

An Analysis of Online Game Influence Toward the Biology Learning Achievement of Students at SMAN 1 Suhaid and SMPN 1 Suhaid, Kapuas Hulu

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Abstract

This study aims to investigate the influence of online game toward biology learning achievement, dealing with the school environment and family environment of senior high school and junior high school students. The research method of this study is descriptive qualitative, which had been conducted at SMA N 1 Suhaid and SMP N 1 Suhaid, Kapuas Hulu, West Kalimantan. The sample is students who play online games. The technique of collecting data is using questionnaire in order to investigate online game users, interest factor in learning biology at school, and family factor. The technique of data analysis is using linear regression. Moreover, the result of the hypothesis test includes; (1) It is obtained that $t > t$ table, or $2.789 > 2.024$. It means that there is an influence of online games toward biology learning achievement at SMA N 1 Suhaid in terms of the school environment. (2) The second hypothesis test results $t < t$ table, or $0.903 < 2.024$. It means that there is no influence of online games in terms of family environment. (3) The result of the third hypothesis test results $t > t$ table, or $2.132 > 2.024$. It means that there is an influence of online games toward the school environment. (4) The fourth hypothesis test results $t > t$, or $2.140 > 2.024$. It means that there is an influence of online game toward family environment.

1. INTRODUCTION

Nowadays, technology and Information has been developed rapidly. Somehow, it has provided many benefits and conveniences for human life. One of the developments that is occurring is online game which is a game which is currently being a trend and interests students from children, even adults. Online Game is defined as a computer game that uses computer network. Today's development of technology makes it possible to access online game through smartphone devices by using internet data access.

The main function of a game is to increase the intensity of human experience which is relatively safe to use. However, it is able to create tension and entertainment. Firstly, online games were appeared mostly about war simulation games and aircraft in military which finally were released and commercialized. Then, these games were able to inspire other games to emerge and develop. Moreover, current online games are easy and good

enough to be played by all ages, including school students.

Emes (1997) and Harris (2001), found no clear causal relationship between academic performance and the use of computer games. Dempsey *et al.* (1994) was a study on video game playing and psychopathology, It found that videogame playing was a social activity and not a serious achievement activity. And some studies for the impact of frequent gaming on young people's health. Players have complained of eyestrain, headaches, chest pain, fatigue and mood swings (Tazawa *et al.*, 1997). According to Mitchell and Savill (2004) games can stimulate the enjoyment, motivation and engagement of users, aiding recall and information retrieval, and can also encourage the development of various social and cognitive skills.

Tazawa and Okada (2001) findings that where gameplay causes sleep deprivation it is also associated with black rings under the eyes and muscle stiffness in the Shoulder. Ricci and Vigevano (1999)

note that, while the role of the software itself is still unclear, 'a brighter image has a higher probability of provoking discharges than a darker one' and flashing lights and geometric patterns present in some games may activate a seizure. Funk (1993) suggests that parents should be educated about the need to monitor the extent of game playing and to influence game selection.

According to McCormick (2001) that the cumulative effects of playing or even just observing violent computer games and horror games do impact negatively upon personality development. Pillay (2003) found signs that after playing recreational computer games may influence children's performance on subsequent computer-based educational tasks. The time you spend behind the monitor could be spent facing another person across a table or a tennis court. Disguised as efficiency machines, digital time bandits steal our lives and undermine our communities Stoll (1999).

Din and Calao (2001), who successfully used the Sony PlayStation Lightspan games with socially disadvantaged kindergarten children to facilitate age-appropriate tasks in spelling and reading, they called for further research before causality could be established. the introduction of educational video games can be a useful tool in promoting learning within the classroom. Rosas et al. (2003) Computer games have been particularly effective in raising achievement levels of both children and adults in areas such as maths and language, where specific objectives can easily be stated (Randel et al., 1992). Jayakanthan (2002) reports that versions of strategy games like Sim City have been used in schools to encourage learning in subjects such as geography.

Simulation games are most effective in encouraging discovery learning where the system provides two kinds of instructional support: learner-requested background information and elaborate system-initiated advice (Leutner, 1993). task cards were used with games, requiring learners to describe their strategies and to provide tips to others, thereby stimulating reflection and writing skills (Kaptelinin and Cole, 2001).

Based on the observation in SMP Negeri 1 Suhaid and SMA Negeri 1 Suhaid, Kapuas Hulu, West Kalimantan, the students often spend their breaktime by playing online games. In the observation which was carried out around Semitau and Suhaid areas at night, many children were gathering to play online games together. They usually spend about 1 to 4 hours a day to play online games. Obviously, a lot of time is wasted just for playing online games.

The impact of playing online games is assumed can reduce the positive activities which surely should be done by students in that age. Somehow, students who depend on gaming activities will reduce their time to study and socialize with their peers. However, if it continues for a long time, it is

assumed that students will stay away from society, not sensitive or care of the environment, and even can form a social independency in which students do not have the ability to adapt to their social environment (Nuhan, 2016).

Students are surely feeling happy when they play online games. Some of them argue that game is challenging and entertaining. Online games surely can make students addicted. As a result, they forget their main duty that is learning or studying. Consequently, in terms of academics, they will get a decrease in the learning achievements.

Some internal and external factors can cause a decrease of learning achievement. According to Slameto (2010): 1) Internal factor (factor from the student itself); It is the student's physical or spiritual condition. 2) External factors (factor from the student outside); It is the environmental condition around the student. This factor includes: social environment, such as: family, teacher and staff, community, and friends; Non-social environment, such as: home, school, equipment, and nature; Learning Approach (approach to learning) is a type of student learning effort that includes strategy and method in the learning process.

The purpose of this study are: (1) to investigate the influence of online games toward the biology learning achievement of SMA N 1 Suhaid students in terms of the school environment, (2) to determine the influence of online games toward the biology learning achievements of SMA N 1 Suhaid students in terms of the family environment, (3) to find out the influence of online games toward science learning achievements (biology) of SMP N 1 Suhaid students in terms of the school environment, (4) to know the influence of online games toward science learning achievements (biology) of SMP N 1 Suhaid in terms of the family environment.

2. RESEARCH METHODS

The research method of this study is descriptive qualitative method, the researchers do the observation and collecting data at once (point time approach). The data collection begins from August 14, 2019 to August 16, 2019 in SMP N 1 Suhaid and SMA N 1 Suhaid. Moreover, the respondent or sample is the students who have smartphone and have played online games. However, specifically for SMA N 1 Suhaid, the sample is only focused on the students of Science department (Jurusan IPA).

The instrument used in this study is questionnaire. The type of questionnaire in this study is a closed questionnaire by using a Likert scale. The questionnaire about online games consists of 25 questions related to the family environment and the school environment. The result of the questionnaire is used as the independent variable and the students' biology scores are used as the dependent variable. In line with Sugiyono (2015) which states that in qualitative research, the data collection is done in

natural setting (primary condition), primary data sources, and technique of collecting data by using triangulation or combination. Finally, the obtained data is tabulated and analyzed by using a software namely SPSS 22 for regression test.

3. RESULTS AND DISCUSSION

The result from questionnaire about online games obtained from the respondent at SMA N 1 Suhaid and SMP N 1 Suhaid which are related to the factor of school environment is shown in the table below.

Table 1. The Influence of Online Games Toward Learning Activities at School.

No	Information	SMA N 1 Suhaid		SMP N 1 Suhaid	
		f	%	f	%
1.a	Online games cause the students to be very lazy at school.	1	2,56	8	20,51
1.b	Online games cause the students to be lazy at school.	23	58,97	27	69,23
1.c	Online games cause the students to be not lazy at school.	15	38,46	4	10,26
2.a	Online games cause the students to be very difficult to concentrate at school	5	12,82	3	7,69
2.b	Online games cause the students to be difficult to concentrate at school	25	64,10	28	71,79
2.c	Online games cause the students to be easy to concentrate at school	9	23,08	8	20,52
3.a	Students assume that online games cause learning achievement to be decreased.	8	20,51	27	69,23
3.b	Students assume that online games do not cause	31	79,49	12	30,77

learning achievement to be decreased.

Based on the table above, it can be seen that online games cause 58.97% of respondents from SMA N 1 Suhaid who play online games become lazy to study at school. Moreover, it occurs in SMP N 1 Suhaid that 69.23% of respondents who play online games are being lazy to study at school. While 38.46% of respondents from SMA N 1 Suhaid who play online games do not be lazy to study at school. The 10.26% of respondents from SMP N 1 Suhaid who play online games argue that they do not be lazy to have a learning process in the classroom. As a result, this shows that playing online games can cause ones to be lazy during the learning process at school because online games is assumed as more interesting, more challenging, and can stimulate students' adrenaline. It is in accordance with (Rahima, 2018) who states that playing online games is firstly considered as a reaction to have entertainment. However, it continues to turn into addiction and affect student biology learning achievement if ones cannot control themselves.

Online games cause 64.10% of respondents from SMA N 1 Suhaid who like to play online games to be difficult to concentrate when they are at school. It is similarly happened in SMP N 1 Suhaid where 71.79% of respondents who like to play online games feel difficult to concentrate. Their difficulties in concentration make them difficult to receive and gain any information or material from the teacher at school. This condition is in accordance with Setiawan (2018) who states that the negative impact of mobile games can be seen from the students' daily activities after playing mobile games when they lose. Then, it makes them angry, emotional, lazy and affects their learning achievements.

Table 2. Students' Learning Duration At Home After The Existence Of Online Games

Learning duration in a day	SMA N 1 Suhaid		SMP N 1 Suhaid	
	f	%	f	%
Only for upcoming exam	19	48,72	20	46,16
Less than an hour	0	0	1	2,56
An hour per day	20	51,28	18	51,28

Based on the table above, it can be seen that 48.72% of respondents from SMA N 1 Suhaid only study when they are going to face exam, and 51.28% of them study for at least 1 hour per day. Moreover, this is almost similar with the data from SMP N 1 Suhaid where 46.15% of respondents still study only when they are going to face exam, 51.28% of them study for 1 hour in every day. It shows that most of

the students who play online games still take their time to study at home. This is in accordance with Slameto (2010) who states that the ability of students to study is not only dealing with the school environment, but also can be dealing with the environmental factors around them.

Table 3. Roles of Parents in Reminding Their Children to Study at Home

Roles of parents in reminding their children	SMA N 1 Suhaid		SMP N 1 Suhaid	
	f	%	f	%
Often	15	38,46	26	66,67
Seldom	11	28,21	13	33,33
Never	13	33,33	0	0

Based on the table above, it can be seen that 38.46% of the respondents' parents from SMA N 1 Suhaid often remind their children to study at home, while 28.21% of them rarely remind their children to study at home, and there are 33.33% of them states that they never remind their children to study at home. Somehow, that is different with the data obtained from SMP N 1 Suhaid, where 66.67% of the respondents' parents still often remind their children to study at home. Moreover, there are 33.33% of them still rarely remind their children to study at home. From the table, the information that is obtained is that the parents' attention to their children at SMP N 1 Suhaid is more dominant given rather than the senior high school. Practically speaking, this can be happened because the junior high school students still need parental guidance and they are easier to be controlled. While the senior high school students are considered as adult and they are able to manage their own studying time without needing to be reminded by their parents.

The hypothesis in this study include: (1) there is an influence of online games toward biology learning achievements of the students of SMA N 1 Suhaid in terms of the school environment, (2) there is an influence of online games toward biology learning achievements of the students of SMA N 1 Suhaidin terms of the family environment, (3) there is an influence of online games toward science learning achievements (biology) of the students of SMP N 1 Suhaid in terms of the school environment, (4) there is an influence of online games toward science learning achievements (biology) of the students of SMP N 1 Suhaid in terms of the family environment.

The number of respondents in this study only focus on the students who play online games, in which from SMA N 1 Suhaid are 39 students and SMP N 1 Suhaid are 39 students. The result of the hypothesis testing includes; (1) It is obtained that $t > t$ table, or $2.789 > 2.024$. Therefore, the hypothesis is accepted. It means that there is an influence of online games toward biology learning achievements of the students of SMA N 1 Suhaid in terms of the school

environment. (2) The second one, it shows that $t < t$ table, or $0.903 < 2.024$. Therefore, the hypothesis is rejected. It means that there is no influence of online games in terms of the family environment. (3) The third result shows that $t > t$ table, or $2.132 > 2.024$. Surely, the hypothesis is accepted which means that there is an influence of online games in terms of the school environment. (4) The fourth result indicates that $t > t$ table, or $2.140 > 2.024$. Therefore, the hypothesis is accepted. It means that there is an influence of online games in terms of the family environment.

The result of the first hypothesis test obtains the Sig score. In terms of the school environment, there is 0.008 ($p < 0.050$). Therefore, the hypothesis is accepted. It means that the school environment variable of SMA N 1 Suhaid has a significant influence toward Biology learning achievement of the students of SMA N 1 Suhaid. In line with the result of the third hypothesis test, the Sig score is obtained. In terms of the school environment, there is 0.40 ($p < 0.50$). Therefore, the hypothesis is accepted. It means that the environment variable of SMP N 1 Suhaid has a significant influence toward science learning achievements (Biology) of the students of SMP N 1 Suhaid. The respondent shows the same result in which playing online games affects student learning achievements. This is in line with (Rahima, 2018) who states that the higher students' addiction to play online games, the lower their learning achievements. Moreover, the lower their addiction to play online games, the higher their learning achievements. In addition, (Astuti, 2018) states that the higher one's addiction in playing online games, the higher the bad sleep habit for the online games players. This statement is in line with the obtained data that the respondent from the students mostly like playing online games at night. This is shown in the table below.

Table 4. The Most Preferred Time to Play Online Games

Time to play online games	SMA N 1 Suhaid		SMP N 1 Suhaid	
	f	%	f	%
Night	30	76,92	25	64,10
After School	9	23,08	14	35,90
Break time at school	0	0	0	0

The students' tendency to play online games at night causes them having bad sleep habit, bad rest, and they are easily getting sleepy when they are at school. Thus, it causes students to be unable to concentrate when the teacher delivers the explanation and material. Meanwhile, according to Setianingsih (2018), gadget addiction can affect children's brain development because the excessive dopamine hormone production interferes the maturity of the cortical prefrontal function namely controlling

emotion, self-control, responsibility, decision making, and other moral values. Therefore, it can cause distraction of students' concentration and hyperactivity. Moreover, it can be said that overplaying online games can cause bad effect for human health.

Based on the result of the second hypothesis test, the Sig score is obtained at 0.373 ($p > 0.050$). Therefore, the hypothesis was rejected. It means that the family environment variable does not significantly influence the learning achievement of the students of SMA N 1 Suhaid who like to play online games. While the fourth hypothesis test obtains the Sig score at 0.039 ($p < 0.050$). Therefore, the hypothesis is accepted. It means that the family environment variable significantly influences the learning achievement of the students of SMA N 1 Suhaid who like to play online games. It shows that the parents' attention given to the students of SMP N 1 Suhaid is greater compared to the students of SMA N 1 Suhaid. The students of SMP N 1 Suhaid are still easily controlled and advised by the parents. While the students of SMA N 1 Suhaid are considered to be more mature. As a result, the parents feel that they do not need to advise their children. Somehow, the parents care by which often scolding their children when playing online games is a kind of attention for their children. Moreover, parents need to provide knowledge and monitor their children about the bad influence and danger of the addiction of playing online games since the middle school age. However, if parents or families pay attention to their children in learning, it will affect the students' learning achievements at school.

After the existence of online games which is easily accessed by using smartphone device, most of the respondents both from SMA N 1 Suhaid and SMP N 1 Suhaid feel more wasteful. Each student mostly tries to save their pocket money for Rp. 3,000.00 (three thousand rupiah) to Rp. 5,000.00 (five thousand rupiah). Then, they use it to buy internet data in order to be able to play online games.

Table 5. The Influence of Online Games Toward The Students' Finance

No	Information	SMA N 1 Suhaid		SMP N 1 Suhaid	
		f	%	f	%
1.a	Students do not feel wasteful of their finance after the existence of online games.	15	38,46	3	7,69
1.b	Students feel that their finance is similar as usual after the	8	20,51	1	2,56

existence of online games.

1.c	Students feel more wasteful of their finance after the existence of online games.	16	41,03	35	89,74
2.a	Students save Rp. 3.000/day in order to play online games.	27	69,23	16	41,03
2.b	Students save more than Rp. 3.000/day in order to play online games.	5	12,82	1	2,56
2.c	Students save more than Rp. 5.000/day to play online games.	7	17,95	22	56,41
3.a	Students spend Rp. 5.000 in order to play online games.	20	51,28	13	33,33
3.b	Students spend Rp. 5.000–Rp. 20.000 in order to play online games.	8	20,51	2	5,13
3.c	Students spend more than Rp. 20.000 in order to play online games.	11	28,21	24	61,54

Based on table 5, it can be investigated that 89.74% of the respondents from the students of SMP N 1 Suhaid who like to play online games feel more wasteful after playing online games compared with the respondents from the students of SMA N 1 Suhaid. There are 56.41% of the respondents from the students of SMP N 1 Suhaid who save their pocket money at Rp. 5,000 / day. The amount is bigger compared to the 69.23% respondents from the students of SMA N 1 Suhaid who only save their pocket money at 3,000 / day. Moreover, there are 61.54% respondents from the students of SMP N 1 Suhaid who spend more than Rp. 20,000 in order to play online games.

The role of school and family is needed to prevent the students' addiction to play online games, because it can result students becoming more wasteful and they are unable to save their pocket money. Somehow, in terms of the students' biology learning achievements at school, it has been decreasing. However, students really like playing games. Therefore, the learning process at school should be designed more interesting so that it can

increase students' interest in the learning process. In addition, the forms of the games can be such as educational games, outbound, practicum, field trip, and other interesting learning activities that need to be developed at SMA N 1 Suhaid and SMP N 1 Suhaid. Furthermore, students are well and more motivated in joining the learning process especially science (biology).

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the data and the result of the analysis, it can be concluded that: 1) There is an influence of online games toward biology learning achievements of the students of SMA N 1 Suhaid in terms of the school environment. 2) There is no influence of online games toward biology learning achievements of the students of SMA N 1 Suhaid in terms of the family environment. 3) There is an influence of online games toward science learning achievements (biology) of the students of SMP N 1 Suhaid in terms of the school environment. 4) There is an influence of online games toward science learning achievements (biology) of the students of SMP N 1 Suhaid in terms of the family environment.

It is expected that the further research can be carried out, which can be done in a longer time span, adding some additional aspects to be analyzed, and increasing the number of samples. As a result, the proof and the percentage of an influence can be more accurate.

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