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An Applied Study on the Relationship between Digital Media Literacy and Video Game Playing Behaviour

ABSTRACT

The innovations brought by digitalization have expanded the gaming ecosystem, offering individuals opportunities for entertainment, socialization, and cognitive development. However, uncontrolled use increases the risk of problematic gaming behaviour and game addiction. This study was conducted to examine the relationship between digital media literacy and digital game addiction with the participation of 237 students aged 9 to 12. The findings revealed a weak but statistically significant positive relationship between digital media literacy and digital game addiction ($p < .05$). As gaming time increased, addiction symptoms also rose ($r = 0.52$, $p < .001$), and the addiction risk was found to be higher among male students ($p < .001$). It was also concluded that children mostly play games on mobile devices, and the portability of these devices may make it harder to control gaming time, thus increasing the risk of addiction. The study provides recommendations for developing digital media literacy, managing game time, and fostering conscious gaming habits.

KEY WORDS

Digital Games. Digital Literacy. Digital Media. Game Addiction. New Media Literacy.

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1 Introduction

In our technology-driven world, the digital revolution has redefined how individuals live, learn, and participate in society. Digital media literacy has therefore emerged as a vital competency, equipping individuals – particularly younger generations – with the knowledge, skills, and values necessary to navigate and critically evaluate the digital environment. Scholars define digital literacy not only as the technical ability to operate digital tools but also as the capacity to interpret, assess, and use information responsibly. Today's children, often described as “digital natives”, grow up surrounded by technology from birth, which allows them to adapt to digital devices quickly and use them with ease (Švecová et al., 2021). This makes digital literacy education a cornerstone of preparing children for academic success, social participation, and personal development in a technology-driven world.

Among the many aspects of digital media that influence children's lives, digital games represent one of the most significant (Akgöl, 2023). Originally developed as simple entertainment in the 1970s, digital games have since evolved into complex interactive experiences with educational, cultural, and social dimensions (Doğan Keskin & Aral, 2021). Today, they span multiple platforms including PCs, consoles, and mobile devices and attract millions of young players worldwide (Gallagher, 2017). While digital games can foster critical thinking, creativity, and problem-solving, they also carry potential risks when used excessively or without awareness.

Research has shown that digital games contribute to digital media literacy by encouraging interpretation of texts, visuals, and interactive systems, thus promoting critical and cognitive skills (Gentile et al., 2011). At the same time, excessive or uncontrolled gaming may lead to problematic behaviours, such as attention difficulties, social withdrawal, anxiety, and even addiction. With organizations like the World Health Organization (WHO) and the American Psychiatric Association (APA) formally recognizing gaming disorder (GD) as a behavioural condition, the issue has gained increased attention from policymakers, educators, and health professionals (APA, 2023; WHO, 2020).

The dual role of digital games providing both opportunities for development and risks of addiction highlights the importance of understanding their impact within the broader framework of digital media literacy (Buckingham, 2006). Children are especially vulnerable, as they are immersed in digital environments from an early age, often engaging with games that fulfill psychological and social needs, ranging from autonomy and achievement to social connection and emotional regulation. Identifying the factors that contribute to healthy gaming habits versus addictive tendencies is therefore essential for fostering conscious and balanced media use.

This study situates digital game use within the context of digital media literacy, examining both its educational potential and its risks for problematic use. By exploring how gaming behaviours intersect with cognitive, social, and psychological outcomes, the research seeks to provide insights that can guide families, educators, and policymakers in promoting responsible digital engagement among children.

1.1 Literature Review

In today's lifestyle, which is intertwined with digital technologies, individuals have instant access to information, and in such a world, digital literacy plays a critical role in social participation (Turner et al., 2017). Drawing from Fröbel's notion of *homo spiellens*, play can be understood as a vital medium through which individuals develop cognitive and moral awareness – a principle that underlies the role of digital games in enhancing children's digital media literacy today (Rebecchi, 2024). Equipping the younger generation with these skills is of great importance to ensure success and sustainability in a technology-driven future (Jacqueline, 2024). Efforts to conceptualize digital literacy began with the invention of computers, which constitute

the foundation of the digital world. The emergence of personal computers in the 1980s for word processing purposes marked a pivotal moment in the development of digital literacy (Dobson & Willinsky, 2009).

Paul Gilster defines digital media literacy as the ability to comprehend and utilize information from various formats and sources through digital tools such as computers. He emphasizes that digital media literacy is not merely the ability to use technology, but also the capacity to evaluate the reliability of information and to select accurate information (Gilster, 1997). According to Hobbs, digital literacy is “a set of knowledge, skills, and competencies required to live successfully in a culture saturated with technology” (2017, p. 6).

Today’s generation is born into a world where digital media is an integral part of their lives (Ito et al., 2019). For them, digital media is not merely a tool, but a fundamental element of their daily lives (Çamalan & Demirbaş, 2024). Digital literacy refers to a set of knowledge, skills, attitudes, and values that enable children to play, learn, socialize, and engage in civic actions in digital environments in a safe, empowered, and autonomous manner, in ways that are appropriate to their age, culture, and context (UNICEF, 2017). Digital media literacy offers a more rigorous yet simultaneously more engaging and motivating way to address the educational challenges of the digital age (Buckingham, 2007). With these qualities, digital literacy education equips children with the skills to access information, think critically, and express themselves – abilities essential both in their academic pursuits and everyday lives (Bayzan & Uludaşdemir, 2024).

The effects of digital media are not limited to the cognitive level; in the absence of awareness regarding digital media literacy, it may also influence children’s behaviour (Pratiwi & Mukaromah, 2018). In particular, the unconscious and excessive use of electronic media tools can lead to various behavioural problems in children, such as attention deficit, hyperactivity, anxiety, depression, aggression, and social behaviour issues (Duran, 2023). Families, schools, and governments must take responsibility for ensuring that children use media consciously by controlling access and conducting awareness-raising initiatives. This underscores the importance of gradual and sustainable media literacy education, which can help children become more resilient to the overwhelming flow of information and peer pressure (Pratiwi & Mukaromah, 2018). At this point, one of the most striking fields where the impact of digital media on children can be observed is digital games. Far beyond being a simple tool of entertainment, digital games shape children’s social interactions, leisure practices, and even behavioural tendencies, making them a significant subject of study within digital media literacy.

Play has maintained its continuity as a cultural activity throughout history, and has reemerged in the modern era as the “digital game”, which preserves the same structural principles within virtual reality environments (Kvetanová, 2023). Theories of play provide an important conceptual framework for understanding the role of digital games in contemporary media culture. Huizinga’s notion of *homo ludens* underscores play as a fundamental element in the development of culture, while Caillois extends this perspective by categorizing games into four core principles: competition (*agon*), chance (*alea*), imitation (*mimicry*), and vertigo or ecstatic experience (*ilinx*) (Caillois, 2001). These principles remain evident in modern media production and are particularly manifest in digital gaming practices. In the digital era, the emergence of *homo medialis* highlights how individuals are constantly immersed in media environments that simulate alternative realities and offer hedonistic experiences. These principles explain why digital games not only provide entertainment but also foster cultural transmission, emotional engagement, and educational values, making them a significant subject of media literacy research (Pravdová & Hudíková, 2022). When supported by meaningful guidance and reflective interaction, digital media and games can serve as powerful tools for learning through critical thinking, problem-solving, and real-world connections (Yalçın Irmak & Erdoğan, 2015). Children whose media experiences are enriched by interactions within school, family, and social environments demonstrate higher levels of cognitive and emotional awareness. In this sense, media and digital media literacy aim to provide a more conscious and reflective gaming experience, enabling individuals to resist

potential negative effects of games (Klimmt, 2009). Without such skills, however, digital media and games risk becoming passive consumption tools that distance individuals from long-term learning and achievement (Gee, 2007). Furthermore, recent research emphasizes that digital games also serve as arenas of identity formation, where players negotiate belonging, recognition, and authenticity within gaming communities (Dietkow, 2023). This perspective broadens the cultural understanding of play by highlighting how interactive media not only reflect but actively construct social identities in virtual environments. These theoretical perspectives demonstrate that digital games are not merely tools of entertainment but also media that shape children's social and cultural worlds. Building on this understanding, it is useful to examine the historical development of digital games, which provides important insights into their current role in digital media culture.

Digital games began to gain popularity in the 1970s and 1980s, attracting a wide audience, and home consoles such as the Atari 2600 and Intellivision made it possible for people to play games in their homes (Olle & Westcott, 2018). This process, which started in the 1970s with simple pixelated productions like *Pong* and *Asteroids*, gradually transformed into sophisticated and interactive experiences featuring complex storylines, character development, and impressive visual effects (Cindrich, 2007). Home consoles continued to evolve over time, and the foundations of today's gaming industry were laid with the launch of PlayStation 2 (PS2) in 2001. PS2 stood out with innovative games combining cinematic narratives and open-world mechanics, becoming the best-selling game console of all time (Gallagher, 2017).

Today, digital games can be classified into three main platforms: personal computers (PC), gaming consoles (PS4, Xbox, Nintendo), and mobile games. However, more specific classifications can also be made based on game genres (Güvenli İnternet Merkezi, 2019). Among children today, it is observed that the most preferred games are popular titles, and games that gain popularity at certain times spread widely, leading to a general trend in which most children play the same games (Biricik & Atik, 2021). As of May 2023, *Roblox* had 300 million monthly active users (Exclusible, 2024). In addition to *Roblox*, *Minecraft*, *PKXD*, and *Brawl Stars* create an attractive environment for Generation Z with their social interaction-based structures. Especially in multiplayer competitive games, features such as teaming up with friends, in-game chat, and coordination encourage players to spend more time and develop emotional bonds with the game.

Digital games play a dual role in the field of media literacy, offering both opportunities and risks. Apperley and Walsh (2012) emphasize that digital games contribute significantly to digital media literacy, as they can be used as pedagogical tools to enhance students' digital literacy skills, transforming games from being merely a source of entertainment into effective learning instruments. With the advancement of technology, digital games have evolved beyond entertainment, becoming powerful tools in education, health, and culture (Hlazunova & Koziuberda, 2021; Arda et al., 2021). The growing popularity of digital games has underscored their intricate connection with digital media literacy. Previous research demonstrates that engaging with textual and visual narratives in digital games fosters essential digital literacy skills such as critical thinking, problem-solving, and creative content production (Akgöl, 2023; Doan et al., 2012). However, the influence of games extends beyond cognitive engagement to encompass emotional and social dimensions that shape players' behaviour and interpersonal interactions.

Similar to other forms of media, digital games hold significant potential to affect individuals' psychology and social conduct. The immersive and interactive experiences they provide can influence real-world relationships and contribute to players' cognitive and emotional development (Pernisco, 2020). Importantly, the thematic content of games serves as a key determinant in how players engage socially and behave both within and outside virtual environments. For instance, games that encourage prosocial behaviours such as cooperation and empathy strengthen social bonds among players, whereas violent games may normalize aggression and reduce social satisfaction (Prot et al., 2012).

Supporting this view, Shoshani et al. (2021) found that the social effects of digital games are closely tied to their thematic structure. Their findings reveal that non-aggressive games promote helping behaviours and mutual support among players, emphasizing that the impact of digital games on children's social development is directly linked to game content.

In this regard, digital games can be viewed not only as platforms for cultural transmission through symbolic and narrative structures but also as powerful pedagogical tools that foster digital media literacy, empathy, and learning outcomes (Jukić, 2023). Furthermore, recent studies indicate that games can facilitate the acquisition of media competences even when players are not consciously aware of the learning process. Immersion in game environments encourages critical reflection, information seeking, and adaptive decision-making, all of which contribute to broader digital literacy and transferable real-world skills (Škripcová, 2022).

The use of digital games in education contributes not only to students' cognitive development but also to the enhancement of their digital literacy skills. In this regard, the relationship between gaming and digital media literacy has been described as symbiotic (Steinkuehler, 2011). Games such as *Minecraft*, which provide opportunities for content creation and sharing, encourage critical thinking and content evaluation, thereby enriching the learning process (Dezuanni, 2020). Thus, digital games emerge as both a motivational tool in educational settings and an effective method for equipping students with the essential skills required in the digital age. In a study examining the relationship between digital game addiction and academic achievement, it was found that children who spent most of their weekday time playing digital games showed a positive correlation with their English test scores (Skoric et al., 2009).

At the same time, excessive gaming carries important risks that affect children on individual and social levels. While digital games provide cognitive and recreational benefits, excessive use can lead to impairments in social, academic, and psychological functioning. In some individuals, this pattern may reach a pathological level; however, the definition of gaming addiction remains a debated topic within the literature (Gentile et al., 2011).

In a longitudinal study conducted by Gentile et al. (2011) with primary and secondary school students in Singapore, it was found that 9% of the participants met the criteria for gaming addiction. Over a two-year period, the researchers examined the prevalence, duration, and consequences of gaming addiction, revealing that addicted individuals demonstrated lower academic performance, weaker parental relationships, and a higher tendency to play violent games. This, in turn, was associated with increased aggressive beliefs and behaviours, as well as a greater risk of victimization (Gentile et al., 2011).

The issue of addiction continues to be a major topic of discussion both in academia and in society. Dralega et al. (2023) emphasize that the definition of an addictive behaviour must rely on clear and measurable criteria. However, when examining the variables associated with digital game addiction, it becomes evident that the theoretical framework remains insufficiently defined.

Moreover, the increased accessibility of digital games – especially during the COVID-19 pandemic – has heightened concerns about overuse (Ko & Yen, 2020; Barr & Copeland-Stewart, 2021). In Turkey, there is still a lack of large-scale, nationally representative studies focusing specifically on digital game addiction; most existing work either centres on internet addiction or remains limited in scope (Göktaş, 2022; Şimşek & Karakuş Yılmaz, 2020). According to the 2024 report by the Turkish Statistical Institute (Türkiye İstatistik Kurumu, 2024), more than 90% of children play digital games regularly, and many report exceeding their intended playtime or neglecting responsibilities due to gaming. Furthermore, 23.4% of children reported feeling restless and unhappy when not playing digital games, suggesting signs of psychological dependency.

These patterns point to a deeper understanding of gaming not merely as a behavioural issue, but as a complex psychological and social phenomenon shaped by individual differences and emotional needs. Pathological gaming is defined as excessive and compulsive engagement with video games that negatively affects an individual's academic, social, and psychological functioning. However, as emphasized in recent studies, gaming addiction is not caused solely

by games themselves but is often associated with deeper psychological, social, and emotional factors (Gentile et al., 2011). Gentile and colleagues identified several personal characteristics that increase the risk of pathological gaming, including impulsivity, low social competence and empathy, and poor emotional regulation. Individuals who struggle to control their impulses, manage emotions, or form healthy social relationships are more likely to use games as a coping mechanism or a means of escaping reality and distress.

The theoretical frameworks surrounding digital game addiction show how the concept has been shaped in academic and clinical contexts. Mark D. Griffiths, who has been conducting research in the field of behavioural addictions for more than 30 years, has made significant contributions regarding digital game addiction. Beginning his career in the 1980s with studies on adolescents addicted to fruit machines in amusement arcades, Griffiths gradually expanded his research in line with technological developments. Today, he emphasizes the addictive potential of online games, pointing out that their 24/7 accessibility can lead to excessive engagement and harmful consequences (Paul, 2016). Digital games possess an inherently addictive structure that constantly encourages users to keep playing (Rohmani & Pambudi, 2023). The inability to control the urge to play, and its interference with social life, is considered a sign of addiction (Griffiths & Davies, 2005). The American Psychiatric Association (APA) recognized Internet Gaming Disorder (IGD) in May 2013 as an area requiring further research, including it in the appendix of the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 2013). Similarly, the World Health Organization included Gaming Disorder in the 11th revision of the *International Classification of Diseases* (ICD-11, n.d.), officially recognizing it as a behavioural disorder alongside gambling disorder (WHO, 2020; Göktaş, 2022).

Building on this theoretical foundation, Griffiths (2008) identified six key criteria that define internet and video game addiction, which have become widely accepted in behavioural addiction research. These include salience, referring to gaming becoming the most dominant activity in an individual's life; mood modification, which involves the emotional or psychological relief obtained through gaming; tolerance, describing the need to spend increasing amounts of time playing to achieve the same level of satisfaction; withdrawal symptoms, such as restlessness, anxiety, or irritability when unable to play; conflict, reflecting the disruption of personal relationships or daily responsibilities due to excessive gaming; and relapse, referring to the return to previous gaming patterns after attempts to reduce or quit.

These components reveal the fundamental psychological and behavioural processes that explain pathological gaming behaviour (Griffiths, 2008). He also explains how gaming can gradually shift from a recreational activity into a compulsive and maladaptive behaviour, aligning with later definitions of gaming disorder recognized by the DSM-5-TR and ICD-11.

The psychological mechanisms underlying digital game addiction help explain why games can be so engaging and difficult to quit. Digital games often include complex reward systems in addition to fostering problem-solving skills. These reward mechanisms stimulate the brain's reward centre, triggering dopamine release and reinforcing the desire to continue playing (Ermi & Mäyrä, 2003; Bilgi Teknolojileri ve İletişim Kurumu, 2021). In line with this, Olle and Westcott (2018) classified digital game players according to their level of commitment and time spent playing: casual players (less than 5 hours per week), transitional players (5–9 hours), skilled players (10–15 hours), second-job players (15–24 hours), and professional gamers (24–70 hours). This typology highlights how gaming behaviour can range from recreational to professionalized engagement, underlining the complexity of its impact on individuals.

In addition to these risks, digital games also provide gratifying psychological and social experiences that explain their broad appeal. Rigby and Ryan (2011) describe digital games as a virtual tool for satisfying real needs. In this sense, children who are subject to rules at school and responsibilities at home can find freedom and autonomy in digital worlds. The literature identifies multiple gratifying aspects of digital games (Doan et al., 2012), including satisfying curiosity through exploration, providing a sense of purpose, enhancing invincibility by overcoming

real-life limitations, feeding the ego, building friendships, seeking challenges, gaining leadership opportunities, fulfilling sexual fantasies, and meeting the need for love and acceptance. These elements demonstrate why games can become deeply appealing, meeting psychological and social needs in ways that may not always be accessible in real life.

Finally, researchers underline that certain behavioural signs can indicate the presence of digital game addiction. Among the most common are compulsive gaming, social isolation, mood swings, decreased imagination, and an excessive focus on in-game achievement at the expense of real-life responsibilities (Olle & Westcott, 2018). These indicators suggest that digital game addiction is a complex phenomenon that requires careful attention from families, educators, and policymakers.

2 Methodology

Data were collected using a research survey technique to gather information about children's digital media use, video game playing behaviours, and media literacy skills. The obtained data were analyzed with the aim of developing strategies to enhance digital media literacy and to offer recommendations for reducing the negative effects of video game addiction. This study adopted a correlational research design to investigate the relationship between digital media literacy and digital game playing behaviours among children.

In this study, the relationship between digital literacy and video game playing behaviours is examined based on certain assumptions. It is assumed that the level of digital literacy is related to gaming behaviours, that the risk of game addiction increases as the duration of gameplay rises, and that male individuals are more prone to addiction. Furthermore, it is assumed that age may have an effect on the level of addiction. It is also considered that the reward mechanisms of video games may increase playing time and trigger addiction. The survey data are evaluated based on the assumption that participants provided accurate and attentive responses.

2.1 Research Design

The research was conducted at a private school in Konya, Turkey, during the 2024 – 2025 academic year. The study sample consisted of 237 students from grades 4 to 6, selected through purposive sampling. Data were collected using the survey method, ensuring the systematic gathering of information relevant to the research objectives. The question forms were designed based on a 5-point Likert scale to evaluate the participants' responses. The theoretical framework from which the hypotheses were derived was constructed through a literature review technique.

This study was conducted in accordance with ethical principles. During the data collection process, all necessary measures were taken to protect the rights and privacy of the participants. Participation in the research was entirely voluntary. The participants were clearly informed about the purpose and procedure of the study, as well as how the collected data would be used. The surveys were administered anonymously, and the confidentiality of participants' identities was carefully maintained. The data obtained were used solely for scientific purposes and were not shared with any third parties. Considering the age group of the children, pedagogical sensitivity was observed throughout the research process, and special attention was given to ensuring that the survey questions were appropriate, clear, and comprehensible for children.

2.2 Research Questions and Hypotheses

This study seeks to answer the following questions:

1. What is the relationship between the level of digital media literacy and children's digital game playing behaviours (such as playtime and tendencies toward addiction)?
2. Is digital media literacy an effective factor in reducing symptoms of digital game addiction in children?
3. How does gender affect children's levels of digital media literacy and their digital game playing behaviours?

2.3 Instruments

Data were collected using three instruments:

1. Digital Media Literacy Scale (DLS) (Pala & Başibüyük, 2020), measuring awareness and skills in digital media use.
2. Digital Game Addiction Scale for Children (VASC) (Yılmaz et al., 2017), assessing problematic gaming behaviours.
3. Personal Information Form, developed by the researcher, gathering demographic data (age, gender, weekly gaming time, preferred game types).

The Digital Media Literacy Scale developed by Pala and Başibüyük (2020) and the Digital Game Addiction Scale for Children developed by Yılmaz et al. (2017) have proven validity and reliability. In addition, participants were asked to answer questions regarding basic demographic information such as age, gender, gaming duration, and preferred game types.

The Digital Literacy Scale (DLS) developed and validated by Pala and Başibüyük (2020) was used to measure the digital media literacy levels of children aged 9–12. The scale was created by the authors based on the Europass (n.d.) “Digital Skills – Self-Assessment Grid” and developed through a comprehensive literature review, expert evaluations, and a pilot study. Pala and Başibüyük conducted all validity and reliability analyses, employing Exploratory and Confirmatory Factor Analyses (EFA and CFA) to establish construct validity, and Cronbach's Alpha along with the test–retest method to confirm reliability.

As a result of these analyses, a five-point Likert-type scale consisting of 21 items and four sub-dimensions – “information processing”, “communication”, “security”, and “problem solving” – was developed. The response options were rated as *Always* = 5, *Often* = 4, *Sometimes* = 3, *Rarely* = 2, and *Never* = 1, and the scale included no reverse-scored items. The findings confirmed that the DLS is a valid and reliable measurement tool (Pala & Başibüyük, 2020).

Digital Game Addiction Scale for Children (VASC) developed by Yılmaz et al. (2017) was used to assess children's level of gaming addiction. The authors designed the 31-item draft scale based on a comprehensive literature review and expert evaluation to ensure content validity. Following pilot testing and revisions for child comprehension, the final version consisted of 21 items across four factors: “self-discipline”, “rewards/reinforcement”, “problems”, and “involvement”. Items were rated on a five-point Likert scale ranging from *Never* (1) to *Very Often* (5), with total scores between 21 and 105, where scores above 90 indicated a risk of gaming addiction.

Reliability and validity analyses demonstrated satisfactory internal consistency, with Cronbach's alpha values confirming the scale's robustness. The questionnaire also collected demographic data, including gender, age, socioeconomic background, and access to gaming devices. Findings revealed that boys scored significantly higher than girls on the VASC. Overall, the four-factor structure was confirmed as both valid and reliable (Yılmaz et al., 2017).

2.4 Procedure

The instruments were administered in classrooms under researcher supervision in January 2025. Participation was voluntary, anonymity was assured, and each session lasted about 45 minutes. Questionnaires were prepared based on a 5-point Likert scale in order to evaluate the participants' responses.

2.5 Data Analysis

Data were analyzed using R 4.4.2. Descriptive statistics summarized demographic characteristics. Pearson correlation examined associations between digital media literacy and gaming behaviour, while simple and multiple linear regression analyses tested the predictive effects of literacy, gaming time, age, gender, and parental education. Statistical significance was set at $p < .05$.

For numerical variables, means (M) and standard deviations (SD) were calculated, while for categorical variables, frequencies and percentages were reported. ANOVA and linear regression analyses were used for the analysis of numerical variables, and Spearman correlation analysis was applied to determine correlations between variables. Beta coefficients (β) and 95% confidence intervals (CI) were also calculated to interpret effect sizes.

Factor analysis was not applied in the study, since the scales used had already been developed on similar samples of the same age group, their construct validity had been proven, and comprehensive validity and reliability analyses had been conducted. Therefore, it was not considered necessary to establish a new factor structure in the current research, and statistical tables related to factor analysis were not included in the article.

3 Results

The study included a total of 237 students aged between 9 and 12 years, with a mean age of 10.60 ± 0.94 . In terms of gender distribution, 47.39% ($n=109$) were girls and 52.61% ($n=121$) were boys. When asked, "On an average day, how much time do you spend in front of a screen (for gaming, school, or other activities)?", the responses indicated that the average daily gaming time was 1.63 ± 1.80 hours (Table 1).

Variable	N = 237 ¹
Age (year)	10.60±0.94
Gender	
Girl	109(%47.39)
Boy	121(%52.61)
Gaming Duration (hour)	1.63±1.80

¹ n (%)

Table 1: Descriptive statistics for age, gender, and gaming duration

Source: own processing, 2025

The mean score of the Digital Literacy Scale (DLS) was 79.16 ± 13.11 , while the mean score of the Digital Game Addiction Scale for Children (VASC) was 59.04 ± 18.36 (Table 2).

Variable	N = 237 ¹
DLS score	79.16±13.11
VASC score	59.04±18.36

¹ n (%)**Table 2:** *Statistics related to scale scores*

Source: own processing, 2025

The overall Cronbach's Alpha coefficient of the Digital Literacy Scale (DLS) was found to be 0.846, indicating that the scale is reliable. Among the sub-dimensions, communication (0.803) and problem solving (0.782) demonstrated acceptable levels of reliability, whereas the information-processing (0.543) and security (0.452) sub-dimensions showed low reliability (Table 3).

Scale and Sub-dimension	Cronbach's Alfa
DLS Total	0.846
Communication	0.803
Problem Solving	0.782
Information Processing	0.543
Security	0.452

Table 3: *Cronbach's alpha coefficient for the digital literacy scale*

Source: own processing, 2025

The overall Cronbach's Alpha coefficient of the Digital Game Addiction Scale for Children (VASC) was 0.92, indicating high reliability. Among the sub-dimensions, self-control (0.894) and reward/reinforcement (0.878) demonstrated very high reliability, whereas problems (0.772) and participation (0.761) showed acceptable levels of reliability (Table 4).

Scale and Sub-dimension	Cronbach's Alfa
VASC Total	0.920
Self-control	0.894
Reward/reinforcement	0.878
Problems	0.772
Involvement	0.761

Table 4: *Cronbach's alpha coefficient for the digital game addiction scale*

Source: own processing, 2025

In the correlation analysis, a weak but statistically significant positive relationship was found between the Digital Game Addiction Scale for Children (VASC) and the Digital Literacy Scale (DLS) ($r = .21$, $p < .01$). In addition, VASC showed significant positive correlations with both gaming duration ($r = .52$, $p < .001$) and age ($r = .22$, $p < .01$). Similarly, DLS was positively correlated with gaming duration ($r = .26$, $p < .001$) and age ($r = .29$, $p < .001$). Furthermore, a significant positive correlation was also observed between gaming duration and age ($r = .22$, $p < .01$). These results suggest that, although the correlations are generally weak to moderate in magnitude, they highlight meaningful associations among children's gaming habits, digital literacy, and age (Table 5).

Variable	VASC	DLS	Gaming Duration	Age
VASC	1			
DLS	0.21**	1		
Gaming Duration	0.52***	0.26***	1	
Age	0.22**	0.29***	0.22**	1

* $p < .05$ ** $p < .01$ *** $p < .001$ **Table 5:** Correlations between scale scores, game duration, and age

Source: own processing, 2025

In the multiple linear regression analysis (Table 6), all independent variables were entered simultaneously in a single model to predict Video Game Addiction Scale for Children (VASC) scores. Although the correlation analysis indicated a weak but significant positive relationship between DLS and VASC ($r = .21$, $p < .01$), the regression results showed that the effect of the DLS variable was weaker ($\beta = 0.05$, $p = .60$). This apparent discrepancy between the two analyses is not due to different models but rather to shared variance between DLS and other predictors, such as age and gaming duration, which reduced the unique predictive contribution of DLS when these variables were controlled for (Table 6).

Variable	Beta	95% Confidence Interval. ¹	p-value (Significance)
DLS Score	0.05	(-0.14-0.24)	0.6
Age	3.2	(0.60-5.8)	0.016
Gender			0.023
Girl	—	—	
Boy	5.6	(0.79-10)	
Gaming Duration	3.9	(2.6-5.3)	<0.001

¹CI= Confidence Interval $R^2 = 0,274$ **Table 6:** Multiple linear regression analysis

Source: own processing, 2025

When examining the responses of the children participating in the study regarding which technological devices they had access to, it was found that 53.42% ($n = 125$) owned a laptop, 73.08% ($n = 171$) owned a tablet, 76.92% ($n = 180$) owned a mobile phone, and 39.32% ($n = 92$) owned a game console. Additionally, 5.13% ($n = 12$) of the participants reported that they did not own any device. Participants were informed that they could select more than one option when indicating the devices they owned (Table 7).

Variable	N = 237 ¹
Laptop	
Yes	125(%53.42)
No	109(%46.58)
Tablet	
Yes	171(%73.08)
No	63(%26.92)
Mobile Phone	
Yes	180(%76.92)
No	54(%23.08)
Game Console	
Yes	92(%39.32)
No	142(%60.68)
I don't own any device	
Yes	12(%5.13)
No	222(%94.87)

¹ n (%)**Table 7:** Technological device access data

Source: own processing, 2025

4 Discussion

The study identified a weak but significant positive relationship between the Digital Literacy Scale (DLS) and the Digital Game Addiction Scale for Children (VASC) ($p < .05$). This finding contradicts the common expectation that higher digital literacy serves as a protective factor against addiction. Although digital literacy is often assumed to enhance individuals' critical awareness of media use and reduce problematic behaviours (Livingstone & Helsper, 2007), the present study suggests a more complex relationship. Digital literacy, while equipping individuals with technical competence, may also increase exposure to online environments and interactive platforms, thereby heightening the risk of excessive use (Pamuk, 2024; Leung & Lee, 2012). In this sense, digital proficiency does not always translate into self-regulation. Consistently, Appel (2012) found that adolescents with higher computer literacy tend to play digital games more frequently.

At the same time, the study revealed a strong positive relationship between gaming duration and digital game addiction. Longer playtime was associated with diminished self-control, greater reward dependence, and stronger emotional attachment to games. These findings align with prior research (Avcı & Zorba, 2023; Gentile et al., 2011; Lemmens et al., 2015), indicating that gaming time remains a more decisive predictor of addictive behaviour than digital literacy itself. Extended gaming undermines self-regulation and increases psychosocial risks (Oral & Arabacıoğlu, 2019; Demirel et al., 2019; Güvendi et al., 2019; Lieberoth & Fiskaali, 2021). The immersive and rewarding nature of digital games – which allows players to build and control their own virtual environments – further reinforces engagement and contributes to prolonged play, thus intensifying the risk of addiction. In addition to the psychological mechanisms underlying prolonged gaming, technological accessibility also plays a crucial role in shaping gaming habits. These results are consistent with previous studies showing that children increasingly prefer mobile devices for gaming. The findings of this study revealed that primary school students most frequently used smartphones and tablets when playing digital games (73.08% tablet, 76.92% smartphone). Similarly, Yılmaz et al. (2024) found that primary school students in Türkiye

predominantly preferred smartphones and tablets for gaming. This trend aligns with broader research indicating that children's gaming habits have gradually shifted toward mobile platforms, reflecting the growing accessibility and portability of these devices (Oral & Arabacıoğlu, 2019; Karaman Yaşar et al., 2024; Yumrukuz, 2021; Tozduman Yaralı, 2025). This transition suggests that mobile gaming environments now constitute a central part of children's digital experiences, which may have implications for both their screen time patterns and the development of responsible gaming behaviours.

Gender and age also emerged as significant factors. Male students scored higher on the VASC than female students, suggesting that boys constitute a higher-risk group for digital game addiction (Taş & Güneş, 2019; Demirtaş Zorbaz et al., 2015; Phillips et al., 1995; Bayzan et al., 2023; Göldağ, 2018; Charoenwanit & Sumneangsator, 2014). Additionally, addiction symptoms increased with age, indicating that adolescents may be particularly vulnerable to excessive gaming (Aslan et al., 2022).

While the risks of excessive gaming are evident, the educational and developmental potential of digital games should not be overlooked. Alcock et al. (2014) argue that this potential is realized only through conscious and critical engagement. The "Serious Play" project demonstrated that digital games can function as pedagogical tools that foster creativity, multiliteracies, and deeper learning (Dezuanni & Zagami, 2017). Similarly, Ermi and Mäyrä (2003) emphasized that children in contemporary game culture should not be viewed as passive consumers but as active participants capable of engaging critically with digital games.

Overall, these findings underscore the dual nature of digital games: while they offer opportunities for learning and digital literacy development, they also pose risks when used without regulation. The results highlight the need for balanced educational strategies that nurture both critical media skills and self-regulation. Future research should further explore how digital literacy interacts with psychosocial and contextual factors to either mitigate or exacerbate problematic gaming behaviours.

5 Conclusion

The findings of this study suggest several strategies to encourage responsible digital game use among children and reduce the risk of gaming addiction. Schools should integrate digital literacy programs to foster critical media use, while both students and parents should receive guidance on time management and healthy gaming practices. Parental awareness of digital media is especially important for supporting children's gaming habits, and gender-sensitive interventions may be needed given the higher risk observed among boys. Rather than simply restricting playtime, children should be encouraged to engage in sports, arts, and cultural activities to develop alternative interests.

Furthermore, the educational potential of digital games should not be overlooked. Promoting constructive and curriculum-aligned game use can support student motivation, creativity, and problem-solving skills. Recent theoretical discussions suggest that digital games blur the boundaries between fiction and real interaction; they simultaneously function as symbolic representations and interactive tools, enabling players to engage cognitively and experientially with both the narrative and the mechanics of play, thereby fostering cognitive engagement and the development of media literacy (Csöngö, 2024). This requires continuous awareness-raising among parents and teachers to ensure digital games are used as tools for learning rather than sources of distraction. School-based prevention policies, alongside programs delivered through counsellors and psychologists, may provide an additional safety net for at-risk children. Stronger collaboration between families, schools, and community organizations could facilitate earlier identification of problematic gaming patterns and enable more holistic interventions.

Consistent with cross-national evidence showing that problematic gaming negatively affects adolescents' well-being regardless of cultural context (van der Neut et al., 2023), and with empirical findings demonstrating that self-reported addiction scales capture the psychological dimensions of problematic gaming more accurately than mere usage time (Baggio et al., 2015), the present findings underscore the universal relevance of responsible gaming education and highlight the need for collaborative efforts between schools, families, and policymakers to address these risks effectively.

Future research should employ longitudinal designs with larger, nationally representative samples to clarify causal links between gaming addiction and academic outcomes. The development of more reliable measurement tools is also needed to reduce bias and strengthen the validity of future studies. Beyond this, comparative research across different cultural and socioeconomic contexts could deepen understanding of how environmental factors shape gaming behaviours. Policymakers, educators, and mental health professionals should work together to design comprehensive frameworks that balance the benefits of digital games with the need to safeguard children's well-being. Ultimately, sustainable solutions will depend on fostering a digital culture where gaming is practiced in moderation, guided by awareness, responsibility, and meaningful alternatives for personal growth.

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