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The Influence of Online Gaming on the Learning Activities of Senior High School Students: A Case Study

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academic performance,

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ABSTRACT

Games are commonly played for entertainment, leisure, and recreational purposes. Among adolescents, online games have become especially popular, offering both potential benefits and challenges. While some studies highlight their role in enhancing cognitive skills, collaboration, and motivation, excessive gaming can also negatively impact academic performance and time management. This study aimed to examine the influence of online gaming on the learning activities of senior high school students. Data were collected through using structured questionnaires, semi-structured interviews, observations and distributed to 18 tenth-grade students at Thursina IIBS. The findings indicate that although many students engage in popular titles such as *Mobile Legend (Mobile Legends: Bang Bang), PUBG: Battlegrounds (PlayerUnknown's Battleground), EA SPORTS™ FIFA Mobile Soccer, eFootball™ 2024 (Konami), Roblox, Race Master 3D – Car Racing, Brawl Stars, and Grand Theft Auto V (GTA V)*, the overall effect of gaming on learning activities depends largely on how students manage their time. Most respondents reported being able to balance gaming with study responsibilities, suggesting that online gaming does not necessarily hinder learning outcomes when moderated appropriately.

INTRODUCTION

The rapid advancement of science and technology has significantly transformed modern society, influencing areas such as communication, education, and entertainment. One of the most notable developments in recent years is the increasing prevalence of digital gaming, particularly online games, among young people. According to data from (Badan Pusat Statistik, 2024), 66.48% of Indonesia's population accessed the internet in 2022, compared to 62.10% in 2021. This growing digital penetration is closely linked to the widespread ownership of mobile phones, with 67.88% of Indonesians using mobile devices in 2022, up from 65.87% in 2021. Such accessibility has facilitated the rapid adoption of online games as a common recreational activity among students.

To better understand this phenomenon, it is important to first define the scope of games. Games, in general, can be described as structured forms of play, usually undertaken for entertainment or educational purposes. Within this broad category, video games represent digital or electronic forms of play, and a subcategory of these includes online games, which require internet connectivity (Paraskeva, Mysirlaki and Papagianni, 2010). Online games have gained immense popularity among adolescents due to their interactive and immersive nature, which differentiates them from traditional games such as *gobak sodor* or *kite* playing that were once dominant in Indonesian culture. Unlike offline games, online games create virtual environments where players can collaborate and compete globally.

Existing literature suggests that online games can have potential educational benefits when used appropriately. Studies demonstrate that game-based learning environments can increase students' motivation and participation in learning activities (Lin and Wei, 2011; Chen, 2017). Online games can also provide interactive platforms that support collaboration, critical thinking, and peer learning, thereby fostering deeper engagement with academic content (Paraskeva, Mysirlaki and Papagianni, 2010). Furthermore, digital game-based learning has been linked to enhanced student enjoyment, improved attention, and higher academic performance, particularly when applied to underachieving students (Nadeem, Oroszlanyova and Farag, 2023).

On the other hand, excessive use of online games raises several concerns. Previous studies have shown that online game addiction may reduce students' cognitive and emotional engagement in academic settings (Kim, 2025). Poor time management has also been identified as a consequence of over-gaming, as students who dedicate significant amounts of time to play often neglect their academic responsibilities (Torralba, 2020). Moreover, extended gaming hours can lead to sleep deprivation, reduced concentration, and a decline in academic achievement (Kim, 2025). These contrasting findings underline the need to investigate not only the benefits but also the risks of online gaming for students.

Against this backdrop, the present study aims to examine the influence of online games on the learning activities of senior high student at one of Islamic education institution at Malang, Indonesia. Specifically, it seeks to analyze both the positive and negative impacts of online gaming on student engagement, academic performance, and time management. By doing so, this research provides a balanced perspective that may help educators and policymakers design strategies to integrate online gaming constructively into educational contexts while minimizing its risks.

Understanding the dual role of online games as both a potential educational tool and a source of distraction is crucial in shaping effective teaching and learning strategies. This study contributes to the growing body of literature by providing empirical insights into how online gaming affects the learning activities of senior high school students within an Islamic boarding school environment. The findings are expected to inform future policies and practices that optimize the benefits of digital technologies while safeguarding students from their potential harms.

METHODS

This study employed a case study design with a mixed-method approach to investigate the influence of online gaming on students' learning activities. The research was conducted from January to March 2025 at Thursina International Islamic Boarding School (IIBS), Malang, Indonesia, involving 18 tenth-grade students selected through purposive sampling from a total of 96 students. The inclusion criteria required that participants actively engaged in online gaming for at least >1-5 hours per day. The key variables examined were the intensity and type of online gaming (independent variable) and students' academic engagement, time management, and self-

reported performance (dependent variables), which align with prior studies on gaming and education (Ku *et al.*, 2014; Soltani Nazarlou, Delavarpour, and Tabatabaee, 2025).

Data were collected using structured questionnaires, semi-structured interviews, and observations. The questionnaire employed a Likert scale to measure gaming frequency, motivation, and study habits, consistent with approaches in earlier studies on online game addiction and academic engagement (Müezzin, 2015; Kim, 2025). To enrich the quantitative findings, interviews with six selected students were conducted to provide insights into the cognitive, emotional, and behavioral aspects of online gaming. Additionally, classroom and dormitory observations were carried out to capture authentic learning interactions, study routines, and the balance between gaming and academic responsibilities, similar to methods applied in game-based learning studies (Lin, Wei and Hung, 2012). This triangulation of instruments was designed to enhance validity and reduce single-source bias (Creswell and Clark, 2018).

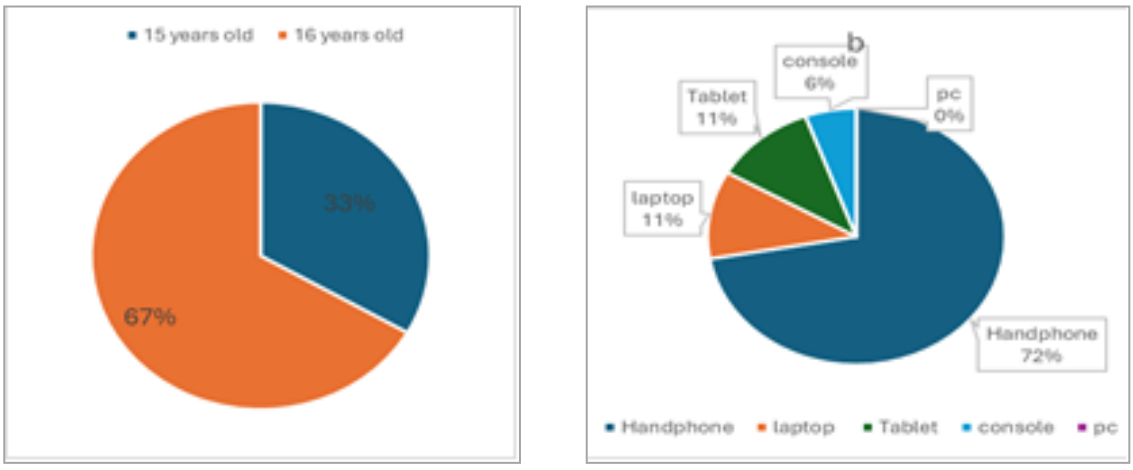
The data analysis followed three main stages. First, tabulation of questionnaire responses was conducted to summarize frequencies, percentages, and mean scores, providing a descriptive overview of students' gaming behavior and learning activities (Nadeem, Oroszlanyova and Farag, 2023). Second, cross-tabulation was used to compare gaming intensity with academic engagement indicators, enabling interpretation of emerging trends across different groups of students (Penaso and Gaylo, 2019). Third, thematic coding was applied to interview transcripts and observation notes to identify recurring themes such as time management challenges, shifts in motivation, and peer influence (Paraskeva, Mysirlaki and Papagianni, 2010). The integration of quantitative tabulations and qualitative themes provided a balanced understanding of the dual role of online gaming in student learning. Ethical protocols included informed consent from students and guardians, institutional approval, and assurance of anonymity, consistent with international standards for educational research (Kadam, 2017).

RESULTS AND DISCUSSIONS

This study explored how online gaming influences the learning activities of tenth-grade students at Thursina IIBS, Malang. The findings highlight both positive and negative effects, showing that gaming is deeply embedded in the daily lives of students, shaping their digital behavior, motivation, and academic experiences. The following sections present the results supported by thematic analysis and illustrated in Figures 1–6.

Student Profiles and Gaming Preferences

As shown in Figure 1a, most respondents were aged 16 (66.7%), with the remainder aged 15 (33.3%), aligning with national data that places tenth graders within the 15–17 age range (Badan Pusat Statistik, 2024). Device use (Figure 1b) revealed that mobile phones (73%) were the dominant platform compared to laptops (11%), tablets (11%), and consoles (5%). This preference for mobile gaming reflects practicality and accessibility among adolescents, consistent with youth digital behavior trends, especially in Indonesia (Zheng *et al.*, 2024).



(a) (b)

Figure 1. Graph of distribution of respondent ages (a) and devices used (b)

In terms of gaming choices (Figure 2), students reported playing a range of popular titles such as Mobile Legend (*Mobile Legends: Bang Bang)*, PUBG: Battlegrounds (*PlayerUnknown's Battleground*), EA SPORTS™ FIFA Mobile Soccer, eFootball™ 2024 (Konami), Roblox, Race Master 3D – Car Racing, Brawl Stars, and Grand Theft Auto V (GTA V). The dominance of Mobile Legends: Bang Bang is consistent with national surveys identifying it as a leading game among Gen Z players in Indonesia (Aprianingsih *et al.*, 2024). This finding underscores how gaming trends among Indonesian youth mirror broader global shifts in digital entertainment preferences.

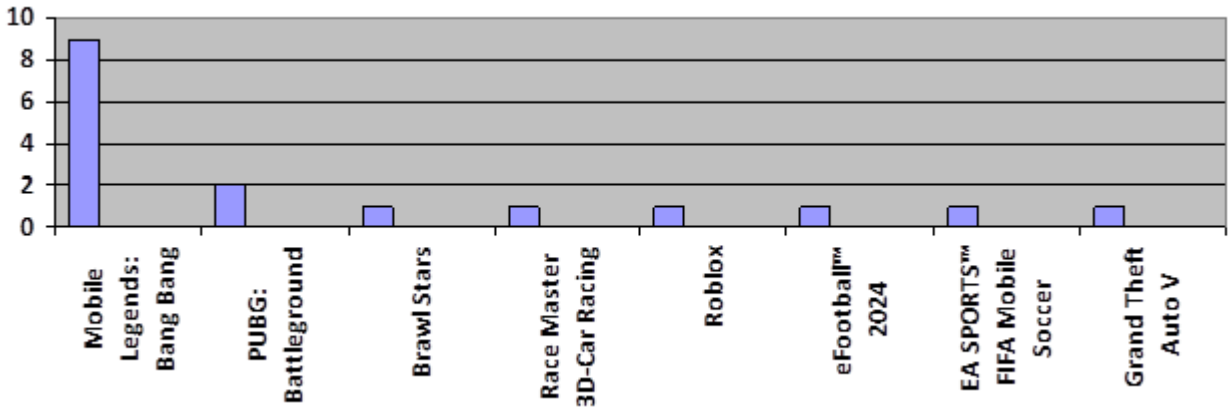
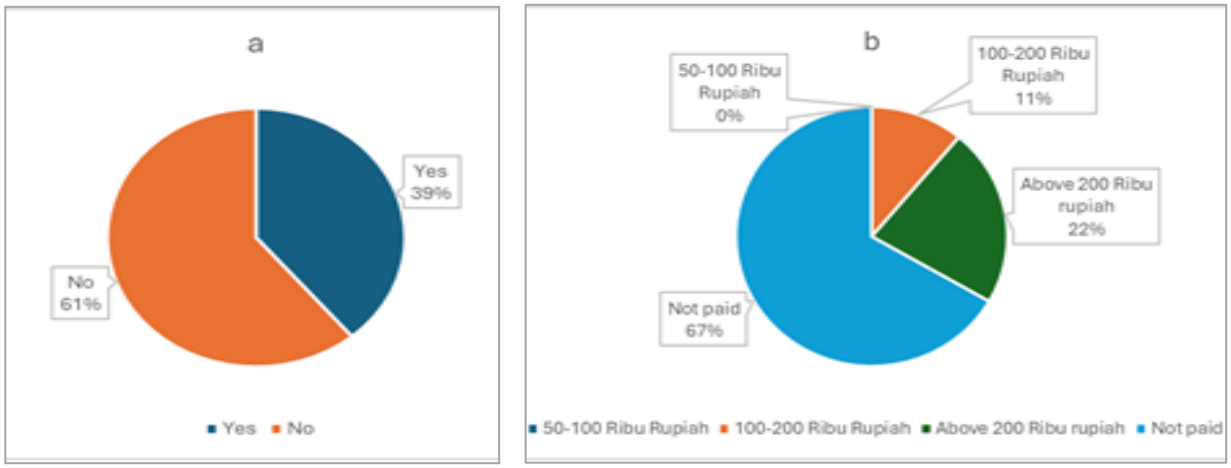


Figure 2. Graph of types *of games* played by respondents

Gaming Habits and Their Academic Correlations

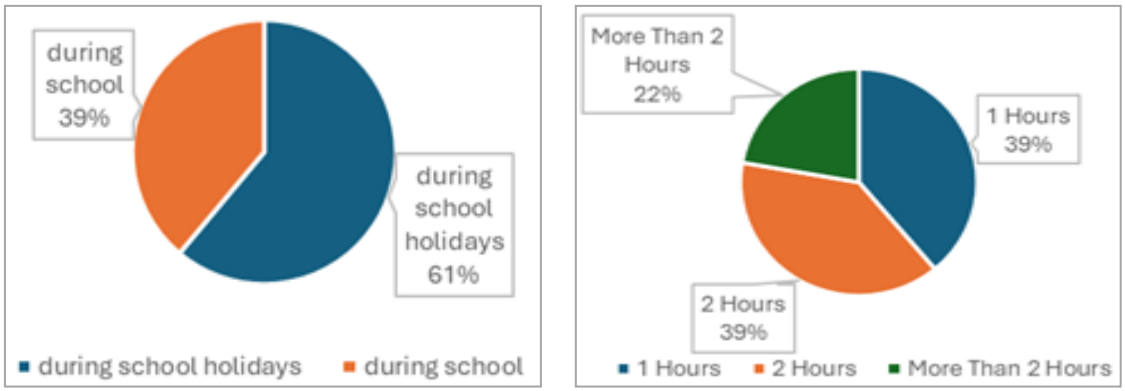
Gaming habits varied significantly across the sample. Most students preferred free-to-play games (Figure 3a, 61%), though a notable minority invested in paid games, with some spending over IDR 200,000 (Figure 3b, 22%). This aligns with previous reports that free-to-play models dominate the Indonesian gaming market (Aprianingsih *et al.*, 2024).



(a) (b)

Figure 3. Paid or unpaid games (a) and their prices (b)

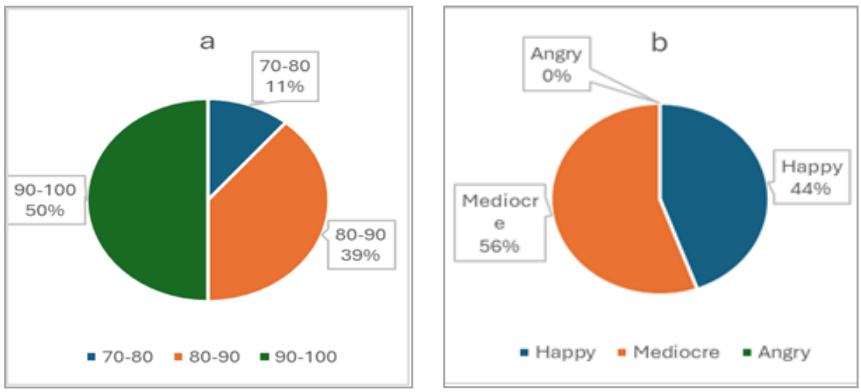
In terms of time allocation, Figure 4a shows that students primarily played during school holidays (61%), while 39% also played during school periods. Duration-wise, the majority limited their play to 1–2 hours daily (Figure 4b), aligning with national averages of 2 hours/day or 17-22 hours/week (Insyani, 2022). This balance suggests that while gaming is popular, many students retain a level of self-regulation.



(a) (b)

Figure 4. Time spent playing *games* (a) and how long it took (b)

Interestingly, Figure 5a indicates that half of the students achieved excellent report card scores (90–100), with only 11% scoring between 70–80. Combined with Figure 5b, where most students reported feeling "normal" (56%) or "happy" (44%) when gaming, the data suggests that moderate gaming does not necessarily harm academic performance. These findings challenge claims that online games directly reduce achievement (Anwar & Winingsih, 2022). Instead, as supported by Lin, Wei, and Hung (2012), when integrated effectively, gaming may enhance motivation and academic outcomes.



(a) (b)

Figure 5. Average respondent report (a) and respondent feelings when playing *games* (b)

The Tendency for Repeated Play and Its Implications

A strong pattern emerged in Figure 6, where 83% of students expressed a tendency to continue gaming. This reflects the inherently engaging nature of online games, though it raises concerns about long-term dependency. National data shows that nearly 78% of Indonesian adolescents (aged 15–18) are vulnerable to gaming addiction, with male students particularly at risk (Cahyani and Friyatmi, 2025).

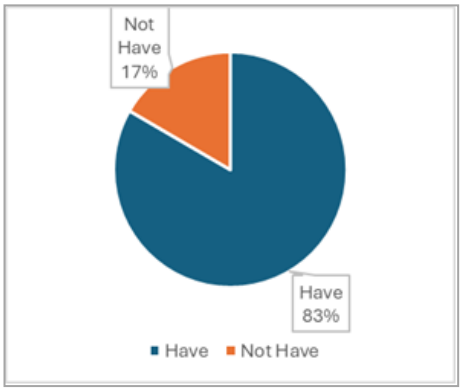


Figure 6. Graph of students' tendency to play it again

The implications of this duality are significant. On one hand, online games can foster collaboration, strategic thinking, and problem-solving (Paraskeva, Mysirlaki and Papagianni, 2010; Jumana *et al.*, 2023). On the other, excessive use can undermine time management and create addictive behaviors, thereby disrupting learning routines (Yie *et al.*, 2010; Wang *et al.*, 2023). This suggests that the effect of gaming is context-dependent: beneficial when managed within limits, but detrimental when excessive.

Discussion on The Influence of Online Gaming on Learning Activities

The findings from Figures 1–6 highlight a mixed influence of online gaming on student learning activities. On the positive side, gaming can increase motivation, engagement, and cognitive abilities such as strategic thinking and teamwork (Lin and Wei, 2011; Jumana *et al.*, 2023). Many students in this study were able to balance gaming with strong academic achievement, suggesting that moderate play can coexist with effective learning.

However, the risk of overuse remains evident, as a majority expressed a desire to keep playing, potentially leading to addictive tendencies (Cahyani and Friyatmi, 2025). This aligns with concerns that digital games, while engaging, may reduce academic focus when self-regulation is lacking (Peters *et al.*, 2018).

Overall, online gaming among high school students represents a double-edged phenomenon: it can serve as both a motivational tool and a source of distraction. The key determinant lies in how students manage their time and how educators or parents contextualize gaming within a structured learning environment.

CONCLUSION

This study, conducted among 10th-grade students at SMA Thursina IIBS, demonstrates that online gaming has both positive and negative influences on students' learning activities. The findings indicate that students predominantly prefer Multiplayer Online Battle Arena (MOBA) titles such as *Mobile Legend (Mobile Legends: Bang Bang), PUBG: Battlegrounds (PlayerUnknown's Battleground), EA SPORTS™ FIFA Mobile Soccer, eFootball™ 2024 (Konami), Roblox, Race Master 3D – Car Racing, Brawl Stars, and Grand Theft Auto V (GTA V)*. Among these, MOBA games were found to be the most engaging yet potentially addictive, as their competitive and team-based mechanics encourage prolonged play and a drive to achieve higher rankings. Quantitative analysis revealed that while many students were able to balance gameplay with their academic responsibilities, evidenced by generally high average report scores there remains a notable risk of dependence among those who engage in gaming more intensively. This suggests that online games can foster cognitive and social skills such as problem-solving and teamwork, but excessive use may also disrupt study routines and social interactions. Therefore, it is essential for students, parents, and educational institutions to collaboratively monitor and regulate gaming duration. Structured guidance can help ensure that online gaming remains a supportive activity that enhances engagement and cognitive skills, rather than one that undermines students' academic performance and well-being.

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