



## The Effects of Mobile Games on Elementary School Students' Achievement in Aceh

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### Abstrak

Penelitian tentang masalah kecanduan *mobile game* terus meningkat selama dua dekade terakhir. Tujuan dari penelitian ini adalah untuk mengetahui hubungan antara game online dan prestasi akademik di kalangan siswa usia sekolah dasar di provinsi Aceh. Penelitian ini mengungkapkan bahwa anak laki-laki lebih banyak menjadi pemain game dibandingkan dengan anak perempuan dan mereka yang bermain game online berusia sekitar 11-12 tahun memiliki waktu bermain rata-rata 3-5 jam/hari. Populasi penelitian ini adalah siswa sekolah dasar di Aceh dengan jumlah sampel 55 siswa. Untuk mengukur tingkat kecanduan game, penelitian ini menggunakan Skala Kecanduan Game (Lemmens, Valkenburg & Peter, 2009). Kemudian, dengan menggunakan analisis regresi, hipotesis diuji. Dari data tersebut, kita dapat menyimpulkan bahwa bermain game online sedikit banyak mempengaruhi perolehan nilai mereka di sekolah karena bermain dalam waktu yang lama dapat mengurangi kemampuan anak untuk fokus pada kegiatan akademik. Studi ini dapat menjadi sebuah referensi tentang kebiasaan bermain game online remaja, yang mungkin menjadi faktor yang mempengaruhi prestasi akademik mereka.

**Kata Kunci:** game online, siswa sekolah dasar, remaja, prestasi belajar

### Abstract

Research into mobile game addiction has increased over the previous two decades. The purpose of this study was to investigate the association between online mobile gaming and academic performances among adolescent students in Aceh's elementary schools. The study revealed that boys are more of a player compared to girls who often play games and those who play online games are around 11-12 years old have an average playing time of 3-5 hours/day. The research population consisted of elementary students from Aceh, with a sample size of 55 pupils. Included in the study was the Game Addiction Scale (Lemmens et al., 2009). Then, using regression analysis, the hypothesis was tested. From the finding, we can conclude that academic performance was found to be negatively associated with online gaming. This is because playing games for a long time reduces their ability to focus on academic tasks. This study can serve as a reference to adolescents' online gaming habits, which could be a factor affecting their academic achievement.

**Keywords:** online game, elementary students, adolescent, achievement

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## INTRODUCTION

The internet currently plays a role as one of the important sources of information in one's life experience. The existence of the internet is also very helpful for people to develop themselves and has become a strategic tool to enable them to cope with rapidly developing technology. It is undeniable, people live now in an informative lifestyle where everything is updated very quickly, and the internet has become one of the human needs regardless of age or gender in society. However, the use of the internet among teenagers and children is often questioned as many of them tend to be addicted.

Historically, the use of the internet in Indonesia has started in the 2000s and continues to grow rapidly until now. Referring to data from the Ministry of Communication and Information, Indonesian people are one of the largest users of communication devices in Southeast Asia. According to Marius & Pinontoan as cited in Anggraeni & Wihardja (2020), in 2013 there were 236.8 million cellular users, placing Indonesia in the 5th position in the country with the largest number of mobile and computer users in the world, however, the use of high-tech communication tools will lead to positive and negative impacts for its users. The positive impacts of using technology include facilitating and accelerating access to information and facilitating the communication process. Communication tools also provide game features to be a source of entertainment for users (Anggraeni & Wihardja, 2020). Meanwhile, the negative impacts that may arise from the use of technology are the emergence of plagiarism habits, vulnerability to exposure to issues of violence and pornography; neglected work due to the intensity of excessive use of gadgets, and no less important is the addiction to using gadget (Kende, 2014).

Some people enjoy playing mobile games in their leisure time because of the excitement they provide. Furthermore, because of a lot of schoolwork, adolescents tend to feel stressed during school hours; therefore playing mobile games will ease their stress. Indeed, for some people playing video games has a number of reasons to be played, for it can be a stress reliever, challenge and competition, relaxation, enjoyment, social interaction, and even mentally escaping from the real world. However, there is a growing body of evidence that games can actually lead to increases in academic achievement, as well as advances in visual-spatial skills, which are often important in the fields of science, mathematics, technology, and engineering, among other things (Anand, 2007; Jackson et al., 2011). It is also claimed that the complex nature of games can assist kids in achieving academic achievement by involving players in problem-solving, critical thinking, and creative thinking activities (Smyth, 2007). For this reason, while gaming addiction is associated with poor academic achievement, moderate involvement in a game can result in improved performance in academic contexts according to Lay et al. (2009). They also discovered a beneficial relationship between playing games and performing well on English tests.

In addition, according to research, children are more prone to becoming addicted to online games than adults. One of these online game addictions can be characterized by excessive playing duration so that it has a negative impact on gamers (Lemmens, Valkenburg & Peter, 2021). Several studies (King, 2018; Rikkers et al., 2016) have found that mobile games have negative impacts on players, such as reduced sleep time, behavioral problems (eg low self-esteem, anxiety, depression), to decreased academic achievement in students. In addition, the excessive use of the internet and the increase in playing mobile games lead to addiction resulting in serious functional impairment in the lives of children and adolescents if left untreated.

The word addiction term can be applied to a wide range of behavior including addiction to information communication technology (ICT). Online game addiction is one type of addiction caused by internet technology or better known as internet addictive disorder. Online games are part of the internet that is often visited and very popular and can even lead to addiction that has a high intensity. Referring to the description above, we may conclude that addiction is a dependent behavior or a very strong physical and psychological bound condition in

doing something and there is an unpleasant feeling if it is not fulfilled. Mental health issues can arise from any type of addiction (Kuss & Griffiths, 2011; Samli, 2018).

Similarly, Anderson and Dill (2000) conducted a study on video games and aggression and concluded that not only does gaming affect performance directly, but it also induces an increased degree of aggressiveness, which is frequently associated with school issues and poor academic performance. In addition, adolescents who are addicted to online games often neglect social activities and contacts in favor of online gaming (Müller et al., 2015). In fact, an academically successful student has the ability to communicate effectively in a variety of ways: through oral and written communication. Bukhori, et al (2019) claim that the intensity with which students study textbooks impacts their academic performance. An activity's intensity is measured by the amount of time and effort it takes for an individual to complete it. Readers' acquisition of author-provided information is an example of a communication process including reading.

There has been research on the influence of internet gaming on academic attainment (Harahap & Ramadan, 2021; Kurnada & Iskandar, 2021; Turner et al., 2018) which demonstrates that online gaming users will not receive harmful influence as long as they play with the suggested timespan. Additionally, online games are supposed to benefit language acquisition, although their effect on academic accomplishment requires additional research. However, a number of other researchers, such as Adžić et al. (2021) and Islam et al. (2020), presented important facts based on their research. They report that less successful students have lower grades as a result of their habit of playing online games, whereas excellent students maintain high scores despite spending the same amount of time playing. In other words, online gaming has no significant effect on students' academic performance. Moreover, they suggest that time management while playing is very influential in determining students' academic success.

Meanwhile, Jang et al. (Jang et al., 2005) argue that online gaming shares some of the negative sides such as in an online role-playing game with a massively multiplayer component (MMORPG). It is clear that MMORPG users devote more time (from 6 p.m. to 11 p.m.) to their game and find the social aspects of the in-game world more enjoyable and satisfying than what occurs in the real world. According to Bavelier et al (2015), gamers' problems with online games are a result of a change or pathology in their gaming habits. In this case, the player's emotional and psychological effects are influenced by the increased intensity of play, and the game online becomes a distraction from the real world. Continual online game problems can also lead to social breakdowns and a decrease in motivation to learn, as online game users shift their priorities.

In fact, little work has been carried out to seek the link between academic achievement and the use of the Internet and electronic games by children and adolescents (Anggraeni & Wihardja, 2020; Islam et al., 2020; Jackson et al., 2011) and tend to examine both variables simultaneously (Rikkers et al., 2016). Some of the existing research has relied on students' grades or self-assessments, both of which involve subjectivity in the examiner. Additionally, other studies have concentrated on specific areas. Taking these concerns into account, this study employs a valid and reliable measure to evaluate the amount to which students are addicted to online games by associating it with the student's school grades. Furthermore, this research is being carried out in some schools in Aceh province to analyze the relationship between the level of online game addiction among students and their academic achievement.

## **METHOD**

This study used a correlation design utilizing a questionnaire to get the needed data for the study. Correlational research designs are used to determine the link between two or more variables. This design is appropriate since it is capable of establishing a link between Internet Addiction and academic performance. The participants in this study were elementary school students in Aceh and were selected through purposive sampling which the persons chosen for the investigation are themselves not expected to be the representatives of the population, but rather they possess the necessary information about the issue being investigated upon.

There are a total of 55 respondents who returned the survey questionnaire. Among the respondents, 25 (45%) were females, and 30 (55%) were males. Statistical treatment of data was done through the use of percentage, weighted mean, and Pearson r Correlation. For the purpose of achieving the research study's goal, it was necessary to collect information on the level of internet addiction and academic accomplishment among adolescents. Data was collected through a questionnaire that refers to the Game Addiction Scale (Lemmens et al., 2009). In this questionnaire, there are seven addiction criteria to be measured including salience, tolerance, mood modification, relapse, withdrawal, conflict, and problem. The instrument has four response ratings namely (1) rarely, (2) sometimes, (3) often, (4) very often.

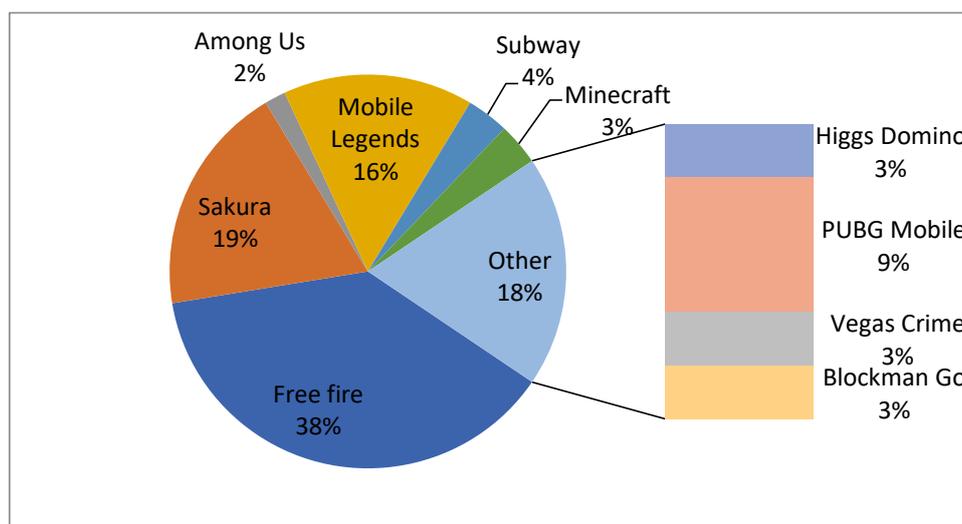
In order to determine students' achievement at school, their school reports for two terms were obtained in order to compare them to the students' individual responses. Then, the Pearson product-moment correlation coefficient and the independent sample t-test were employed to test the research hypotheses at a 0.05 level of significance for the data analysis of the data.

## RESULTS AND DISCUSSION

Considering prior studies on the influence of electronic gaming on adolescents, this study explored the relationship between electronic gaming and students' academic achievement. The outcomes of this study support the widely held assumption that mobile games have a detrimental effect on academic achievement, particularly when time spent playing is excessive. Building on past research on the effect of electronic gaming in adolescents, this study designed a questionnaire using the game addiction scale for adolescents developed by Lemmens, et al (2009) and examined whether playing mobile games was correlated with students' academic performance.

Based on the results of the study, the following salient findings based on Lemmens criteria were drawn:

In terms of length time playing the game on mobile devices, the respondents spent 3-5 hours with an overall weighted mean of 2.78 percent. While the most popular game played is Free Fire by 38 percent.



**Figure 1. Characteristics of Respondents Based on the Types of Online Games Played**

Furthermore, the majority of respondents, which is 67.2%, said that playing online games makes them feel better. Then, in response to the statement about ignoring other important things when playing online games, the majority of respondents (74.50 percent) admitted that they occasionally neglect important things while playing online games. Meanwhile, the majority of respondents (30.90 percent) indicated that they get stressed out if they do not play, while others admitted otherwise. Concerning the statement item about conflict, 36.4 percent indicated that it occurs very frequently and 49.1 percent stated that it occurs occasionally as a result of playing online games.

**Table 1**  
**Mean and Standard Deviation related to the adolescents that engage in online game play**

	Indicator	Mean	X	Std. Deviation
X1	Saliency	Duration of playing online games	2.78	1.10
X2	Mood Modification	The goal of playing online games is to feel better	3.00	0.86
X3	Mood Modification	Play online games to reduce stress	2.96	0.74
X4	Problems	Ignoring other important things for playing online games	1.56	1.07
X5	Withdrawal	Unpleasant emotions when game play is suddenly reduced	2.16	1.07
X6	Problems	Study time is limited due to playing games	2.00	0.77
X7	Tolerance	More time to play games, especially when online learning	2.24	1.07
X8	Relapse	Parents' inability to reduce the duration of an adolescent's game play	2.07	0.94
X9	Conflict	Playing online games makes communication with family/friends hampered	2.27	0.71

Based on the data from the table above, with a criterion mean of 2.00 'sometimes' and 3.00 'often,' we may predict that mobile games will affect their academic learning to some extent. In addition, for academic performance, data from students who participated in this study indicate that on average, students that participate in online games obtain an average of 88.34, which is B (Good performance) on the grading scale, while 9 out of 55 get C (Satisfactory performance). Their average school result decreased to 88.32 in the second semester for the same categories.

**Table 2**  
**Correlation between online game playing and academic achievement**

		X	Y
X	Pearson Correlation	1	-.907**
	Sig. (2-tailed)		0.000
	N	55	55
Y	Pearson Correlation	-.907**	1
	Sig. (2-tailed)	0.000	
	N	55	55

Meanwhile, Table 2 demonstrates that there is a strong correlation between academic online gaming and academic achievement with  $n = 55$ ,  $p < .05$  ( $p$ -value = 0.000). As a result, the null hypothesis was rejected.

H0: There is no significant relationship between online gaming and academic achievement scores of elementary students in Aceh.

From the data analyzed, it can also be found that there is a significant negative relationship between the academic performance of the respondents and playing mobile games ( $r = -.907$ ) as it causes a decrease in grades in school along with addiction to playing online games. In this regard, the findings of this study contradict the literature on this particular topic (Anggraeni & Wihardja, 2020; Iyitoğlu & Çeliköz, 2020), which asserts that mobile games have no detrimental effect on students' academic achievement. Numerous studies, however, corroborate our study's finding that internet-addicted students perform poorly in school (Jackson et al., 2011; Jang et al., 2005; Sahin et al., 2016).

Internet and online gaming addiction have been examined as a factor impacting student performance in a variety of school subjects. In line with this current study, Adžić et al. (2021) suggest that students should be permitted to play online games for no more than four hours per day, whereas Islam et al. (2020) argue that two hours of online gaming would lead to positive effects on students.

According to their research, it seems reasonable to conclude that the decline in student achievement in school is caused by students playing online games longer than recommended. Therefore it is suggested that students play for less than three hours.

There are several limitations to this research. First of all, we are unable to assess how all of the variables affect each other and whether or not issues such as poor family functioning or parental mental health problems are influenced by the child's problem behavior and become confounding variables. Secondly, despite reducing the questions, some children had difficulty responding to survey questions due to their comprehension of particular words, such as when they had to estimate the amount of time spent playing games. As a result, rather than reporting the number of hours worked, we modified their responses into a 4-point scale.

## CONCLUSION

As previously discussed, although online gaming is still a matter of debate, for most people it has become one of the most accessible and interesting forms of entertainment than ever before. Despite the fact that this study discovered a negative association between the average time spent on electronic gaming and student accomplishment, online games can be used for entertainment purposes if played within the recommended time. However, we must keep in mind that online gaming will harm those who become addicted and can be measured through the game addiction scale (GAS).

This study also encourages the need for further research to develop and implement interventions aimed at increasing parental supervision and developing user self-regulation to limit daily electronic gaming activities.

Based on the finding, online game addiction causes a decrease in student achievement. Therefore school officials and teachers, working with parents, may consider encouraging students to focus on physical fitness and social skills to reduce student time spent playing online games. Additionally, parental engagement is critical in assisting adolescents in progressing along their path. For example, a teacher may decide to inform parents about their children's academic and social progress at school. This group can help parents and teachers better monitor their children's actions at school and home.

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