

Gender Differences and the Relationship Between Mobile Legends Gameplay and Academic Procrastination Behavior

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Abstract—This study investigates the relationship between Mobile Legends gameplay and academic procrastination among junior high school students in North Minahasa, Indonesia. Utilizing a quantitative descriptive-correlational design, the research involved 120 students, with 85 participating in the main study. Data were collected using a validated questionnaire and analyzed using descriptive statistics, one-way ANOVA, and Pearson correlation. Results indicated that both Mobile Legends gameplay and academic procrastination behaviors were at moderate levels. Gender-based analysis showed that male students engaged in significantly more gameplay and procrastination than female students. A positive and significant correlation was found between the two variables, suggesting that increased gameplay is associated with higher levels of procrastination. The study concludes with recommendations for parents, educators, and counselors to address gaming behavior and develop time management strategies to mitigate academic procrastination.

Keywords— academic procrastination behavior, gender differences, junior high school students, Mobile Legends gameplay

I. INTRODUCTION

The rapid growth of internet usage has significantly influenced the lifestyles of young people, particularly through the rising popularity of online games. One of the most well-known is Mobile Legends, a Multiplayer Online Battle Arena (MOBA) game developed by Moonton, which pits two teams of five players against each other (Nada, 2019). Easily accessible through smartphones and supported by internet connectivity (Soesanto, Priyadi, & Tiani, 2020). Mobile Legends has gained massive popularity in Indonesia, which ranks third globally in the number of online gamers (Dihni, 2022). With over 80.76 million active players worldwide, many of whom are students, the game is commonly played at school, on campus, and even during break times (Rizaty, 2023).

These games, accessible via computers or mobile devices, have become an integral part of daily life for individuals of all ages (Sonjaya, Arifin, & Pratiwi, 2020; Wahyudy, 2020). Online games, such as Mobile Legends, are played by millions of users simultaneously across the globe through internet connectivity. While initially associated with desktop computers, today's mobile technology has expanded access, making it easier for players to engage anytime and anywhere.

The widespread popularity of Mobile Legends among students has raised concerns about its impact on academic behavior, particularly in relation to procrastination. The game often causes students to neglect their academic responsibilities, leading to a tendency to delay tasks and assignments (Sabella, 2021). Procrastination itself is defined as the intentional delay

in completing academic duties (Candra, Wibowo, & Setyowani, 2014). Students who become deeply engaged with the game are more likely to exhibit such behavior, ultimately affecting their educational performance (Octomo, 2022).

This study summarizes the conceptual framework of this study into the following alternative hypotheses:

Ha1: There is a significant difference in Mobile Legends gameplay between male and female students.

Ha2: There is a significant difference in academic procrastination behavior between male and female students.

Ha3: There is a statistically significant relationship between the frequency of playing Mobile Legends and the level of academic procrastination behavior among junior high school students.

II. LITERATURE REVIEW

Mobile Legend Game (MLG)

In general, Mobile Legend Game is an online game that is played as a team, in one team will consist of five people. Strategy in the Mobile Legend game is a battle between 2 teams of five people for each team (Rani, Hasibuan, & Barus, 2018). In the Mobile Legends game, two teams will compete to attack the opponent's base and defend the team's own base with a duration of approximately 15 minutes for 1 round (Prayogo, 2019). Mobile Legends game is a game developer of "Moonton", Mobile Legends launched on Android in China, Indonesia, Malaysia on July 11, 2016, and IOS launched on November 9, 2016. This game genre is a MOBA (Multiplayer Online Battle Arena) designed for smartphone users with a bonus virtual pad. This game connects 10 people divided into 2 squads that hit one after another with the aim of destroying, to defending the base. The rotation of the game Mobile Legends is to attack the opponent's turret and defend the team's turret.

The features provided by this Mobile Legends game, such as a variety of playing modes, role heroes played with a variety of choices, make this game attractive and an option for many people to play Mobile Legends game. In addition, playing this game is very fun because it can be played together with friends (Rio, 2023). Not a few of the students who play online games either consciously or unconsciously have become addicted. Online games are very popular and cause significant addiction (Kustiyani, 2019). This happens because these students get pleasure from their gaming experience. That is why not a few of them invite their friends to come play this game together. The activity of playing Mobile Legends game is fun, so fun that there are some students who play Mobile Legends game until late at night which makes them sleepy in class the next day.

In addition, some students also play this game in the school environment both during recess and during class time. Some students even prioritize playing mobile legend games over studying and making assignments. Because they are too engrossed in playing mobile legend games, students become lazy in doing assignments and ignore other work (Djohar, 2022). If this continues to be done by students, this mobile legend game can make students addicted to this game. Therefore, playing mobile legend games must be balanced with time to study and make assignments for students. So that this game does not have a negative impact on students'

academics. Addiction to online games can make students' academic grades decline (Saputra, 2020). The fun experience of playing this game makes students forget the time to make their assignments.

Academic Procrastination Behavior (APB)

Procrastination is a common experience that most people have encountered at some point in their lives. Procrastination is generally defined as the voluntary delay of an intended course of action despite expecting to be worse off for the delay (Steel, 2007). It is considered a self-regulatory failure that often results in unnecessary postponement of tasks, particularly when the tasks are perceived as difficult, unpleasant, or less rewarding (Tuckman, 2002). Procrastination is not simply poor time management but is also influenced by emotional, cognitive, and motivational factors (Sirois & Pychyl, 2013). Procrastination may be viewed as a complex psychological behavior involving the interplay of personality traits (e.g., low conscientiousness, high impulsivity), emotional factors (e.g., fear of failure, anxiety), and situational contexts (e.g., task aversiveness, distractions), making it a significant topic of concern in educational and psychological research.

Academic procrastination, a specific form of procrastination, refers to the intentional delay in starting or completing academic tasks such as studying for exams, writing papers, or completing assignments (Solomon & Rothblum, 1984). It is especially prevalent among students and has been linked to lower academic performance, increased stress, and decreased well-being (Kim & Seo, 2015).

Some students tend to exhibit procrastination behavior, particularly in academic settings. Academic procrastination is commonly experienced by learners, as noted by Candra, et al. (2014), and it specifically involves delaying tasks related to academic responsibilities. Suhandianto dan Pratitis (2019) defines academic procrastination as the act of postponing formal tasks connected to one's academic duties or performance. Wahyudy (2020) elaborates that academic procrastination refers to postponing academic obligations, whether occasionally or habitually, such as delaying exam preparation or neglecting homework. In essence, academic procrastination is characterized by a tendency to delay or avoid academic tasks and study efforts. According to Tuckman (2002), academic procrastination is the propensity to put off, postpone, or avoid tasks that need to be accomplished.

Several factors contribute to academic procrastination behavior. According to Ferrari (2005), these factors can be categorized into two main types: internal and external factors. Internal factors refer to influences stemming from within the student, such as their physical and psychological condition. On the other hand, external factors are those that come from outside the student, such as parenting style, environmental conditions, and the frequency of activities like gaming. Rizki, as cited in Nafeesa (2018), identifies three factors that affect academic procrastination in students. The first is the nature of the tasks, with students tending to procrastinate more on tasks they find boring or unpleasant. The second factor is personality traits, which shape behavior and influence whether or not a student procrastinates. The third factor involves situational influences, such as environmental distractions, which may lead to delays in completing tasks.

Although previous studies have examined the relationship between online gaming and academic procrastination, there is a pressing need to specifically investigate the effects of Mobile Legends: Bang Bang—one of the most popular multiplayer online battle arena (MOBA) games in Southeast Asia, particularly among adolescents and young adults (Mulyadi, 2020). The unique gameplay mechanics, time-demanding nature, and competitive reward systems of Mobile Legends may influence players' academic behaviors differently than other

online games (Wijaya & Santoso, 2021). Additionally, recent shifts in learning environments—such as the transition to online and hybrid education post-COVID-19—have changed the way students interact with technology and manage their academic responsibilities (Adnan & Anwar, 2020). These changes may have intensified tendencies toward academic procrastination, especially with increased screen time and accessibility to mobile games (Kuss & Griffiths, 2012).

While prior research has generally linked excessive gaming to lower academic performance and time management issues (Chamarro, Oberst, Cladellas, & Fuster, 2014), few studies have isolated Mobile Legends as a focal point, despite its massive popularity and frequent play among students. This study seeks to fill that gap by examining how the frequency and intensity of playing Mobile Legends correlates with academic procrastination behavior. The findings are expected to offer updated, game-specific insights that can help educators, parents, and counselors develop targeted strategies to manage procrastination and promote balanced digital usage.

Gender and Digital Game Addiction

Gender differences play a significant role in the development and expression of digital game addiction. Research consistently shows that males are more likely than females to engage in excessive gaming, particularly in competitive genres such as first-person shooters and Multiplayer Online Battle Arena (MOBA) games. This disparity is often attributed to motivational factors, with males showing a stronger orientation toward achievement, competition, and escapism, while females more frequently value social interaction and narrative engagement in games. Studies like those by Kuss and Griffiths (2012) and Ko, Yen, Chen, Chen, and Yen (2005) reveal that male gamers are at a higher risk of developing problematic gaming behaviours, including Internet Gaming Disorder (IGD), partly due to traits such as impulsivity, sensation seeking, and lower emotional regulation. Understanding these gender-based differences is crucial for designing effective prevention and intervention strategies targeting digital game addiction.

Yee (2006) categorized the motivations for online gameplay into achievement, social interaction, and immersion. Males more frequently cited achievement and competition, which are prominent features of games like Mobile Legends, while females emphasized relational aspects. This gendered preference reinforces a pattern wherein boys are drawn to gaming environments that foster prolonged engagement and, potentially, addictive behaviours. Moreover, a study by Lemmens, Valkenburg, and Peter (2011) confirmed that excessive game use is more prevalent in males and is significantly correlated with reduced academic performance.

Gender and Academic Behaviour

Gender also plays a critical role in academic behaviour and learning styles. Research by Klassen and Kuzucu (2009) and Ferrari (2005) found that male students consistently report higher levels of academic procrastination than females. This behaviour has been linked to lower levels of self-regulation and academic motivation (Steel, 2007). In contrast, females tend to exhibit better self-discipline, greater use of metacognitive learning strategies, and more consistent time management (Diseth, 2003). These tendencies often translate into superior academic outcomes. Tuckman (2002) observed that girls are more likely to take initiative in academic settings, while boys are more prone to task avoidance and delay, particularly when faced with non-preferred or cognitively demanding tasks. Additionally, Zimmerman and

Martinez-Pons (1990) highlighted gender differences in self-regulated learning strategies. Their study showed that females reported higher use of goal-setting, planning, and help-seeking behaviours, which are crucial for academic success and reduce tendencies toward procrastination.

The intersection of digital addiction and academic procrastination is particularly pronounced among male students. Rehbein, Staudt, Hanslmaier, and Kliem (2016) found that male adolescents who played online games excessively experienced measurable declines in academic performance. They suggested that the immersive nature of games diverts time and attention from learning tasks, leading to habitual procrastination.

Gentile, Choo, Liau, Sim, Li, Fung, and Khoo (2011) also emphasized that boys involved in heavy gaming often exhibit reduced academic engagement, sleep problems, and lower grades. In contrast, although female students may also use digital devices intensively (especially for social media), their usage patterns are generally less disruptive to academic routines (Weinstein, 2010).

These findings underscore the importance of addressing gender-specific behaviours when examining the academic effects of digital addiction. As suggested by Anderson and Dill (2000), while gaming may offer cognitive stimulation and entertainment, unregulated use—particularly among males—can interfere with school responsibilities and long-term educational goals.

III. METHODS

Research Design

This study employed a quantitative research approach to explore the relationship between the frequency of playing Mobile Legends and academic procrastination among students. Quantitative research allows for the systematic collection and statistical analysis of numerical data to test hypotheses and thus answer specific research questions (Creswell & Creswell, 2018). A descriptive-correlational research design was utilized. The descriptive component was used to measure the levels of online Mobile Legends game usage and academic procrastination, while the correlational component aimed to examine the significance and direction of the relationship between these two variables. Additionally, a comparative design was also used to explore the gender difference in the online Mobile Legends game play and academic procrastination behavior.

Participants

The participants in this study were eighth-grade students from a selected senior high school in North Minahasa, North Sulawesi, during the second semester of the 2022/2023 academic year. The population included students from four classes: 8A (32 students), 8B (35 students), 8C (33 students), and 8D (32 students), totaling 132 students. Due to absences during data collection, the final number of participants was 120 students. These 120 students were divided into two groups: 35 students from class 8B participated in the pilot study, and 85 students from classes 8A, 8C, and 8D were involved in the main study. The pilot study group consisted of 18 female and 17 male students, while the main study group comprised 36 female and 49 male students.

This study used a convenience sampling method, which involves selecting participants based on their availability and accessibility. Accordingly, data were collected from students

who were present in class during the time of distribution, without regard to age, prior knowledge, or experience.

Data Collection Instrument

The instrument used in this study was a structured questionnaire consisting of two variables: Mobile Legends gameplay and academic procrastination behavior among students. Ensuring the validity and reliability of research instruments, validity was established through content and statistical validation. The questionnaires were adapted from two validated sources. The items for the Mobile Legends variable were adapted from Agustria (2022), originally comprising 28 items. Through content validity, experts selected 15 relevant items (items 2, 8, 9, 14, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27). The academic procrastination variable was adapted from Parantika (2019), whose original instrument included 40 items. Following expert review and theoretical alignment, 15 items were selected for this study (items 1, 4, 5, 6, 8, 12, 13, 16, 18, 21, 22, 25, 31, 37). For statistical validity, a pilot study was conducted involving 30 participants. The combined instrument consisted of 30 items—15 items for each variable. Based on the output of scale reliability analysis, 26 items were retained for use in the actual study due to their acceptable reliability, in which the Cronbach alpha values exceeded 60%.

Data Analysis Techniques

Quantitative data in this study were analyzed using appropriate statistical procedures. Descriptive statistics, specifically mean scores, were used to assess the levels of Mobile Legends gameplay and academic procrastination behavior, respectively. These variables were measured using a five-point Likert scale.

To address the relationship between the two variables, the hypotheses were tested. In statistical hypothesis testing, the p-value was used as a criterion to determine whether to reject or retain the alternative hypothesis. If the p-value is less than or equal to $\alpha = 0.05$, this indicates that the observed result is unlikely to have occurred by chance, leading to the acceptance of the alternative hypothesis, suggesting a statistically significant effect. Conversely, if the p-value is greater than α , the alternative hypothesis is rejected, indicating that any observed effect may be due to random variation rather than a true relationship. In this study, analysis of Pearson's product-moment correlation coefficient was employed.

When testing a hypothesis to determine whether there is a significant difference between male and female students, the p-value helps evaluate the hypothesis. If the p-value is less than or equal to $\alpha = 0.05$, the difference between the male and female students is considered statistically significant, and the alternative hypothesis is retained, leading to the conclusion that a real difference exists. However, if the p-value is greater than 0.05, the evidence is insufficient to retain the alternative hypothesis, indicating that the observed difference may have occurred by chance and is not statistically significant. In this study, a one-way Analysis of Variance (ANOVA) was conducted.

Statistical Results Interpretation

The mean score, obtained through descriptive statistical analysis, is interpreted according to a five-point Likert scale. For clarity and consistency, the mean is rounded to the nearest whole number as follows:

- Mean score from 4.50 to 5.00 are rounded to 5 and interpreted as Very High
- Mean score from 3.50 to 4.49 are rounded to 4 and interpreted as High
- Mean score from 2.50 – 3.49 are rounded to 3 and interpreted as Moderate
- Mean score from 1.50 – 2.49 are rounded to 2 and interpreted as Low
- Mean score from 1.00 – 1.49 are rounded to 1 and interpreted as Very Low

For interpreting the strength of the correlation between the frequency of playing Mobile Legends and academic procrastination behavior, the criteria proposed by Taylor (1990) were used:

| Pearson's r | Interpretation |
|-------------|--------------------------|
| 0.90 – 1.00 | Very High Correlation |
| 0.70 – 0.89 | High Correlation |
| 0.50 – 0.69 | Moderate Correlation |
| 0.30 – 0.49 | Low Correlation |
| 0.00 – 0.29 | Little or No Correlation |

IV. RESULTS & DISCUSSIONS

Research Question 1. What is the level of Mobile Legends gameplay among students?

To find the answer to the level of Mobile Legends gameplay, descriptive statistical analysis was conducted to determine the extent of Mobile Legends gameplay among students. The analysis revealed a mean score of 3.20 (SD = 0.8669) based on responses from 85 students across grades 8A, 8C, and 8D. According to the Likert scale interpretation range (2.50–3.49), this result indicates a moderate level of engagement with the game (see Table 1).

Table 1 Descriptive Statistics of Mobile Legends Gameplay

| N | Minimum | Maximum | Mean | Std. Deviation |
|----|---------|---------|--------|----------------|
| 85 | 1.00 | 5.00 | 3.2032 | 0.8669 |

The findings suggest that students generally engage with the Mobile Legends game at a moderate level, which aligns with previous studies by Mubarok, Handoyo, and Nugroho (2022), who also reported moderate levels of gameplay among students. This supports the view that while Mobile Legends is widely enjoyed for its entertainment value (Nawawi, Farid, & Hidayat, 2021), students in the sample do not engage excessively nor minimally in gameplay.

Research Question 2. What is the level of academic procrastination behavior among students?

To answer the second research question, descriptive statistical analysis was performed to assess the level of academic procrastination behavior among the participants. The data as shown in Table 2, collected from 85 students in grades 8A, 8C, and 8D, revealed a mean score of 2.77 (SD = 0.9960). Based on the predefined Likert scale interpretation, this mean score

falls within the range of 2.50 to 3.49, which corresponds to a moderate level of academic procrastination.

Table 2 Descriptive Statistics of Academic Procrastination Behavior

| N | Minimum | Maximum | Mean | Std. Deviation |
|----|---------|---------|--------|----------------|
| 85 | 1.00 | 5.00 | 2.7665 | 0.9960 |

These findings indicate that students from the selected school demonstrate an average tendency to delay academic tasks. Their procrastination behavior is neither minimal nor excessive, but present at a level that may still impact their academic performance. This result is consistent with observations by Candra et al. (2014), who noted that procrastination is a common behavioral issue among students in academic contexts. The persistence of such behavior among students suggests the need for strategies that encourage time management and motivation to reduce delays in completing academic responsibilities.

Research Question 3. Is there a significant difference in Mobile Legends gameplay and academic procrastination behavior based on gender?

To investigate whether gender plays a significant role in Mobile Legends gameplay and academic procrastination behavior, an inferential statistical analysis, namely one-way Analysis of Variance (ANOVA) was conducted to test the alternative hypothesis. The analysis compared the mean scores of male and female students across the two variables: Mobile Legends gameplay and academic procrastination behavior.

For Mobile Legends gameplay, as shown in Table 3, the ANOVA results showed a significance value (p) less than 0.05, suggesting the acceptance of the alternative hypothesis, indicating a statistically significant difference between male and female students. Table 4 shows the descriptive statistics revealing that male students (M = 3.53) reported higher levels of gameplay compared to their female (M = 2.74) counterparts. The mean scores suggested that male students exhibited significantly higher levels of playing Mobile Legends game than female students.

Table 3 One-Way ANOVA for Mobile Legends Gameplay by Gender

| Source | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|--------|-------|
| Between Groups | 8.709 | 1 | 8.709 | 14.068 | 0.000 |
| Within Groups | 51.273 | 83 | 0.618 | | |
| Total | 59.982 | 84 | | | |

Table 4 Descriptive Statistics of Mobile Legends Gameplay by Gender

| Gender | N | Mean | Std. Deviation |
|--------|---|------|----------------|
|--------|---|------|----------------|

| | | | |
|--------|----|------|------|
| Male | 44 | 3.53 | 0.86 |
| Female | 41 | 2.74 | 0.63 |

For Academic Procrastination Behavior, the ANOVA results (see Table 5) showed a significance value (p) less than 0.05, suggesting the acceptance of the alternative hypothesis, indicating a statistically significant difference between male and female students. Table 6 shows the descriptive statistics revealing that male students (M = 3.28) reported higher levels of procrastination compared to their female (M = 2.51) counterparts. The mean scores suggested that male students exhibited significantly higher levels of academic procrastination behavior than female students.

Table 5 One-Way ANOVA for Academic Procrastination Behavior by Gender

| Source | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|-------|-------|
| Between Groups | 3.851 | 1 | 3.851 | 3.990 | 0.032 |
| Within Groups | 80.112 | 83 | 0.965 | | |
| Total | 83.963 | 84 | | | |

Table 6 Descriptive Statistics of Mobile Legends Gameplay by Gender

| Gender | N | Mean | Std. Deviation |
|--------|----|------|----------------|
| Male | 44 | 3.28 | 0.88 |
| Female | 41 | 2.51 | 1.05 |

The significance values in both ANOVA tables are below the $\alpha = 0.05$ threshold, suggesting the acceptance of both alternative hypotheses 1 and 2, that there is a significant difference between male and female students in both Mobile Legends gameplay (p = 0.000) and academic procrastination behavior (p = 0.032). These findings suggest that gender is a meaningful factor influencing students' gaming behavior and tendency to procrastinate academically, with male students displaying higher levels in both areas. Male students play Mobile Legends more frequently and tend to procrastinate more than female students.

Research Question 4. Is there a significant correlation between Mobile Legends gameplay and academic procrastination behavior?

To answer the fourth research question, an inferential statistical analysis, namely bivariate Pearson's product-moment correlation coefficient was employed to test the alternative hypothesis saying that there is a significant correlation between Mobile Legends gameplay and academic procrastination behavior. The analysis revealed a correlation coefficient of $r = 0.496$ with a significance value (p) of 0.000 (see Table 7), leading to the acceptance of the alternative hypothesis, suggesting a statistically significant effect of Mobile Legends gameplay on students' academic procrastination behavior.

Table 7 Correlation Between MLG and Academic Procrastination Behavior

| Variables | Correlation Coefficient r | Significance (2-tailed) |
|--------------------------------|---------------------------|-------------------------|
| MLG × Academic Procrastination | 0.496 | 0.000 |

Based on the interpretation scale provided by Sugiyono (2018), an r-value of 0.496 indicates a moderate strength of correlation. Additionally, the correlation signifies a positive correlation between the two variables since the r-value is positive. This means that students who reported a higher frequency of playing Mobile Legends were more likely to also report higher levels of academic procrastination. These findings suggest that while not conclusive of causation, game engagement may be a contributing factor to students' delays in academic tasks.

Discussion

The results of this study provide meaningful insights into the relationship between digital gaming and academic behaviour among students, specifically focusing on the popular mobile game *Mobile Legends*. The moderate positive correlation observed ($r = 0.496, p < 0.01$) indicates that higher engagement in *Mobile Legends* gameplay is associated with increased levels of academic procrastination. This suggests that students who spend more time playing the game are more likely to delay academic tasks, potentially compromising their academic performance.

These findings are consistent with previous research that highlights the widespread appeal of mobile games among adolescents and young adults. Nawawi, et al. (2021) observed that games like Mobile Legends have become a dominant form of entertainment, particularly due to their competitive nature and easy accessibility on mobile platforms. While moderate gameplay may be seen as a form of healthy leisure, the significant correlation found in this study raises concerns about its implications for academic discipline and time management.

Moreover, the results support the conclusions of Mubarok, et al. (2022), who found that excessive involvement in online gaming contributes to academic delays and reduced educational outcomes. The immersive and rewarding environment offered by games may provide immediate gratification, which can overshadow the delayed rewards associated with academic achievement. This aligns with Kuss and Griffiths' (2012) findings that the cognitive and emotional stimulation of digital games often leads to distraction and avoidance behaviours, especially in tasks perceived as less engaging or more demanding.

The current findings underscore the need for awareness and guidance in helping students balance leisure and academic responsibilities. Interventions aimed at promoting self-regulation, time management skills, and healthy digital habits may help mitigate the negative academic consequences associated with excessive gaming.

Furthermore, the study highlighted significant gender-based differences in both gameplay frequency and academic procrastination behaviour. Male students reported higher mean scores for both variables, indicating a stronger association between gaming activity and procrastination among male participants. This finding supports previous research showing that male students are generally more engaged in digital gaming and are more likely to exhibit academic challenges linked to their gaming habits (Candra et al., 2014).

Studies have consistently shown that males tend to play online games more frequently and intensely than females, often as a form of competition, stress relief, or social engagement

(Kuss & Griffiths, 2012; Rehbein, et al., 2016). These motivations, while potentially adaptive in moderation, can also lead to compulsive gaming behaviours that interfere with academic duties. For example, Hartanto et al. (2021) found that male students were more prone to delay academic tasks when engaged in immersive digital activities such as multiplayer online games.

The gender disparity observed in this study also aligns with findings by Gentile et al. (2011), who reported that males are more susceptible to problematic video game use, which in turn is linked to lower academic achievement and diminished self-regulation. These patterns suggest that male students may be particularly vulnerable to the distracting effects of mobile games such as Mobile Legends, reinforcing the need for gender-sensitive interventions.

Such interventions could include digital literacy programs, time management workshops, or counselling services tailored to address the psychological and behavioural mechanisms underlying excessive gaming. Additionally, promoting alternative activities that offer the same social or competitive satisfaction—such as team sports, academic competitions, or creative clubs—may help redirect excessive gaming tendencies into more productive channels.

Recognizing the role of gender in gaming behaviour and procrastination is crucial for developing effective, targeted strategies that not only reduce the academic consequences of excessive gameplay but also promote balanced and responsible use of digital entertainment across student populations.

Overall, these findings underscore the need for educational stakeholders—teachers, parents, and counsellors—to monitor gaming behaviour, especially among male students, and to implement strategies that promote time management, academic focus, and balanced use of technology.

V. CONCLUSION

This study concluded that junior high school students at a selected school in North Minahasa generally engage in Mobile Legends gameplay at a moderate level, and that their academic procrastination behaviour also falls within the moderate range. A statistically significant, moderate, and positive correlation was found between the two variables, indicating that increased gameplay is associated with increased academic procrastination. This suggests that students who spend more time playing Mobile Legends are more likely to delay or avoid academic tasks.

Additionally, gender differences were evident, with male students showing higher frequencies of gameplay and greater tendencies toward academic procrastination than their female counterparts. These findings highlight how digital gaming habits—particularly among male adolescents—may affect students' ability to manage their academic responsibilities effectively.

In light of these findings, several practical recommendations are proposed. Schools should consider implementing structured time management and self-regulation programs that equip students with the skills to balance academic duties and recreational activities. Parents are encouraged to monitor their children's gaming behaviour and establish boundaries to foster healthier digital habits. Educational institutions can also promote digital literacy campaigns that raise awareness about responsible gaming, and provide access to counselling services for students at risk of academic difficulties due to excessive gaming. Furthermore, gender-sensitive approaches in these interventions may prove beneficial given the observed differences in behaviour.

Despite these valuable insights, this study is not without limitations. The sample was restricted to a single junior high school in North Minahasa, limiting the generalizability of the results. Future research should consider broader and more diverse populations across various

regions to validate and extend the current findings. Additionally, as a cross-sectional study, this research cannot establish causal relationships between gameplay and procrastination. Longitudinal studies are recommended to observe behavioural changes over time.

The study also relied solely on self-reported data, which may be subject to biases. Future investigations could incorporate data from multiple sources, including teacher observations, parental input, or digital tracking tools to enhance accuracy. Moreover, while this study focused exclusively on Mobile Legends, examining other gaming genres could provide a more nuanced understanding of how different types of games influence academic behaviour. Lastly, exploring psychosocial factors such as motivation, emotional regulation, and peer influence may offer deeper insights into the underlying mechanisms of procrastination.

By addressing these areas, future studies can contribute to a more holistic understanding of the relationship between digital gameplay and academic behaviour, ultimately informing more effective strategies for student well-being and educational success.

Disclosure Statement

The authors declare that there are no conflicts of interest associated with this study. The research was conducted with full objectivity and independence, free from any financial, personal, or institutional influences that could have compromised the integrity of the findings or their interpretation.

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