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Online Gaming, Digital Entertainment, and Academic Performance among Students: A Review

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Abstract

Online gaming and digital entertainment have become increasingly integrated into students' daily lives through smartphones, computers, gaming platforms, video streaming, and social media. This review paper examines the relationship between online gaming, digital entertainment, and academic performance among students. The discussion highlights that digital entertainment can produce both positive and negative effects depending on duration, timing, content type, self-regulation, and learning context. Moderate and purposeful use may support cognitive skills, social interaction, motivation, and digital literacy. In contrast, excessive or problematic use may contribute to distraction, reduced study time, poor sleep quality, lower learning engagement, and weaker academic outcomes. Quantitative findings from previous studies show that many students engage frequently in online gaming and digital entertainment, including long weekly gaming time, mobile gaming as a major source of entertainment, and frequent social media checking. Overall, the reviewed literature suggests that the relationship between digital entertainment and academic performance is conditional rather than absolute. Healthy digital habits, effective time management, and guidance from parents, teachers, and educational institutions are important to help students balance entertainment and academic responsibilities.

1. Introduction

The rapid growth of online gaming and digital entertainment has transformed the daily lives of students across different educational levels [1]. Online games, video streaming platforms, social media, mobile applications, and other screen-based entertainment activities have become common forms of leisure, communication, and social interaction [2]. For many students, digital entertainment is no longer limited to occasional recreation; it is integrated into everyday routines through smartphones, laptops, tablets, and gaming consoles [3, 4]. This shift has created new opportunities for social connection, creativity, and cognitive engagement. Still, it has also raised concerns about excessive use, distraction, reduced study time, sleep disruption, and declining academic performance [5, 6].

Online gaming is one of the most widely discussed forms of digital entertainment because of its immersive, interactive, and competitive nature [7]. Unlike passive entertainment such as television viewing, online games often involve real-time communication, goal-oriented

tasks, reward systems, teamwork, and continuous progression [8]. These features can make games highly engaging and may support certain cognitive skills such as attention, reaction speed, working memory, problem-solving, and decision-making. Some studies suggest that video gaming may be associated with improved cognitive performance in specific domains, particularly impulse control and working memory [9]. However, the same features that make online games engaging may also increase the risk of prolonged use, reduced self-regulation, and difficulty balancing gaming with academic responsibilities.

The relationship between online gaming, digital entertainment, and academic performance remains complex. Some studies report negative associations between excessive gaming and students' grades, motivation to learn, school attendance, and study habits. For example, research on screen media use has found that television viewing and video game playing are inversely associated with academic performance among children and adolescents, especially when usage is excessive or poorly regulated [10]. Similarly, studies on online game addiction indicate that problematic gaming may reduce students' behavioral, emotional, and cognitive engagement in learning, which may then weaken academic achievement motivation [11]. These findings suggest that the academic impact of gaming may operate not only through time displacement but also through reduced learning engagement and motivation.

Nevertheless, the literature does not present a single conclusion that all gaming harms academic performance. Some studies have found negligible or mixed effects, showing that the impact of gaming depends on factors such as duration, timing, content, purpose, and student characteristics. Drummond and Sauer [12], for instance, found little evidence that video game use negatively affected adolescent performance in science, mathematics, or reading. Hartanto, Toh, and Yang [13] further showed that the timing of gaming matters: weekday gaming was negatively associated with academic outcomes, whereas weekend gaming was more positively associated. These findings indicate that online gaming should not be understood simply as harmful or beneficial, but as a form of digital behavior whose academic consequences depend on how, when, why, and how long students engage with it.

In addition to gaming, broader digital entertainment activities such as streaming videos, browsing social media, and using mobile entertainment applications may influence academic performance by affecting attention, time management, sleep quality, and learning routines [14]. The World Health Organization has recognized gaming disorder as a pattern of gaming behavior involving impaired control, increasing priority given to gaming over other activities, and continuation despite negative consequences [15]. Although only a minority of students may experience gaming disorder, the classification highlights the importance of examining problematic patterns of use rather than focusing only on screen time [16]. Therefore, a balanced review is needed to examine both the potential benefits and risks of online gaming and digital entertainment for students' academic performance.

This review paper aims to synthesize existing literature on online gaming, digital entertainment, and academic performance among students. Specifically, it discusses patterns of digital entertainment use, positive and negative effects on learning behavior, and the relationship between gaming-related habits and academic outcomes. By reviewing previous studies, this paper seeks to clarify the conditions under which online gaming and digital entertainment may support or hinder students' academic success.

2. Patterns of Online Gaming and Digital Entertainment Use among Students

Students' engagement with online gaming and digital entertainment is commonly shaped by access to smartphones, internet availability, peer influence, social media, video streaming, and mobile gaming platforms. Recent quantitative studies show that digital entertainment is not an occasional activity for many students, but a regular part of their daily or weekly routine. In a cross-sectional study of 399 Bangladeshi university students, Mahmud et al. [17] reported that 62.7% of respondents played online games for more than 30 hours per week. This finding indicates that a substantial proportion of university students may spend more than four hours per day on gaming-related activities, which can compete with time for study, sleep, physical activity, and social interaction.

Mobile gaming is especially common because smartphones provide easy and continuous access to entertainment. Sayeed et al. [18], in a study of 1,125 university students from three universities in Bangladesh, found that 65.2% of students selected mobile games as their main source of entertainment. The pattern was higher among male students, with 72.7% of males and 48.3% of females reporting mobile games as their primary source of entertainment. The same study also found that gaming duration was strongly related to addiction level: among students who played mobile games for more than four hours per day, 58.9% were severely addicted, while one out of five students who

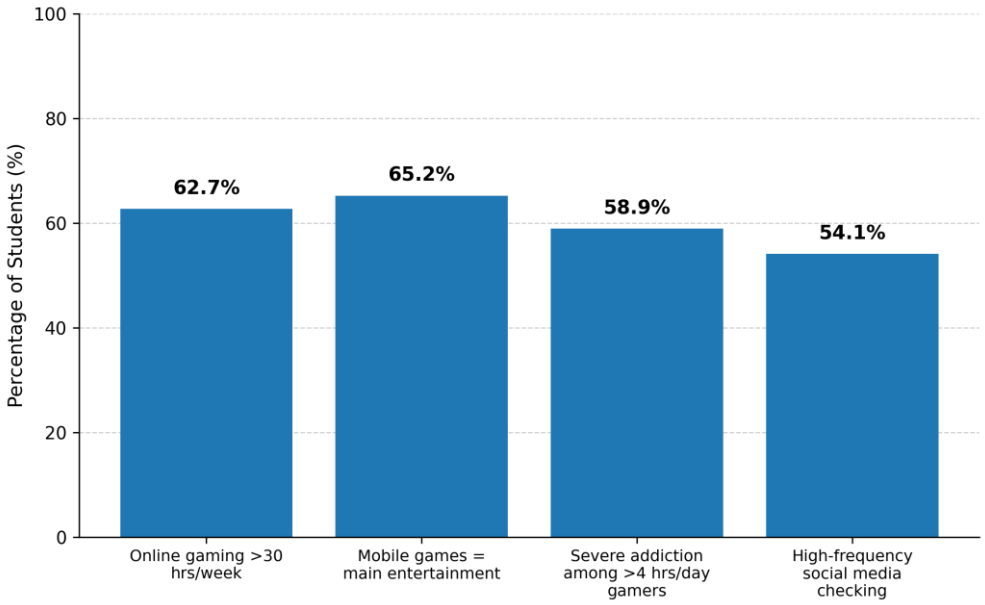

Figure 1. Patterns of online gaming and digital entertainment use among students.

played between two and four hours per day showed severe addiction. These findings suggest that duration of use is an important indicator when examining students' gaming behavior.

Peer influence and exposure to online media also contribute to students' gaming habits. Sayeed et al. [18] reported that 54.3% of respondents who were influenced by friends and YouTube gamers were severely addicted to mobile games. This shows that students' gaming patterns are not only individual choices but are also shaped by social networks, online gaming communities, and digital content creators. YouTube gaming videos, livestreams, esports content, and peer recommendations may encourage students to try new games, play for longer periods, and become more involved in gaming culture.

Digital entertainment among students is broader than just online gaming. It also includes social media, texting, video browsing, music streaming, video watching, and interacting with online content. In a longitudinal study of 2,587 high school students, Ra et al. [19] found that students engaged in an average of 3.62 digital media activities at a high frequency, defined as "many times per day." The most common high-frequency activity was checking social media sites, reported by 54.1% of students, followed by texting at 52.1%, browsing or viewing images and videos at 42.9%, and streaming or downloading music at 38.5%. These data show that students often engage in multiple digital entertainment activities rather than only one form of media.

As shown in Figure 1, the reviewed studies indicate high levels of digital entertainment engagement among students, including long weekly gaming time, mobile gaming as a major source of entertainment, severe addiction among heavy gamers, and frequent social media checking.

Overall, the quantitative evidence shows that students' online gaming and digital entertainment patterns are frequent, multi-platform, and socially influenced. Many students use digital entertainment daily, and some spend long hours on gaming each week. While moderate use may serve as recreation, excessive use—especially more than 4 hours per day or 30 hours per week—may indicate problematic patterns that can interfere with academic routines, sleep, physical activity, and learning engagement. Therefore, understanding the frequency, duration, platform type, and social motivation behind students' use of digital entertainment is essential for evaluating its relationship with academic performance.

3. Positive and Negative Effects on Student Learning and Behavior

Online gaming and digital entertainment can influence students' learning and behavior in both positive and negative ways. The effects are not uniform because they depend on the type of digital activity, the amount of time spent, the purpose of use, the level of self-control, and the student's academic environment. While excessive and uncontrolled use may interfere with academic responsibilities, moderate and purposeful use may support certain cognitive, social, and motivational skills.

One positive effect of online gaming is its potential to improve cognitive abilities. Many games require players to make quick decisions, solve problems, process visual

information, remember rules, and adapt to changing situations. Strategy games, puzzle games, role-playing games, and action games may encourage planning, attention control, spatial reasoning, and decision-making. Reynaldo et al. [20] reported that video games can improve cognitive skills such as perception, attentional control, and decision-making. Similarly, studies on game-based learning suggest that games can support critical thinking when designed with educational objectives in mind. Mao et al. [21] found that game-based learning positively affected students' critical thinking, particularly when learning activities required active participation, problem-solving, and reflection.

Online gaming may also support social interaction and collaboration. Multiplayer games often require communication, teamwork, leadership, and coordination among players. Through these interactions, students may develop social confidence, cooperation skills, and a sense of belonging. In some cases, digital entertainment platforms also expose students to diverse communities, cultures, and forms of creative expression. For students who experience social difficulties in face-to-face settings, online games and digital platforms may provide alternative spaces for interaction and identity development.

Another potential benefit is increased motivation and engagement. Digital entertainment is often interactive, goal-oriented, and reward-based. These features can make learning activities more attractive when applied appropriately in educational contexts. Game-based learning, simulations, quizzes, and gamified platforms may increase students' interest in academic content by making learning more active and enjoyable. When digital entertainment is integrated with academic goals, it may help students develop digital literacy, creativity, and independent learning habits.

Despite these potential benefits, online gaming and digital entertainment may also produce negative effects when use becomes excessive or uncontrolled. One major concern is distraction. Students who spend long hours gaming, watching videos, or browsing social media may have less time to read, complete assignments, prepare for examinations, and participate in academic activities. Excessive entertainment use may also encourage procrastination, reduce attention span, and weaken students' ability to focus on long academic tasks.

Sleep disruption is another important negative effect. Many students use digital devices late at night for gaming, streaming, or social media. Nighttime screen use may delay bedtime, reduce sleep duration, and lower sleep quality. Poor sleep can affect memory, concentration, emotional regulation, and academic readiness. Abdallat et al. [22] found that internet gaming disorder was associated with poor sleep quality among university students. This suggests that problematic gaming may indirectly affect academic behavior by reducing students' physical and mental readiness for learning.

Problematic gaming may also affect emotional and behavioral regulation. Students who develop excessive dependence on online games may experience irritability, loss of control, neglect of responsibilities, and reduced interest in non-gaming activities. In severe cases, gaming may become a coping mechanism for stress, loneliness, or academic failure. This can create a cycle in which poor academic performance increases gaming behavior, while excessive gaming further reduces study engagement and academic motivation. Alzahrani and Griffiths [23] found that most studies in their systematic review reported a negative relationship between problematic gaming and academic performance, although the direction of causality remains uncertain.

Digital entertainment may also reduce students' engagement in learning. When students prioritize gaming, streaming, or social media over academic tasks, they may show lower behavioral engagement, such as poor attendance and incomplete assignments; lower emotional engagement, such as reduced interest in learning; and lower cognitive engagement, such as limited effort in understanding academic material. This is particularly concerning when digital entertainment becomes habitual and replaces structured study routines.

As shown in Figure 2, online gaming and digital entertainment may support student learning through cognitive, social, and motivational benefits, but may also hinder academic development through distraction, poor sleep, and reduced engagement in learning.

Overall, the effects of online gaming and digital entertainment on student learning and behavior are best understood as a matter of balance. Digital entertainment can support cognitive development, motivation, social interaction, and digital literacy when used in moderation and with purpose. However, excessive or problematic use may lead to distraction, poor sleep, reduced study time, weak academic engagement, and lower academic performance. Therefore, students need self-regulation, time management, and guidance from parents, teachers, and educational institutions to ensure that digital

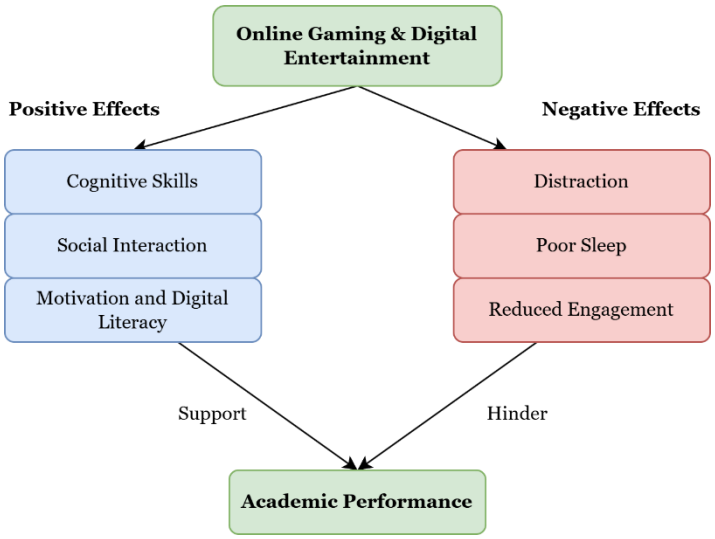

Figure 2. Positive and negative effects on student learning and behavior.

entertainment supports rather than harms academic development.

4. Relationship between Digital Entertainment Use and Academic Performance

The relationship between online gaming, digital entertainment, and academic performance has been widely examined, but the findings are not always consistent. Some studies report a negative relationship between excessive gaming and academic outcomes, while others show weak, mixed, or even positive associations depending on the context of use. Therefore, the relationship should be understood not only in terms of whether students play games or use digital entertainment, but also in terms of how long they use them, when they use them, what type of content they consume, and whether these activities interfere with academic responsibilities.

One of the most common explanations for the negative relationship between gaming and academic performance is the displacement of study time. Students who spend long hours playing online games, watching entertainment videos, or browsing social media may have less time to read, complete assignments, prepare for examinations, and participate in academic activities. Excessive gaming may also lead to class skipping, poor attendance, delayed assignments, and weak study discipline. Mahmud et al. [17], in a study of Bangladeshi university students, found that long gaming duration and skipping classes were associated with poorer academic performance. This suggests that gaming may harm academic outcomes when it replaces essential learning activities.

Another important pathway is reduced academic engagement. Online game addiction may reduce students' behavioral, emotional, and cognitive engagement in learning. Behavioral engagement refers to active participation in academic tasks, emotional engagement refers to students' interest and positive attitudes toward learning, and cognitive engagement refers to the effort students invest in understanding academic material. Sun et al. [11] found that online game addiction negatively affected these three forms of learning engagement, which in turn was related to reduced academic achievement motivation. This indicates that gaming may not only reduce study time but also weaken students' motivation and psychological involvement in learning.

Digital entertainment may also affect academic performance through sleep disruption and reduced concentration. Students who play games or use entertainment platforms late at night may experience shorter sleep duration and poorer sleep quality. Poor sleep can reduce attention, memory, classroom participation, and academic readiness. In this way, the academic effects of digital entertainment may be indirect: students may not perform poorly simply because they play games, but because gaming interferes with sleep, concentration, and daily learning routines.

However, not all studies conclude that gaming directly harms academic achievement. Drummond and Sauer [12] analyzed data from more than 192,000 students in 22 countries using the Program for International Student Assessment dataset and found that video game use had little impact on academic performance in science, mathematics, and reading. This finding suggests that moderate gaming may not necessarily reduce academic achievement, especially when students can still manage their time and academic responsibilities effectively.

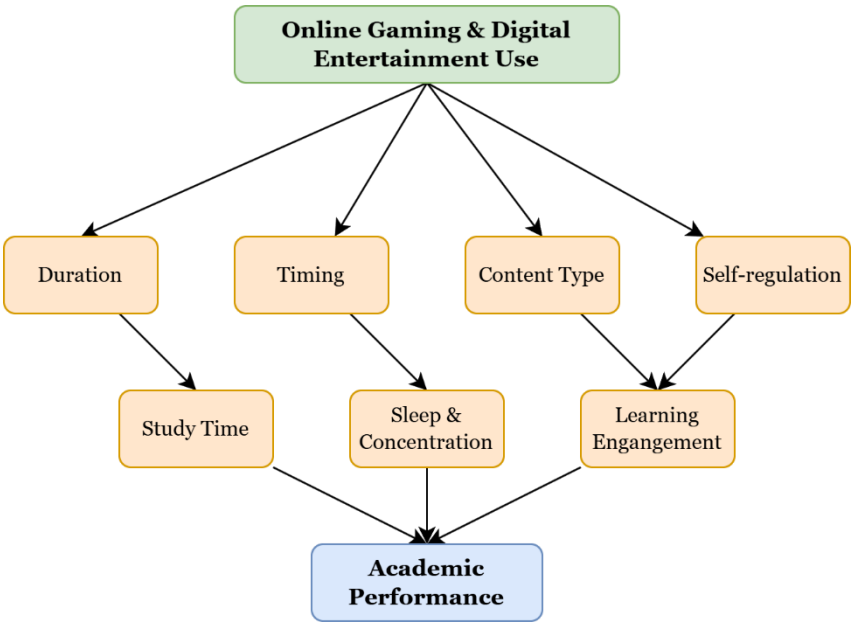

Figure 3. Relationship between digital entertainment use and academic performance.

The timing of gaming also appears to be important. Hartanto, Toh, and Yang [13] found that weekday gaming was negatively associated with academic performance in mathematics, reading, and science, while weekend gaming was positively associated with academic outcomes. This suggests that gaming on school days may interfere more strongly with homework, sleep, and study routines. In contrast, weekend gaming may be less harmful or serve as recreation when academic obligations are lower.

The type and purpose of digital entertainment may also influence academic outcomes. Entertainment-based gaming that is excessive, unstructured, or addictive may have negative consequences, while educational games, simulations, and gamified learning tools may support motivation and learning. Therefore, the academic impact of digital entertainment depends in part on whether digital activities are used primarily for recreation or integrated into meaningful learning experiences.

As shown in Figure 3, digital entertainment use may influence academic performance through several pathways, including study time, sleep and concentration, and learning engagement. At the same time, the strength of this relationship depends on duration, timing, content type, and self-regulation.

Overall, previous studies suggest that the relationship between online gaming, digital entertainment, and academic performance is conditional rather than absolute. Excessive and problematic use is more likely to be associated with poor academic outcomes, especially when it reduces study time, disrupts sleep, lowers motivation, or weakens learning engagement. In contrast, moderate, well-regulated, and purposeful use may have limited negative effects and may even support certain learning-related skills. Thus, students' academic performance is influenced not only by digital entertainment itself but also by self-regulation, time management, content type, and the broader educational environment.

5. Conclusion

In conclusion, online gaming and digital entertainment have become important parts of students' daily lives and can influence academic performance in different ways. The reviewed literature indicates that moderate, purposeful use may support cognitive skills, motivation, social interaction, and digital literacy. In contrast, excessive or uncontrolled use may lead to distraction, poor sleep quality, reduced study time, lower learning engagement, and weaker academic outcomes. The relationship between digital entertainment and academic performance is therefore neither always negative nor always positive. Still, it depends on factors such as duration of use, timing, content type, self-regulation, and the learning environment. Students who can manage their time and balance entertainment with academic responsibilities may experience fewer negative effects, whereas problematic or addictive use can interfere with academic success. Therefore, parents, teachers, and educational institutions should guide students in developing healthy digital habits, responsible gaming behavior, and effective time management so that digital entertainment can be used in a balanced and beneficial way.

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