Luo et al., 2021). The significant differences observed in favor of men in the sub-dimensions of social media attitudes show that men take more active roles on digital platforms and are more self-confident in these environments. In particular, the fact that men scored higher in the dimensions of the need for sharing and social competence suggests that their digital self-efficacy levels are also more developed (Korkmaz & Kilic, 2024; Shen & Rukmini, 2023). The fact that there is no significant difference in the perception of social isolation between genders shows that the effect of interaction patterns in the digital world on the feeling of loneliness may be gender-independent. This situation shows that some psychological consequences of social media use are common and individual factors may be more decisive (Yam et al., 2024).

The findings obtained according to disciplinary differences reveal that engineering students score higher in digital literacy levels than in other fields. This is also related to the fact that engineering education has a curriculum structurally based on digital technologies (Arandas et al., 2024; Steinrücke et al., 2020). Students' earlier acquaintance with course contents, laboratory studies and software-based applications increases their digital competence. The significant difference between engineering students in technical and cognitive dimensions reveals that individuals studying in this field have more advanced skills in producing solutions to digital problems, algorithmic thinking and analyzing digital tools (Papaioannou, 2011). In addition, students' digital awareness develops at a higher level as the field of engineering encompasses advanced skills such as digital security, data management, and network structures (Aumgri & Apirating, 2023; Tomczyk, 2020). The fact that the social media addiction levels of students in the field of social sciences are higher than those of health sciences students is related to the communication-based approaches and social sensitivities of individuals studying in this field. Learning processes in the social sciences are fed more by interactive environments such as social media (Yam et al., 2024; Zhang et al., 2023). A more specific explanation for why engineering students demonstrate higher digital literacy levels compared to other disciplines may be rooted in their program structure and pedagogical context. Engineering curricula typically incorporate mandatory computer-based courses, coding modules, simulation tools, and digital laboratory environments from the very first year of study. This systematic exposure to digital tools as part of academic requirements rather than as supplementary activities positions engineering students to develop stronger technical and cognitive digital competencies over time. Moreover, problem-solving and analytical reasoning, which are core components of

engineering education, align directly with the cognitive dimensions of digital literacy, such as evaluating information credibility and navigating complex digital environments. These curricular and cognitive factors together explain why engineering students surpass other groups in digital skill levels (Pöhn & Hommel, 2024). In contrast, the higher social media addiction scores observed among social science students in this study represent a noteworthy finding that diverges from some prior research findings for instance, Vodă et al. (2022) found that social science and humanities students exhibited relatively adequate digital literacy, while Seputro and Setiawan (2020) similarly reported that social science students demonstrated competent digital skill profiles suggesting that the relationship between disciplinary background and digital literacy may vary across different institutional and cultural contexts. A contextual explanation for the pattern observed in the present sample may be that social science programs often involve discussion-based, collaborative, and socially oriented learning activities. Students in these disciplines may use social media more frequently as an extension of their academic and social interactions, which in the absence of sufficient digital literacy skills may progressively lead to habitual and unregulated use. The relatively lower digital literacy levels of social science students in this sample may further explain this vulnerability, as individuals with weaker digital competencies have been shown to be less capable of critically regulating their media consumption (Curnalia, 2023; Siddiq et al., 2017). This contextual dynamic within the current sample group may account for the deviation from findings in other cultural or institutional settings.

The increase in digital literacy scores by grade level shows that students have access to opportunities to develop their digital skills and gain experience during their university life. The fact that fourth-year students have higher scores, in particular, can be explained by the fact that these students use digital resources more effectively in academic studies (Ngoc Dan et al., 2025; Suherman et al., 2020; Vercruyssen et al., 2023). Significant differences in sub-dimensions also support this result. The fact that fourth-grade students are more proficient in technical, attitudinal, and cognitive dimensions can be evaluated as a result of the digital awareness that develops during the learning process (Arono et al., 2022). This situation reveals the importance of both training time and practical applications for the acquisition of digital competencies (Sariyatun et al., 2025). The difference in the need for sharing shows that students started to use social media tools more strategically for communication, collaboration and academic sharing during their university experience. The evolution of the use of social media from individual satisfaction to multi-purpose communication over time leads to an increase in this need (Fuchs & Aguilos, 2023; Vaishnavi & Ajit, 2023).

The lack of significant differences according to grade level in sub-dimensions such as social media attitude, social competence, relationship with instructors, and social isolation shows that these structures are related to individual personality traits and social environment rather than cognitive development (Arslantaş et al., 2024). The fact that grade level is not determinant, especially in behavioral indicators such as social media addiction, shows that these habits are acquired at an earlier age and can remain stable over time (Jansen et al., 2022; Ngoc Dan et al., 2025). In the light of these findings, it can be said that gender, learning area and grade level are important determinants in the development of digital literacy skills. However, the impact of these factors on variables such as social media addiction and attitude, which are mostly based on individual and psychosocial characteristics, remains limited (Arslantaş & Gül, 2022; Rahimi & Yadollahi, 2017).

A positive and low-level significant relationship was found between social media addiction and social media attitude. This relationship shows that individuals who have a positive view of social media tend to use these platforms more frequently and intensively. However, this should not be interpreted as the attitude directly leading to dependence; There may be mediating factors in between, such as a lack of self-regulation or satisfaction of psychological needs (Akdağ & Ünsal, 2024; Zhang et al., 2023). According to Uzunlar (2022), as digital game addiction increases, social media attitude increases. However, the fact that there is a negative and moderately significant relationship between social media addiction and digital literacy shows that individuals with high digital literacy use social media more consciously and controlled. Digital literacy can reduce the level of dependency by increasing the individual's ability to critically evaluate the media and distinguish information manipulations (Curnalia, 2023; Siddiq et al., 2017). In the literature, it is stated that the level of digital literacy includes not only technical skills, but also multidimensional competencies such as ethical use, source verification, and questioning of media content. In this context, individuals with strong digital literacy exhibit healthier digital behaviors by critically filtering social media content (Güngören et al., 2022; Indah et al., 2022; Tomczyk, 2020).

Individuals who use digital media not only as a means of consumption, but also as a field of production, inquiry, and communication provide higher satisfaction from social media experiences (Indah et al., 2022). Busnawir et al. (2023) also emphasize that there is a significant relationship between digital literacy skills and positive social media attitudes. The negative impact of digital literacy on social media addiction can be explained by the fact that individuals evaluate media content more rationally and are more resistant to algorithmic manipulations offered by platforms (Carl & Worsfold, 2021; Silver et al., 2024). When the effect of social media attitude on social media addiction is evaluated, it is seen that there is a significant and positive relationship between them. This situation shows that individuals' positive approaches to social media may cause them to devote more time and energy to social media use. In addition, the effect of digital literacy on social media addiction is in the opposite direction (Bahri et al., 2024). As the level of digital literacy increases, a more conscious attitude towards harmful uses of social media is developed. This makes individuals' use of social media more balanced and controllable. Individuals with high digital literacy are more aware of social media platforms' strategies to attract attention, consume time, or engage users with manipulative content (Curnalia, 2023). This awareness allows individuals to question their use of social media, avoid wasting unnecessary time, and become more discerning users (Temirkhanova et al., 2024). Therefore, digital literacy can be considered as a protective factor that reduces the risk of addiction by increasing the critical thinking skills of individuals in the face of social media.

There is a strong relationship between social media attitude and digital literacy. The fact that individuals who have a positive approach to social media use digital platforms more frequently and for various purposes can increase their knowledge and skills about these channels (Arslantaş & Gül, 2022). However, this situation does not always have positive results. Positive attitude can also trigger overuse. This dilemma raises the possibility that social media addiction and digital literacy may increase at the same time (Lang et al., 2024; Silver et al., 2024). Social media addiction is too complex to be explained only by the frequency of social media use. Internal factors such as an individual's self-esteem, meaning of life, level of loneliness and cognitive flexibility directly affect the tendency to dependence. Seeking satisfaction through social media, especially for individuals with low self-esteem or high loneliness, can feed addictive behaviors (Ngoc Dan et al., 2025; Tanhan et al., 2024). Digital literacy is considered as a protective factor against social media addiction. It has been observed that individuals with media literacy evaluate the content more critically and behave more controllably against social media channels. These people are more resistant to misleading content and spend more purposeful time on social media (El Messaoudi, 2024; Qerimi et al., 2023). When interpreting these results within the specific context of the sample group university students in the Eurasian Region—several contextual factors are worth considering. The participants in this study are young adults navigating a transitional life stage characterized by increased autonomy, identity exploration, and social pressure. In this context, social media serves not merely as a leisure tool but as a primary platform for peer interaction, academic networking, and self-presentation. The relatively high social media addiction scores observed in this sample may therefore reflect this life-stage dynamic rather than a purely individual psychological failing. Furthermore, the geographic and cultural context of the universities sampled may play a role: in regions where offline social infrastructure is limited or where digital connectivity has expanded rapidly in recent years, university students may be particularly susceptible to overreliance on social media as a social outlet. The fact that digital literacy scores were moderate-to-low across the sample may reflect the limited integration of formal digital literacy education in the curricula of the participating institutions. These contextual factors should be considered when comparing the findings to those from other cultural settings (Bipasha et al., 2025; Hall et al., 2013; Pöhn & Hommel, 2024), and they underscore the importance of developing institution-specific interventions tailored to the particular digital environment and student profile.

The direct effect of social media attitude on social media addiction is supported by many studies. This attitude determines how an individual makes sense of their social media experiences. As positive perceptions about social media increase, individuals use these platforms more intensively, which facilitates the transition from habit to addiction over time (Chen et al., 2020; Sümen & Evgin, 2021). The digitalization of educational processes in the digital age shows that digital literacy has become not only a skill but also a necessity. Studies conducted especially in rural areas reveal that digital literacy levels are low due to limited access to digital tools, which also affects students' academic achievement (Bahri et al., 2024; Hoelscher, 2024). Social media addiction is associated not only with individual factors, but also with the social and cultural context. Family

structure, social support, education level and cultural norms determine an individual's social media usage habits. Social media addiction is less common in individuals with strong social support systems (Hammad & Awed, 2023; Sariyatun et al., 2025).

For the development of digital literacy skills, higher education institutions should take part in their programs in a planned manner (Siddiq et al., 2017). Providing digital literacy training to students from the first years of their education will enable them to grow up as more equipped and conscious individuals in the digital world. This may also play a preventative role in coping with social media addiction (Ocaña-Fernández et al., 2020; Phuapan et al., 2016). Social media addiction is a problem that directly affects the quality of life of the individual. Sleep disorders, academic failure, social isolation and psychological problems are among the negative consequences associated with this addiction. Therefore, it is necessary to consider addiction not only as a habit, but as a multidimensional social problem (Gümüş et al., 2023; Luo et al., 2021). The ease of access to information in the digital environment requires individuals to use their critical thinking skills more. However, individuals with low levels of digital literacy are often under the influence of manipulative content and easily believe fake information on social media. This can further deepen an individual's social media addiction (Curnalia, 2023; Indah et al., 2022).

In this context, digital literacy and social media attitude play an important role in social media addiction. In order to establish a healthy balance in the digital world, individuals need to increase their digital literacy skills and develop a conscious attitude towards the use of social media. Supporting this process at both the individual and institutional levels will be effective in combating social media addiction (Busnawir et al., 2023; Vaishnavi & Ajit, 2023).

This research was carried out within the framework of certain limitations and the findings should be evaluated by considering these limitations. First of all, the research is limited to university students studying at three different universities in the Eurasian Region in the 2024-2025 academic year, and the geographical and institutional diversity of the sample is limited. In addition, the data collection tools used in the research are based on the self-reports of the participants. This may have an impact on the accuracy of responses due to a tendency to social desirability or differences in personal perception (Podsakoff et al., 2003). Evaluation of psychological and behavioral variables such as social media addiction based only on scale scores may be insufficient to fully reflect the complexity of this phenomenon. Therefore, another limitation of the research is that the data were collected only by quantitative methods. This limits an in-depth understanding of the reasons behind digital literacy, social media attitude, and addiction levels, or participants' experiential interpretations. A mixed-method approach supported by qualitative data could have provided more holistic results, especially in terms of contextual interpretation of digital behaviors. Time limitation is also an important limitation of this study. Data were collected over a four-week period in the 2024-2025 spring semester only. Since dynamic constructs such as digital literacy and social media use can change over time, this may limit the validity of findings temporarily.

RECOMMENDATIONS

In line with the results of this research, some suggestions have been developed for higher education administrators, university students and researchers. Higher education administrators may take care to disseminate training programs that will improve the digital literacy skills of university students. Students' digital awareness levels can be increased through seminars, workshops or elective courses for the conscious and balanced use of social media platforms. Considering that digital literacy has a function to reduce the risk of social media addiction, it is predicted that such trainings can have positive effects on students' academic success and psychosocial well-being. In addition, guidance and psychological counseling units within the university can recognize students' possible addiction tendencies early and offer supportive interventions with individual counseling services for social media use.

University students, on the other hand, can contribute to their personal and academic development by evaluating their use of social media from a questioning perspective, balancing the time they spend in digital media, and using these platforms for accessing more information and learning. Benefiting from voluntary online trainings to increase digital literacy skills, gaining the habit of distinguishing reliable sources of

information, and approaching social media content with a critical attitude can make their media consumption healthier.

For researchers, qualitative studies that examine the relationships between digital literacy, social media addiction, and attitude in more depth can be recommended. Research enriched with focus group interviews or individual interviews to understand students' digital experiences can provide more in-depth contributions to existing findings in the field. In addition, comparative studies with participants from different age groups or longitudinal studies can help to understand the change in digital attitudes and addictive behaviors over time. Paying attention to the cultural adaptations of scales and developing new scales can be considered another research aspect that can contribute to the literature. In addition, in line with the research model, social media attitude was determined as the independent variable, digital literacy tool variable, and social media addiction as the dependent variable, but the inverse effects or multiple effects among these variables should be tested with broader models.

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REFERENCES

- Abrosimova, G. A. (2020). Digital literacy and digital skills in university study. *International Journal of Higher Education*, 9(8), 52-58. <https://doi.org/10.5430/ijhe.v9n8p52>
- Akçöltekin, A., & Genç, S. Z. (2022). Developing an attitude scale for university students who perceived scientists as social media phenomena during the 2020 and 2021 COVID-19 pandemic. *Croatian Journal of Education*, 24(4), 1013-1049. <https://doi.org/10.15516/cje.v24i4.4463>
- Akdağ, B., & Ünsal, C. (2024). The mediating role of self-esteem between meaning in life and social media addiction. *Addicta: The Turkish Journal on Addictions*, 11(1), 99-104. <https://doi.org/10.5152/ADDICTA.2024.23126>
- Al-Hamad, N. Q., Al-Omari, F. A., & Salem, H. A. (2022). Students' attitudes towards integrating social media networks to the educational process. *Journal of Educators Online*, 19(1). <https://doi.org/10.9743/jeo.2022.19.1.11>
- Andreassen, C., Pallesen, S., & Griffiths, M. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors*, 64, 287-293. <https://doi.org/10.1016/j.addbeh.2016.03.006>
- Anh, N. N. K., Hoan, H. V., & Long, N. D. (2022). Social media affects the attitudes of FPT students from the LGBT community towards coming out to their parents. *Journal of Higher Education Theory and Practice*, 22(14), 179-202. <https://doi.org/10.33423/jhetp.v22i14.5545>
- Arandas, M. F., Salman, A., Idid, S. A., Loh, Y. L., Nazir, S., & Ker, Y. L. (2024). The influence of online distance learning and digital skills on digital literacy among university students post COVID-19. *Journal of Media Literacy Education*, 16(1), 79-93. <https://doi.org/10.23860/JMLE-2024-16-1-6>
- Arono, Arsyad, S., Syahrman, Nadrah, & Villia, A. S. (2022). Exploring the effect of digital literacy skill and learning style of students on their meta-cognitive strategies in listening. *International Journal of Instruction*, 15(1), 527-546. <https://doi.org/10.29333/iji.2022.15130a>
- Arslandaş, T. K., & Gül, A. (2022). Digital literacy skills of university students with visual impairment: A mixed-methods analysis. *Education and Information Technologies*, 27(4), 5605-5625. <https://doi.org/10.1007/s10639-021-10860-1>
- Arslandaş, T. K., Yaylacı, M. E., & Özkaya, M. (2024). Association between digital literacy, Internet addiction, and cyberloafing among higher education students: A structural equation modeling. *E-Learning and Digital Media*, 21(4), 310-328. <https://doi.org/10.1177/20427530231156180>

- Aumgri, C., & Apirating, K. (2023). Model component analysis of online storytelling media via gamification to enhance the digital literacy skills of students in computer education Thailand. *International Journal of Information and Education Technology*, 13(7), 1101-1108. <https://doi.org/10.18178/ijiet.2023.13.7.1910>
- Aydin, M. K., & Kus, M. (2023). Nomophobia and smartphone addiction amidst COVID-19 home confinement: The parallel mediating role of digital gaming and social media tools usage across secondary school students. *Frontiers in Psychology*, 14, Article 1175555. <https://doi.org/10.3389/fpsyg.2023.1175555>
- Ayyildiz, P., Yilmaz, A., & Baltaci, H. S. (2021). Exploring digital literacy levels and technology integration competence of Turkish academics. *International Journal of Educational Methodology*, 7(1), 15-31. <https://doi.org/10.12973/ijem.7.1.15>
- Bahri, A., Hidayat, W. M., Putra, K. P., Ainun, N. A., & Arifin, N. (2024). The relationship between students' perception to the learning media, digital literacy skills, and self-regulated learning with students' learning outcomes in the rural area. *Journal of Technology and Science Education*, 14(2), 588-606. <https://doi.org/10.3926/jotse.2513>
- Bipasha, N. J., Islam, M. S., & Bhuyan, M. M. (2025). Bridging the digital gender divide: Is digital literacy truly an equalizer for female students across different demographic factors? *Digital Library Perspectives*, 41(3), 497-517. <https://doi.org/10.1108/DLP-11-2024-0178>
- Busnawir, B., Kodirun, K., Sumarna, N., & Alfari, Z. (2023). Analysis of the effect of social skills and disposition of digital literacy on mathematical literacy ability. *European Journal of Educational Research*, 12(1), 59-69. <https://doi.org/10.12973/eu-jer.12.1.59>
- Carl, M., & Worsfold, L. (2021). The implementation and embedding of digital skills and digital literacy into the curriculum considering the COVID-19 pandemic and the new SQE: A case study from inception to implementation and continual development of the digital academy. *Journal of Information Literacy*, 15(3), 119-133. <https://doi.org/10.11645/15.3.3007>
- Chen, I.-H., Pakpour, A. H., Leung, H., Potenza, M. N., Su, J.-A., Lin, C.-Y., & Griffiths, M. D. (2020). Comparing generalized and specific problematic smartphone/Internet use: Longitudinal relationships between smartphone application based addiction and social media addiction and psychological distress. *Journal of Behavioral Addictions*, 9(2), 410-419. <https://doi.org/10.1556/2006.2020.00023>
- Cheng, J., Sun, J., Yao, K., Xu, M., & Cao, Y. (2022). A variable selection method based on mutual information and variance inflation factor. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 268, Article 120652. <https://doi.org/10.1016/j.saa.2021.120652>
- Claro, M., Preiss, D. D., San Martín, E., Jara, I., Hinostroza, J. E., Valenzuela, S., ... & Nussbaum, M. (2012). Assessment of 21st century ICT skills in Chile: Test design and results from high school level students. *Computers & Education*, 59(3), 1042-1053. <https://doi.org/10.1016/j.compedu.2012.04.004>
- Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson.
- Curnalia, R. M. L. (2023). Linking media instruction, media literacy, and digital skills to fake news beliefs and censorship support. *Journalism and Mass Communication Educator*, 78(4), 401-418. <https://doi.org/10.1177/10776958231206043>
- Demir, Y. (2021). Relationships among childhood experiences, happiness and social media addictions in adolescents. *Educational Process: International Journal*, 10(1), 13-26. <https://doi.org/10.22521/EDUPIJ.2021.101.2>
- Deniz, E., & Kazu, H. (2022). Examination of the relationships between secondary school students' social media attitudes, school climate perceptions and levels of alienation. *Athens Journal of Education*, 9(2), 277-302. <https://doi.org/10.30958/AJE.9-2-6>
- Duncan, L. G., Mcgeown, S. P., Griffiths, Y. M., Stothard, S. E., & Dobai, A. (2016). Adolescent reading skill and engagement with digital and traditional literacies as predictors of reading comprehension. *British Journal of Psychology*, 107(2), 209-238. <https://doi.org/10.1111/bjop.12134>
- El Messaoudi, M. (2024). The impact of a blended learning model on undergraduate university students' digital literacy skills: Empirical evidence from higher education. *Educational Process: International Journal*, 13(4), 84-101. <https://doi.org/10.22521/edupij.2024.134.5>
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, 18(3), 233-239. <https://doi.org/10.1111/j.1467-9280.2007.01882.x>

- Fuchs, K., & Aguilos, V. (2023). Technology-enhanced learning in higher education: A study of attitudes and perceptions toward social media. *International Journal of Information and Education Technology*, 13(3), 482-488. <https://doi.org/10.18178/ijiet.2023.13.3.1829>
- Gabarda Méndez, V., Rodríguez Martín, A., & Moreno Rodríguez, M. D. (2017). La competencia digital en estudiantes de magisterio. Análisis competencial y percepción personal del futuro maestro [Digital competence in students of educational degrees. Analysis of future teachers' competence and perception]. *Educatio Siglo XXI*, 35, 253-274. <https://doi.org/10.6018/j/298601>
- Gamito, R., Aristizabal, P., Olasolo, M., & Vizcarra, T. (2017). La necesidad de trabajar los riesgos de internet en el aula [The need to work around the risks of internet at class]. *Revista de Currículum y Formación de Profesorado*, 21(3), 409-426. <https://www.redalyc.org/pdf/567/56752489020.pdf>
- George, D., & Mallery, P. (2003). *Using SPSS for Windows step by step: A simple guide and reference* (4th ed.). Pearson.
- Gilster, P. (1997). *Digital literacy*. John Wiley.
- Goode, J. (2010). Mind the gap: The digital dimension of college access. *The Journal of Higher Education*, 81(5), 583-618. <https://doi.org/10.1080/00221546.2010.11779068>
- Gümüş, D., Sevim, S., & Kizil, M. (2023). Social media addiction and adolescents: Relationship between social media and eating behaviors during pandemic. *Addicta: The Turkish Journal on Addictions*, 10(1), 59-66. <https://doi.org/10.5152/ADDICTA.2023.22083>
- Gümüş, M. M., Kukul, V., & Korkmaz, Ö. (2024). Relationships between middle school students' digital literacy skills, computer programming self-efficacy, and computational thinking self-efficacy. *Informatics in Education*, 23(3), 571-592. <https://doi.org/10.15388/infedu.2024.20>
- Güngören, Ö. C., Erdoğan, D. G., Uyanık, G. K., & Tolaman, T. D. (2022). The relationship between cognitive absorption and digital literacy skills among secondary school students. *Participatory Educational Research*, 9(6), 113-129. <https://doi.org/10.17275/per.22.131.9.6>
- Hahs-Vaughn, D. L., & Lomax, R. G. (2020). *Statistical concepts - A second course*. Routledge. <https://doi.org/10.4324/9780429277825>
- Hall, M., Nix, I., & Baker, K. (2013). Student experiences and perceptions of digital literacy skills development: Engaging learners by design? *Electronic Journal of e-Learning*, 11(3), 207-225. <https://academic-publishing.org/index.php/ejel/article/view/1670>
- Hammad, M. A., & Awed, H. S. (2023). Investigating the relationship between social media addiction and mental health. *Nurture*, 17(3), 149-156. <https://doi.org/10.55951/NURTURE.V17I3.282>
- Hasell, A., & Chinn, S. (2023). The political influence of lifestyle influencers? Examining the relationship between aspirational social media use and anti-expert attitudes and beliefs. *Social Media + Society*, 9(4). <https://doi.org/10.1177/20563051231211945>
- Hayes, A. F. (2022). *Counterfactual/potential outcomes "causal mediation analysis" with treatment by mediator interaction using PROCESS*. Canadian Centre for Research Analysis and Methods Technical Report.
- Hidayat, H., Ardi, Z., Ahlunnazak, A. I., Harmanto, D., Orji, C. T., & Isa, M. R. M. (2024). Determining the influence of digital literacy on learning personal competence: The moderating role of fear of missing out. *European Journal of Educational Research*, 13(4), 1775-1790. <https://doi.org/10.12973/eu-jer.13.4.1775>
- Hoelscher, C. (2024). Digital primary source literacy: Developing skills for online archival research. *New Directions for Teaching and Learning*, 2024(180), 39-47. <https://doi.org/10.1002/tl.20607>
- Horváth, Z., Kun, B., Király, O., Paksi, B., Griffiths, M. D., & Demetrovics, Z. (2024). Longitudinal trait and state-like differences in the components model of addiction: An illustration through social media addiction and work addiction. *Journal of Behavioral Addictions*, 13(4), 923-937. <https://doi.org/10.1556/2006.2024.00055>
- Imjai, N., Aujiropongpan, S., & Yaacob, Z. (2024). Impact of logical thinking skills and digital literacy on Thailand's generation Z accounting students' internship effectiveness: Role of self-learning capability. *International Journal of Educational Research Open*, 6, Article 100329. <https://doi.org/10.1016/j.ijedro.2024.100329>
- Indah, R. N., Toyyibah, Budhiningrum, A. S., & Afifi, N. (2022). The research competence, critical thinking skills and digital literacy of Indonesian EFL students. *Journal of Language Teaching and Research*, 13(2), 315-324. <https://doi.org/10.17507/jltr.1302.11>

- Ismail, S., Awi, N. A., Mohamed, M., Yusliza, Y. M., Saputra, J., & Thurasamy, R. (2021). Investigating the structural relationship of mass media on attitude, social influence, product safety and its impact on purchase behaviour of herbal product in Malaysia. *International Journal of Data and Network Science*, 5(4), 531-546. <https://doi.org/10.5267/j.ijdns.2021.8.014>
- Jansen, P., Schroter, F. A., & Hofmann, P. (2022). Are explicit and implicit affective attitudes toward different body shape categories related to the own body-satisfaction in young women? The role of mindfulness, self-compassion and social media activity. *Psychological Research*, 86(3), 698-710. <https://doi.org/10.1007/s00426-021-01536-z>
- Kalender, S., & Kişı, M. (2024). A study on health nutrition obsession, social–physique anxiety, and social media addiction of young individuals. *Addicta: The Turkish Journal on Addictions*, 11(1), 105-111. <https://doi.org/10.5152/ADDICTA.2024.23141>
- Khan, M. L., Malik, A., Ruhi, U., & Al-Busaidi, A. (2022). Conflicting attitudes: Analyzing social media data to understand the early discourse on COVID-19 passports. *Technology in Society*, 68, Article 101830. <https://doi.org/10.1016/j.techsoc.2021.101830>
- Korkmaz, Ö., & Kilic, H. C. (2024). Secondary school students' digital literacy skills, social media addictions and attitudes to social media use. *International Journal of Technology in Education*, 7(4), 883-902. <https://doi.org/10.46328/ijte.809>
- Lang, V., Špernjak, A., & Šorgo, A. (2024). The relationship between the daily use of digital technologies and the reading and information literacy skills of 15-year-old students. *European Journal of Educational Research*, 13(1), 43-54. <https://doi.org/10.12973/eu-jer.13.1.43>
- Li, W., & Zheng, X. (2024). Social media use and attitudes toward AI: The mediating roles of perceived AI fairness and threat. *Human Behavior and Emerging Technologies*, 2024(1), Article 3448083. <https://doi.org/10.1155/2024/3448083>
- López-Meneses, E., Sirignano, F. M., Vázquez-Cano, E., & Ramírez-Hurtado, J. M. (2020). University students' digital competence in three areas of the DigCom 2.1 model: A comparative study at three European universities. *Australasian Journal of Educational Technology*, 36(3), 69-88. <https://doi.org/10.14742/ajet.5583>
- Luo, T., Qin, L., Cheng, L., Wang, S., Zhu, Z., Xu, J., Chen, H., Liu, Q., Hu, M., & Tong, J., Hao, W., Wei, B., & Liao, Y. (2021). Determination the cut-off point for the Bergen social media addiction (BSMAS): Diagnostic contribution of the six criteria of the components model of addiction for social media disorder. *Journal of Behavioral Addictions*, 10(2), 281-290. <https://doi.org/10.1556/2006.2021.00025>
- Martin, A., & Grudziecki, J. (2013). DigEuLit: Concepts and tools for digital literacy development. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(4), 249-267. <https://doi.org/10.11120/ital.2006.05040249>
- Meral, Y. C., Gümüştakım, R. Ş., Kuş, C., & Taş, Z. Y. (2025). Anxiety, social media addiction, and the effect of these conditions on insomnia during the coronavirus disease 2019 period. *Addicta: The Turkish Journal on Addictions*, 12(1), 95-102. <https://doi.org/10.5152/ADDICTA.2024.23104>
- Nabivi, E. (2025). The role of social media in green marketing: How eco-friendly content influences brand attitude and consumer engagement. *Sustainability*, 17(5), Article 1965. <https://doi.org/10.3390/su17051965>
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065-1078. <https://doi.org/10.1016/j.compedu.2012.04.016>
- Ngoc Dan, T. N. D., Tran, H. Y., Nguyen, G. H. M., Nguyen, Y. K., & Dinh, H. T. M. (2025). Narcissism, social media addiction, self-esteem, and Haxeco traits: Exploring influences on life satisfaction among generation Z. *Psychology Research and Behavior Management*, 18, 419-434. <https://doi.org/10.2147/PRBM.S447067>
- Nkansah, J. O., & Oldac, Y. I. (2024). Unraveling the attributions of digital literacy skills and knowledge gap in Ghana's higher education: Undergraduate students voices in a phenomenological study. *Education and Information Technologies*, 29(12), 15249-15268. <https://doi.org/10.1007/s10639-024-12483-8>
- Ntow, F. D., & Kpotosu, C. K. (2025). Teachers are digitally equipped, but for teaching? Exploring mathematics teachers' perceived levels of digital competencies for teaching with technology. *Interdisciplinary Educational Technology*, 1(1), Article e104. <https://doi.org/10.71176/interedtech/17574>

- Ocaña-Fernández, Y., Fernández, L. A. V., Chiparra, W. E. M., & Gallarday-Morales, S. (2020). Digital skills and digital literacy: New trends in vocational training. *International Journal of Early Childhood Special Education*, 12(1), 370-377. <https://doi.org/10.9756/INT-JECSE/V12I1.201016>
- Ohme, J. (2021). Algorithmic social media use and its relationship to attitude reinforcement and issue-specific political participation—The case of the 2015 European immigration movements. *Journal of Information Technology and Politics*, 18(1), 36-54. <https://doi.org/10.1080/19331681.2020.1805085>
- Otrar, M., & Argin, S. (2015). A scale development study to determine the attitude of students' towards social media. *Journal of Research in Education and Teaching*, 4(1), 391-403. <http://www.jret.org/FileUpload/ks281142/File/37a.otrar.pdf>
- Paget, E. (2024). Online skills in an offline environment: Creating information literacy tutorials for the SolarSPELL offline digital library. *Journal of Learning for Development*, 11(1), 165-171. <https://doi.org/10.56059/jl4d.v11i1.1006>
- Papaioannou, T. (2011). Assessing digital media literacy among youth through their use of social networking sites. *Revista de Informatică Socială*, 8(15), 37-48.
- Payton, S., & Hague, C. (2010). Digital literacy across the curriculum: A Futurelab handbook. *Futurelab: Innovation in Education*. www.futurelab.org.uk
- Phuapan, P., Viriyavejakul, C., & Pimdee, P. (2016). An analysis of digital literacy skills among Thai university seniors. *International Journal of Emerging Technologies in Learning*, 11(3), 24-31. <https://doi.org/10.3991/ijet.v11i03.5301>
- Pöhn, D., & Hommel, W. (2024). Digital skills and technology to empower women. In S. Krishnan, A. J. Anand, & R. Kumar (Eds.), *Sustainable development goals: Technologies and opportunities* (pp. 1-18). CRC Press. <https://doi.org/10.1201/9781003468257>
- Qerimi, G., Jahiri, M., Ujkani, B., & Zeneli, A. (2023). Media literacy and young people's digital skills. *International Journal of Emerging Technologies in Learning*, 18(7), 50-61. <https://doi.org/10.3991/ijet.v18i07.37081>
- Ofem, U. J. (2026). The mediating effect of digital skills and literacy in the nexus between institutional policies and utilization of social media platforms for research: A PLS-SEM. *European Journal of Interactive Multimedia and Education*, 7(1), Article e02603. <https://doi.org/10.29333/ejimed/18121>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879. <https://doi.org/10.1037/0021-9010.88.5.879>
- Rahimi, M., & Yadollahi, S. (2017). Effects of offline vs. online digital storytelling on the development of EFL learners' literacy skills. *Cogent Education*, 4(1), Article 1285531. <https://doi.org/10.1080/2331186X.2017.1285531>
- Reddy, P., Sharma, B., & Chaudhary, K. (2020). Digital literacy. *International Journal of Technoethics*, 11(2), 65-94. <https://doi.org/10.4018/ijt.20200701.oa1>
- Sánchez-Caballé, A., Gisbert-Cervera, M., & Esteve-Mon, F. (2020). The digital competence of university students: a systematic literature review. *Aloma: Revista de Psicologia, Ciències de L'educació i de L'esport*, 38(1), 63-74. <https://revistaaloma.blanquerna.edu/index.php/aloma/article/view/388>
- Sariyatun, Sutimin, L. A., & Abidin, N. F. (2025). The role of social support in moderating the impact of digital literacy and metacognitive skills on self-efficacy among students. *Educational Process: International Journal*, 14, Article e2025078. <https://doi.org/10.22521/edupij.2025.14.78>
- Seputro, A., & Setiawan, B. (2020). Hubungan antara pemahaman literasi digital dan tingkat kompetensi literasi digital pada mahasiswa S1 Universitas Negeri Yogyakarta [The relationship between understanding of digital literacy and the level of digital literacy competency in undergraduate students at Yogyakarta State University]. *LEKTUR Jurnal Ilmu Komunikasi*, 3(1), 38-48. <https://doi.org/10.21831/lektur.v3i1.16822>
- Shen, R., & Rukmini, E. (2023). Smartphone addiction reduction: Effectiveness of print and social media education. *International Journal of Public Health Science*, 12(2), 527-535. <https://doi.org/10.11591/ijphs.v12i2.22566>
- Siddiq, F., Gochyyev, P., & Wilson, M. (2017). Learning in digital networks—ICT literacy: A novel assessment of students' 21st century skills. *Computers and Education*, 109, 11-37. <https://doi.org/10.1016/j.compedu.2017.01.014>

- Spires, H., & Bartlett, M. (2012). Digital literacies and learning: Designing a path forward. *Friday Institute White Paper Series*, 5, 1-24.
- Steinrücke, J., Veldkamp, B. P., & de Jong, T. (2020). Information literacy skills assessment in digital crisis management training for the safety domain: Developing an unobtrusive method. *Frontiers in Education*, 5, Article 140. <https://doi.org/10.3389/feduc.2020.00140>
- Suherman, A., Supriyadi, T., & Safari, I. (2020). Promoting digital literacy skills: An action research to people of Kampung Literasi. *Universal Journal of Educational Research*, 8(4), 1372-1386. <https://doi.org/10.13189/ujer.2020.080430>
- Sümen, A., & Evgin, D. (2021). Social media addiction in high school students: A cross-sectional study examining its relationship with sleep quality and psychological problems. *Child Indicators Research*, 14(6), 2265-2283. <https://doi.org/10.1007/s12187-021-09838-9>
- Tanhan, F., Özok, H. İ., Kaya, A., & Yıldırım, M. (2024). Mediating and moderating effects of cognitive flexibility in the relationship between social media addiction and phubbing. *Current Psychology*, 43(1), 192-203. <https://doi.org/10.1007/s12144-023-04242-8>
- Temirkhanova, M., Abildinova, G., & Karaca, C. (2024). Enhancing digital literacy skills among teachers for effective integration of computer science and design education: A case study at Astana International School, Kazakhstan. *Frontiers in Education*, 9, Article 1408512. <https://doi.org/10.3389/feduc.2024.1408512>
- Thomson, K., Hunter, S. C., Butler, S. H., & Robertson, D. J. (2021). Social media 'addiction': The absence of an attentional bias to social media stimuli. *Journal of Behavioral Addictions*, 10(2), 302-313. <https://doi.org/10.1556/2006.2021.00011>
- Tomczyk, Ł. (2020). Skills in the area of digital safety as a key component of digital literacy among teachers. *Education and Information Technologies*, 25(1), 471-486. <https://doi.org/10.1007/s10639-019-09980-6>
- Ursoniu, S., Serban, C. L., Giurgi-Onu, C., Ravis, I.-A., Bucur, A., Papavă, I., & Bredicean, A.-C. (2022). Validation of the Romanian version of the social media addiction scale-student form (SMAS-SF) among undergraduate medical students. *Neuropsychiatric Disease and Treatment*, 18, 1195-1205. <https://doi.org/10.2147/NDT.S368476>
- Usta, E., Korucu, A. T., & Yavuzarslan, İ. F. (2016). Using augmented reality in education: A content analysis of the studies in 2007-2016 period. *Journal of Subject Teaching Research*, 2(2), 84-95. <https://izlik.org/JA68ZD26GX>
- Uzunlar, N. N. (2022). *Investigation of the effects of adolescents' digital game addiction and social media attitudes on cyberbullying risk levels* [Master's thesis, Istanbul Gelisim University].
- Vaishnavi, S., & Ajit, I. (2023). Exploring the efficacy of social media narrative-based activities in improving digital communication skills and digital literacy among tertiary-level ESL learners. *World Journal of English Language*, 13(7), 222-231. <https://doi.org/10.5430/wjel.v13n7p222>
- Vercruyssen, A., Schirmer, W., & Geerts, N., & Mortelmans, D. (2023). How "basic" is basic digital literacy for older adults? Insights from digital skills instructors. *Frontiers in Education*, 8, Article 1231701. <https://doi.org/10.3389/feduc.2023.1231701>
- Vodă, A. I., Cautisanu, C., Grădinaru, C., Tănăsescu, C., & de Moraes, G. H. S. M. (2022). Exploring digital literacy skills in social sciences and humanities students. *Sustainability*, 14(5), Article 2483. <https://doi.org/10.3390/su14052483>
- Yam, F. C., Yildirim, O., & Köksal, B. (2024). The mediating and buffering effect of resilience on the relationship between loneliness and social media addiction among adolescent. *Current Psychology*, 43(28), 24080-24090. <https://doi.org/10.1007/s12144-024-06148-5>
- Yildiz Durak, H., & Saritepeci, M. (2019). Modeling the effect of new media literacy levels and social media usage status on problematic Internet usage behaviours among high school students. *Education and information technologies*, 24(4), 2205-2223. <https://doi.org/10.1007/s10639-019-09864-9>
- Yilmaz, F., Yilmaz Öznelçi, S., & Çelebi, C. (2025). The mediating role of digital literacy between lifelong learning tendency and 21st century skills. *Participatory Educational Research*, 12(1), 138-156. <https://doi.org/10.17275/per.25.8.12.1>
- Yılmaz, Ö. Y., & Serin, N. B. (2021). The analysis of adolescents attitude to social media and their loneliness level. *Elementary Education Online*, 20(1), 318-326. <https://doi.org/10.17051/ilkonline.2021.01.030>

- Yoo, S. J., & Pyon, H. T. (2026). Is digital inclination associated with lifelong learning in aging South Korea? *Educational Point*, 3(1), Article e145. <https://doi.org/10.71176/edup/17846>
- Zan, B., Çolaklar, H., Altay, A., & Taşkın, N. (2021). A study on digital literacy skills of faculty of letters students: Use of university library. *International Journal of Emerging Technologies in Learning*, 16(1), 152-171. <https://doi.org/10.3991/IJET.V16I01.16567>
- Zhang, K., Li, P., Zhao, Y., Griffiths, M. D., Wang, J., & Zhang, M. X. (2023). Effect of social media addiction on executive functioning among young adults: The mediating roles of emotional disturbance and sleep quality. *Psychology Research and Behavior Management*, 16, 1911-1920. <https://doi.org/10.2147/PRBM.S414625>

