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Digital Enjoyment or Social Disconnection : How Do Online Games Affect Students' Social Lives?

Chrisanta Kezia Yemima, Diana Septi Purnama*
Guidance and Counseling, Faculty of Education and Psychology,
Universitas Negeri Yogyakarta, Indonesia.
*Corresponding Author. Email: chrisantakezia.2022@student.uny.ac.id

Abstract: This research aims to analyze the relationship between online game addiction and social interaction and its implications for students' enthusiasm for learning. This research used a quantitative approach with a survey method involving 100 Surakarta students selected through purposive sampling. The instrument used to measure Social Interaction was adapted from (2024) with a reliability coefficient (alpha) of 0.915. And the Online Game Addiction Scale, adapted fromArua et al., (2023) with a reliability coefficient (alpha) of 0.853. Data analysis used descriptive statistics, assumption tests, Pearson correlation, t-test, and coefficient of determination. The results showed that the majority of respondents had a moderate level of online gaming addiction, with a significant negative correlation between gaming addiction and social interaction. Addiction rates were higher in men than women. Interventions should target social and individual contexts, combining education and social support to reduce online gaming addiction among students. Students addicted to online games tend to spend more time in the virtual world; this can divert students' enthusiasm from learning activities. Students become less focused, get tired quickly, or lose enthusiasm for learning because more time and energy is devoted to playing games.

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Introduction

The rapid development of technology, especially in communication and information, allows individuals to communicate quickly and freely via the Internet. This ease of access causes users to become dependent on spending more time accessing the Internet, which can result in Internet addiction and cause users to become addicted. Green Field in Berte et al. (2021)explained that internet addiction is a problem that affects the psychological, work, and social aspects of a person's life. These psychological problems include feelings of anxiety and restlessness when not using the Internet, which ultimately increases the duration of use. For some teenagers, especially students, becoming intensive consumers of online games is normal. According to T'ng et al. (2023), individuals become dependent on online games for fun, and in some cases, people play online games to escape from real life problems. Psychological factors such as competence, escape from problems, and independence cause someone to become addicted to online games (Kaya et al., 2023). Shi et al. (2019) revealed that many gamers are willing to sacrifice other activities to play games, such as rest time, studying, working, and social interaction. Kurniasanti et al. (2019)states that the characteristics of online game addiction include compulsiveness, withdrawal, tolerance, poor time management, as well as interpersonal and health problems. Excessive use of online

games can affect a person's social life and the way they interact with other people around them (Erevik et al., 2022).

BAPPJII survey data in 2022 shows that Indonesian internet users have increased since 2020. Indonesia is ranked in the top 10 countries with the highest internet use. Based on the APJII survey, from 2022 to 2023, social media will be the content most accessed by Indonesian people. Apart from social media, other frequently accessed content includes online games, with 15.81% of users in 2023 (APJII 2024). Based on interviews with several students in Surakarta, they use social media for an average of 6-8 hours daily and play online games for 4 to 8 hours every day. Limone et al., (2023) stated that dependence on internet use can cause anxiety, sadness, lack of sleep, social isolation, and mood swings. Statistics (2024) reported that in Indonesia, online game users reached 54.7 million people in 2020, and continues to increase every year.Pratama et al., (2020) found that many students experienced gaming addiction, with 26.2% of students in the severe gaming addiction category and 28.2% in the moderate gaming addiction category. This phenomenon shows that game addiction can seriously impact students' daily lives. In addition, game addiction can interfere with social interactions, which are very important in adapting to the social environment.

Social interaction plays a vital role in individuals' adjustment to their social environment, creating a harmonious life, cooperation, harmonious interpersonal relationships, the ability to play social roles, and the development of social skills and values (Indriyani, Syaharuddin, and Jumriani 2021). Lack of social interaction skills among students can trigger negative impacts such as social isolation, which is an accurate indication of online game addiction. They may prefer to spend time in front of a screen rather than interacting directly with friends in the real world, which can disrupt their relationships (Sbarra, Briskin, and Slatcher 2019). Online gaming addiction is also associated with risks to mental well-being, such as depression and anxiety(Bonnaire and Baptista 2019).Pramana et al., (2020) show that students' social interactions in Padang are hampered by inappropriate use of technology. .Mulawarman et al., (2022) found that 52.60% of students aged 20-24 were online game players, accounting for 85% of the total students.

This research has several similarities with previous studies. For example,Marino et al., (2020)discusses online game addiction and social anxiety, and this research also examines how online game addiction affects students' social interactions.Raith et al., (2021) emphasizes the social component of online gaming and how it impacts social well-being. This research also looks at the social impact of using online games on students.Raith et al., (2021)also discusses the individual's need for online social interaction and interpersonal competence related to digital gaming addiction. It is in line with research exploring the impact of online game addiction on students' social interactions. Although there are several similarities, this research significantly differs from previous research.Marino et al., (2020) focus more on social anxiety and metacognition related to gaming disorder, while this research focuses more on social interactions in general.Bhagat, Jeong, & Kim, (2019)review the literature on the impact of MMO games on social welfare without a specific focus on student populations or specific educational environments, while this research explicitly examines students in Surakarta.Bhagat, Jeong, & Kim, (2019)highlighting the need for online social interaction and interpersonal competence to mediate digital gaming addiction. Instead, this research focuses on the direct impact of online gaming addiction on students' social interactions.

The novelty of this research lies in its specific focus and gender differences in Online Game Addiction and Social Interaction of students in Surakarta, a context without context explored in previous research. This study not only highlights the impact of online gaming

addiction on social interactions but also provides essential contextual insights into how this phenomenon is developing in the higher education environment in Indonesia. Hence, this research aims to analyze the relationship between online game addiction and students' social interactions and its implications for students' enthusiasm for learning at SMA Negeri Surakarta. It offers a new perspective that has not been widely explored in the literature, providing a valuable contribution to the global understanding of the social impact of online gaming addiction in specific local environments.

Research Method

This research used a quantitative approach, focusing on collecting and analyzing numerical data to understand the phenomenon under investigation. A survey method involving questionnaires was used to measure online gaming addiction and level of social interaction. The research population consisted of 2,900 Surakarta State High School students. A sample of 100 respondents was selected using non-probability sampling, namely purposive sampling, where subjects were selected based on specific characteristics. The selection criteria required that respondents be mobile phone users According toJames & Drennan, (2005), mid-level users spend 1.5 to 5 hours per day on their phones, in contrast to low-level users (less than 1.5 hours per day) and heavy users (more than 5 hours per day).

Two scales were used in this study to reveal each variable: the Social Interaction Scale and the Online Game Addiction Scale. The social Interaction Scale, adapted from Ren, (2024)with a reliability coefficient (alpha) of 0.915, measures social interaction through social contact and communication. The high reliability of this scale should assure you of the validity of our findings. Respondents were presented with statements and responded using a Likert scale with the following options: strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). Statements that are liked are given a score of 4, 3, 2, 1, while statements that are not liked are given the opposite score. Higher scores indicate higher social interaction, while lower scores indicate lower social interaction.

Online Game Addiction Scale, adapted fromArua et al. (2023)with a reliability coefficient (alpha) of 0.853, measures online game addiction based on seven aspects: salience, tolerance, mood modification, withdrawal, relapse, conflict, and problems(Lemmens et al., 2009). Higher scores indicate more significant online gaming addiction, while lower scores indicate less addiction. The collected data was analyzed using various statistical techniques, including descriptive statistics (mean, standard deviation, and standard error), assumption tests (normality test using the Kolmogorov-Smirnov test and linearity test using ANOVA), hypothesis testing (Pearson product-moment correlation), Independent Sample t-test to test gender differences in online game addiction, and the coefficient of determination (R-squared value) to determine the proportion of social interaction variance that can be explained by online game addiction. This analysis technique provides a comprehensive understanding of the relationship between online gaming addiction and social interactions, allowing conclusions and recommendations based on empirical evidence.

Table 1. Descriptive Categorization Analysis

Category	Categorization Norms
Very high	M+1.5 SD ≤
Tall	M+0.5 SD, < X ≤ M+1.5 SD
Currently	M-0.5 SD, < X ≤ M+0.5 SD
Low	M-1.5 SD, < X ≤ M-0.5 SD
Very Low	X ≤ M-1.5 SD

Source: Irawan & Prayoto, (2021)

Results and Discussion

Descriptive Analysis of Data on the Relationship between Online Game Addiction and Social Interaction

Table 2. Descriptive Analysis of Online Game Addiction with Social Interaction

Variable	Category	Value Range	Frequency	%
Online game addiction	Very high	117 ≤X	1	1%
	Tall	96.25 < X ≤ 117	15	15%
	Currently	78.75 < X ≤ 96.25	40	40%
	Low	61.5 < X ≤ 78.75	33	33%
	Very Low	X ≤ 61.5	11	11%
Social interaction	Very high	68.25 ≤	13	13%
	Tall	57.75 < X ≤ 68.25	41	41%
	Currently	47.25 < X ≤ 58.75	41	41%
	Low	36.75 < X ≤ 46.25	4	4%
	Very Low	X ≤ 36.75	1	1%

Based on the data collected, the majority of online game addictions fall into the moderate category with a frequency of 40 people (40%), followed by the low category with 33 people (33%), the high category with 15 people (15%), the very low category with 11 people (11%), and the very high category is only 1 person (1%). Meanwhile, most social interactions are in the high and medium categories with a frequency of 41 people (41%). The very high category was found in 13 people (13%), the low category was found in 4 people (4%), and the very low category was only found in one person (1%). These findings indicate that although most respondents have a moderate level of online game addiction, they still maintain high and moderate levels of social interaction, which illustrates the complexity between online game addiction and social interaction among online game players.

Table 3. Descriptive Statistics of Online Game Addiction Statistics with Social Interaction

		N	Means	Std. Deviation	Std. Error	Meaning of
Online Game Addiction	Man	64	84.25	15,822	1,978	
	Woman	36	76.28	13,702	2,284	

Based on the data obtained, the sample consisted of 64 men and 36 women. The results of descriptive analysis show that the average score for online game addiction in men is 84.25, with a standard deviation of 15.822 and a standard error of 1.978. In contrast, the average online game addiction score for women is lower, namely 76.28, with a standard deviation of 13.702 and a standard error of 2.284. This difference shows that men tend to have a higher level of online game addiction than women. However, the variation in the female group is smaller than in the male group.

Test the Basic Assumption Data on the Relationship between Online Game Addiction and Social Interaction

The basic assumption test was carried out to determine that the research data met the requirements for normality and linearity.

Normality test

The normality test is needed to find out whether the sample data is normally distributed. The normal distribution is a probability distribution where most of the data lies around the mean, and the less data there is, the further it is from the mean.

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Table 4. Kolmogorov-Smirnov Normality Test Results

		Social interaction	Online game addiction
N		100	100
Normal Parameters	Means	58.27	81.38
	Std. Deviation	8.136	15,507
The Most Extreme Difference	Absolute	0.076	0.053
	Positive	0.061	0.053
	Negative	-0.076	-0.038
Test Statistics		0.076	0.053
Asymp. signature. (2-tail)		0.171c	0.200c,d

The table above shows the results of asymp.sig2tailed on social interaction, namely 0.17 where 0.17 > 0.005. And online game addiction is 0.2 where 0.2 > 0.005 so it can be interpreted that the data results above are normally distributed.

Linearity Test

The linearity test is a statistical technique used to determine whether the relationship between two variables is linear. By carrying out a linearity test, it can be seen whether there is an assumed relationship between the independent and dependent variables. If the p-value is smaller than 0.05, it can be concluded that the relationship between the independent and dependent variables is linear. If the p-value is greater than 0.05, then it can be concluded that there is no relationship between the independent and dependent variables.

Table 5. Linearity Test Results

ANOVA

			Sum of Squares	df	Means Square	F	signature.
Social interaction Online game addiction	Between Groups	(Combined)	3576.510	47	76,096	1,329	0.159
		Linearity	1272.111	1	1272.111	22,219	0,000
		Deviation from Linearity	2304,399	46	50,096	0.875	0.676
	In Groups		2977,200	52	57,254		
	Total		6553.710	99			

The statistical analysis above shows a linear relationship between variables x and y, namely online game addiction and social interaction, with an F value of 22.219 and a p-value of 0.000 where 0.000 < 0.05. Therefore, based on the data above, it can be concluded that online game addiction is related to social interaction.

Hypothesis Testing the Relationship between Online Game Addiction and Social Interaction

Testing this research hypothesis uses Pearson product-moment correlation after ensuring the research data meets the necessary basic assumptions. The correlation hypothesis test is a statistical test used to test two related variables and fulfill the linearity test. This test is carried out by calculating the Pearson correlation coefficient (r) and testing whether the r value is statistically significant.

Table 6. Hypothesis Test Results

Correlation

		Social interaction	Online game addiction
Social interaction	Pearson Correlation	1	-0.441**
	signature. (1-tail)		0,000
	N	100	100
Online game	Pearson Correlation	-0.441**	1

addiction	signature. (1-tail)	0,000	
	N	100	100

****. The correlation is significant at the 0.01 level (1-tailed).**

In the hypothesis testing analysis above, a correlation coefficient (r) of -0.441 and a p-value of 0.000 were obtained, where 0.000 < 0.01. Based on the table above, online game addiction and social interaction have a significant relationship. The hypothesis testing table shows a negative correlation, indicating that online game addiction negatively impacts social interaction. This means that students with online game addiction behavior tend to have lower social interaction behavior.

Table7. Independent Samples t-test

Independent Sample Test

		F	signature.	Q	df	signature. (2-tail)	Meaningful Differences	Std. Error Difference	95% Confidence Interval of the Difference Lower	On
Addicted Online game	Equal variances are assumed	0.837	0.363	2,534	98	0.013	7,972	3,146	1,730	14,215
	Equal variances are not assumed			2,639	81,669	0.010	7,972	3,021	1,962	13,982

From the t-test above, it can be seen that there are differences in online game addiction based on student gender. The t-test table above shows a significance value (2-tailed) of 0.013, smaller than the p-value of 0.05. There are differences between male and female students in terms of online game addiction. The average score for online game addiction was 84.25 for male students and 76.28 for female students. Based on the data above, male students tend to have a higher incidence of online game addiction than female students.

Table 8. Coefficient of determination of Association Size

	R	**R square**	**That**	**Eta Field**
Social interactions* Online game addiction	-.441	0.194	0.739	0.546

The coefficient data above has an R square value of 0.194, or equal to 19.4%. Based on the R square value above, it can be interpreted that the magnitude of the influence of online game addiction on social interaction is 19.4%. Moreover, as much as 80.86% came from other factors outside the variables of this research.

Discussion

From the descriptive analysis, the majority of respondents fell into the category of moderate online game addiction (40%). It shows that most students carry out online gaming activities with moderate intensity. However, there is still a small percentage who show high and very high levels of addiction, which may indicate a more serious problem. For social interaction, most respondents fell into the high and medium categories (41% each). It shows that even though they are addicted to online games, students can still maintain a fairly good level of social interaction. These findings support the theory that engagement in online games

does not necessarily correlate with decreased social interaction but may vary depending on context and intensity of use.

The Pearson correlation test results show a significant negative correlation between online game addiction and social interaction (r=-0.441, p=0.000). It means that the higher the level of online game addiction, the lower the level of social interaction. This finding aligns with previous research, which shows that online game addiction can reduce time and opportunities for social interaction, considering that much time is spent playing games rather than interacting with others (Gong et al., 2020; Koban et al., 2022; Yang et al., 2022). Gender differences in online gaming addiction were also tested using independent samples t-tests. The results show that men tend to have higher levels of addiction than women, with an average online game addiction score of 84.25 for men compared to 76.28 for women. This suggests that men may be more susceptible to online gaming addiction, which could be due to various factors, such as a tendency to engage in competitive activities and the challenges offered by games (Király et al., 2023; Marraudino et al., 2022).

The R square value of 0.194 indicates that online game addiction explains around 19.4% of the variation in social interactions. This means that 80.6% of other factors influence students' social interactions outside online game addiction. These factors include social environment, personality, family support, and other social activities (Hamid, Razaq Bin Ahmad, and Mahzan Awang 2019; Yu et al. 2022). Theories about the internet and online gaming addiction suggest that excessive use can lead to social isolation and problems in social interactions (Prince, Raj, and Nazini 2023; Tateno et al. 2019). However, this research shows that despite being addicted to online games, most students are still able to maintain relatively high levels of social interaction. This may indicate the existence of a compensatory mechanism in which students use online games as a tool to form social identities and build communities in virtual contexts (Rahma and Fajar 2022; Syahrivar et al. 2022). In addition, these results also indicate that interventions to reduce online gaming addiction must consider students' social and individual contexts. Interventions that focus solely on reducing playtime may only be effective with understanding the social motivations and needs underlying the addiction.

Addiction to online games can affect students' social interactions by reducing their time interacting directly with peers and family. This addiction tends to lead to social isolation, where students prefer playing games rather than interacting with other people. As a result, their communication abilities and social skills may decline. It can be related to enthusiasm for learning, addiction to online games often diverts students' focus and attention from academic activities (Masfiah and Putri 2019). This is caused by the time that should be used for studying being used for playing games, as well as mental fatigue due to prolonged playing of games. This means that addiction to online games has the potential to reduce enthusiasm for learning, which in turn can affect their academic achievement. Therefore, educators and parents need to monitor and manage students' use of online games to ensure they do not interfere with their learning activities and social interactions.

This research has major advantages compared to previous research, specifically focusing on students in Surakarta and the impact of online game addiction on their social interactions. Meanwhile, previous studies, such as those conducted by Marino et al., (2020) And Bhagat, Jeong, & Kim, (2019), examining gaming addiction in a different context, this study explicitly measured a significant negative correlation between gaming addiction and social interactions. This study highlights an immediate decline in social interactions among students, an aspect that is rarely explored in depth. Therefore, the findings of this study have important implications for developing interventions aimed at reducing online gaming

addiction among students. These interventions can include educational programs regarding healthy game use, development of social skills, increased enthusiasm for learning and increased awareness of the negative impacts of online game addiction. Furthermore, this research underscores the importance of social and environmental support to help students manage their use of online games and increase their social interactions.

Conclusion

The findings of this study indicate that: 1) The level of online game addiction of most respondents is in the moderate addiction category. This shows that many students are addicted to online games but still at a less severe level. 2) Social Interaction Even though many students are addicted to online games, they are still able to maintain a fairly good level of social interaction. This shows that online game addiction does not completely hinder students from socializing. Pearson correlation analysis shows a significant negative correlation between online game addiction and social interaction. This means that the higher the online game addiction, the lower the student's level of social interaction. Gender differences in online game addiction show that there are significant differences in online game addiction based on gender, where men tend to have a higher level of addiction than women. The R square value shows that online game addiction explains about 19.4% of the variation in social interactions, indicating that other factors also influence it.

Recommendation

This research provides future recommendations for teachers to provide education regarding the negative impact of game addiction on mental and physical health, as well as encouraging activities that increase social interaction among students, such as group discussions, collaborative projects, and extracurricular activities. Students need to be given an understanding of the importance of maintaining a balance between time playing games and time studying and interacting with peers. They should be encouraged to manage their gaming time wisely and engage in positive social activities. Parents play an important role in monitoring their children's online activities and setting limits on gaming time, besides that open communication between parents and children about the impact of online game addiction can help prevent further problems. Interventions designed to reduce online gaming addiction should consider students' social and individual contexts and involve comprehensive educational programs and social support.

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