

Mobile Games and Academic Performance of University Students



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Abstract: *The increasing number of students who are hooked on playing online mobile games (OMG) is alarming. As such, this study was realized to address the problem. This study assessed the gaming profile towards OMG and its relation to the academic performance of the engineering students of Eastern Visayas State University Tanauan Campus (EVSUTC). Specifically, the study investigated the correlation between student's number of hours spent on playing OMG (at school and home), commonly played OMG (at school and home), reasons for playing OMG and attitudes on playing OMG with academic performance utilizing Eta and Pearson r correlation analyses. A random sample of 134 student respondents were selected through purposive sampling of those who are playing OMG using their mobile phones. Descriptive correlational research design was utilized and a validated survey instrument was employed to gather the needed information. The findings revealed that majority of the students played mobile legends and spent mostly 2 hours playing OMG for a reason of boredom. The overall attitudes of the students on playing OMG were interpreted as Less Favorable ($M=2.58$, $SD=1.13$). Out of the independent variables being set in the study, the number of hours spent on playing OMG at home ($r=-0.188$, $p=0.039$) and commonly played OMG at school ($r=0.203$, $p=0.045$) were found significantly correlated with student's academic performance. Hence, the students' time spent on playing OMG at home and the type of games that students played at school have significant bearing to their academic performance. As such, delimiting student's usage of internet can be made to address the problem.*

Keywords: mobile games, university students, academic performance, eta correlation.

I. INTRODUCTION

Technological advancement of internet connectivity in the Philippines plays a vital role in the academic life of university students.

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It allows students to access the knowledge portal where vast information is provided by various information service providers. Companies like Google, Yahoo, LinkedIn, Facebook, ResearchGate, Academia, Scopus, Elsevier, and other information and research portals provide tools for students, academicians, and professionals as a resource for work and education-related activities.

Researchers define the Internet as the globally interconnected network which is used to transmit data over different types of network media. The distance of networks varied over different types of network implemented in the organizations. These networks can either be public or private network that provides access to information on different types of media such as text, graphics, videos, audio, and even computer applications.

The increasing number of university students with mobile and smartphones with technologies like 4G and LTE provides easy access to high-speed internet connectivity. This is supported by the published data by Statista on the rapid increase of mobile phone users in the Philippines from 2014 to 2019. The Digital 2019: Global Digital Report 2019, the total number of internet users around the globe is 4.388 billion and out of it 76 million Filipinos are connected to the internet [1]. The report further revealed that 76million Filipinos are active users of social media and 72million are social media users using mobile. The distribution of users on device usage reveals that 89% are using mobile phones, 65% are using smartphone, 38% are using laptops or desktop computers. On internet usage, a total of 84% internet users are playing mobile games. The average time spent is 10 hours and 2 minutes a day on the internet on any device.

The growing business opportunities for internet service providers allow them to create promos and service subscriptions at low cost to targeted internet users. Companies like PLDT, DiTO, Smart and Globe telecom offers low-cost internet services which allow students to have seamless connectivity on the internet. Students are empowered to have internet browsing ability and reduces the need to buffer data. These technological presence and improvements impact students' attitudes towards use of mobile and smartphones is highly noticeable in the millennial generations. The implementation of internet connectivity in the university changed the dynamics of students' life to a great degree. Experts and researchers cited various usage of the internet in our daily lives. It offers variety of benefits from interacting socially online, use of collaboration tools between professors and students and doing class research [2].



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The Eastern Visayas State University Tanauan Campus (EVSUTC) offers various Wi-Fi Hotspot locations across the campus for student's internet connectivity.

This service is offered by the university to support student's academic performance in doing their academic activities.

Despite the Internet inherent advantages, it poses drawbacks to university students like online mobile games. The easy access to internet connection, from open and public Wi-Fi hotspot in the universities and low costs internet service proves mobility in playing online mobile games and develops possibilities for students of being addicted. It caught massive attention to millennial students, and for this study measuring the student's attitudes towards playing online mobile games. This technology may impact students' academic performance if not properly handled by students in their attitudes towards playing games online using mobile phones.

Online mobile games (OMG) refer to a videogame played through the internet which requires stable high-speed internet connection. The hardware components in smartphones and mobile phones also affect their gaming experience online. Players play in a virtual world and are matched based on their current level where they compete head-to-head in a multiplayer game.

The Flow Model Theory by Csikszentmihalyi (1975) gives emphasis on individuals' attention in accomplishing desired goals on a specific task. A study conducted on sports mentioned this theory that athletes experience flow when goals are clearly set. [3]. They become completely concentrated on the activity, task is being treated as a self-reward on something being achieved. Another study reveals students experience flow state in classroom activities in the field of Computers in Education. [4]. Experts differ in the application of games as support to the teaching-learning process of students [5].

Students experience flow or optimal experience when they are engaged in mobile gaming. They become so involved in a period of time and everything seems to not really matter at all [6]. Students tend to be persuaded in a mental state that they need to master their game strategy. Students who are considered avid players continue to seek challenges to maintain their level or rank in the game as they experience flow state. Further, students' behavior towards playing online mobile games is greatly affected by the level of their personal state of flow experience.

Most of the studies focused on computer online games and its implications towards students' attitudes on gaming addiction but still a limited study in the university to determine the relationship between students playing mobile online games and academic performance. Thus, this study was conducted among Engineering Students of Eastern Visayas State University – Tanauan Campus during the second semester of the school year 2018-2019 to establish the relationship of playing online mobile games and academic performance.

This much attention among university students in playing online mobile games contributes significantly to students' academic performance. Thus, the aim of the study was to investigate the effects and correlation between respondents' attitudes towards playing online mobile games and academic

performance among engineering students in Eastern Visayas State University – Tanauan Campus, Tanauan, Leyte, Philippines.

II. STATEMENT OF PURPOSE

This study investigated the relationship between playing online mobile games and academic performance among engineering students. It aimed a how engineering students assessed their usage level of paying online mobile games which influences their academic performance.

This study aims to determine the effects and correlation of playing online mobile games on academic performance among engineering students.

Further, the study established the following: respondents gaming profile in terms of hours spent playing OMG at school and at home, commonly played OMG at school and at home, reasons for playing OMG, the respondent's attitudes on playing OMG and the level of academic performance of the respondents in the first semester 2018-2019. Moreover, the study determined the respondent's gaming profile and academic performance. Student's attitudes on playing OMG were also correlated to academic performance.

III. METHODOLOGY

A. Research Design

The study utilized a descriptive correlational research design with the use of Pearson r and eta correlation analysis where it measured the correlation of the variables of the study. The correlation of variable on students' gaming profile in terms of the number of hours that students spent on playing OMG at home and school, commonly played OMG at home and school, reasons on playing OMG, and attitudes on playing OMG to academic performance. The design and analysis were deemed to be appropriate to meet the objective of the study. Students' gaming profiles and attitudes towards OMG were set as independent variables in the study whereas students' academic performance as dependent. It pursued to assess the effects and relationship between the gaming profile of the respondents to their academic performance. The independent variables were treated as categorical and scale variables, while the dependent variable was measured as scale. Eta correlation and Pearson r correlation were utilized to carry out the objectives of the study.

B. Respondents of the Study

The respondents of the study were the engineering students of Eastern Visayas State University-Tanauan Campus enrolled in the second semester of the academic year 2018 to 2019. A purposive sampling technique in the selection process of respondents. This sampling technique was used when the target respondents satisfy the unique criteria (students who played online games using mobile phones either male or female) set by the researchers in order to be included in the study. A total of 493 students were enrolled in the engineering department and the researchers surveyed 134 students who satisfy the research criteria.

C. Research Instruments

The researchers made use of a single set of a self-structured survey questionnaire in which the items were closed-ended.

The questionnaire was comprised of the following parts: Part I deals with the profile of the respondents such as age, sex, year level; Part II asked the questions on the respondents' gaming profile in terms of their number of hours spent of playing online mobile games at home and school, online mobile games commonly played at home and school, and reasons for playing online mobile games; and Part III refers to the respondent's attitudes on playing online mobile games. Respondents were asked to rate their attitudes towards online mobile games using a 5 - point Likert scale ranging from strongly disagree (1) to strongly agree (5). The research instrument underwent validation, item analysis, and reliability tests. Part III of the questionnaire was measured its reliability or internal consistency using the Cronbach alpha coefficient and Composite reliability. On the other hand, its validity was checked applying the methods convergent validity. Moreover, the study ensured appropriate considerations were followed before, during and after data collection.

D. Research Procedure

This study was approved by the Research Office and Campus Director Office of Eastern Visayas State University – Tanauan Campus as institutional research activity and got assisted by the Registrar Office in the determination of the number of target respondents that were involved directly in the study. The pilot testing of the questionnaire was conducted to the selected 50 students of Technology Department with similar characteristics of the target respondents. The researchers administered the survey questionnaire to the student respondents by explaining the purpose and importance of the study, its ethical considerations, assuring them that all information was held with confidentiality and to use solely for the purpose of the study. The responses of the respondents were electronically coded and saved for analysis.

E. Statistical Treatment of Data

The data collected were tabulated, analyzed and statistically treated using MS Excel application where responses from questionnaires were encoded. Descriptive statistics such as frequency counts, percentages, weighted mean were used for the analysis. Correlation analysis such as Pearson Product Moment Correlation and eta correlation were used to test the hypothesis of the study. All process of the analysis was done by using IBM SPSS. The level of significance alpha for the study was set at 0.05.

IV. RESULTS AND DISCUSSIONS

The study utilized correlation analyses to answer the objectives of the study. Specifically, the study used the application of Pearson r-correlation and eta correlation analyses. The presentation of the results started with the student respondent's demographic profile, gaming profile, reliability and validity measure of the construct – student's attitudes towards playing online mobile games, mean scores of the items, academic performance, and correlational analysis results.

Respondents Demographic Profile

Table I presents the demographic profile of the respondents in terms of age, sex and year level. Most of the respondents who are hooked on playing online mobile games are in the age bracket between 19 – 22 years old, dominated by males, and majority are first year.

Table I : Respondents Demographic Profile

	f	%
Age		
31 yrs. Old and Above	1	0.7
27 – 30 years Old	1	0.7
23 – 26 years Old	23	17.2
19 – 22 years Old	102	76.12
18 years Old and Below	7	5.2
Sex		
Female	51	61.9
Male	83	38.1
Year Level		
4 th Year	34	25.4
3 rd Year	15	11.2
2 nd Year	13	9.7
1 st Year	72	53.7

Respondents Gaming Profile

Table II presents the total number of hours spent by students on playing online mobile games at home and at school in which students playing time is within the range of less than or equal to 2 hours per day.

Table- II. Number of Hours Spent on Playing Online Mobile Games

	f	%
At School		
6 hours and Above	1	0.7
3 hours to 5 hours	15	11.2
Less than or equal to 2 hours	118	88.1
Total	134	100
At Home		
6 hours and Above	10	7.5
3 hours to 5 hours	30	22.4
Less than or equal to 2 hours	94	70.1
Total	134	100

Table III shows that the most commonly played online mobile game among respondents at school and at home is Mobile Legend (ML).

Table III. Commonly Played Online Mobile Game

	f	%
At School		
Mobile Legend (ML)	99	73.9
Rules of Survivor	1	0.7
Clash of Royale	2	1.5
Player Unknown Battle Grounds (PUBG)	1	0.7
Class of Clans	2	1.5
Minecraft	8	6.0
Garena AOV	1	0.7
NBA Live	5	3.7
Others	15	11.2
Total	134	100
At Home		
Mobile Legend (ML)	95	70.9
Rules of Survivor	1	0.7
Player Unknown Battle Grounds (PUBG)	1	0.7
Class of Clans	2	1.5
Minecraft	7	5.2
NBA Live	5	3.7
Others	23	17.2
Total	134	100

Table IV reveals the reasons for the students playing online mobile games in which most them are due to boredom (35.8%) experienced by students at school and at home and are followed by stress relief (21.6%).

Table IV. Reason for Playing Online Mobile Games

	f	%
Entertainment	23	17.2
Boredom	48	35.8
Stress Relief	29	21.6
Personal Interest	17	12.7
On-trend with Friends	9	6.7
Want to Compete	8	6.0
Total	134	100

Validity and Reliability Measures of the Construct

Table V presents the results for the test of reliability and validity of the construct attitudes towards playing online mobile games. Test of reliability or internal consistency was used to assess the consistency of the items in terms of what the items are supposed to measure [7]. Two measures of reliability were computed namely Cronbach's alpha and composite reliability [8]. A coefficient value of Cronbach's alpha and composite reliability of equal to or greater than 0.70 must be met to obtain high reliability or internal consistency of items being measured [9]. As shown in Table 5, the items' measured of the construct were reliable.

On the other hand, a measure of convergent validity was conducted to verify the validity of the construct. Experts states that convergent validity is used to measure the quality of items of a construct whether the respondents and the designer of the survey instrument have similar understanding of what these items are supposed to measure [10]. The condition must follow was the item loadings of each item measured should be greater than or equal to 0.50 and the corresponding p-values are lower than or equal to 0.05 [11]. In addition, to check further the validity of the construct, the amount of variance present is also calculated through average variance extracted [12]. Researchers further states that the acceptable value of AVE was at 0.50 and above [13]. Hence, the item loadings were higher than 0.50 and the AVE coefficients met the acceptable validity.

Table V. Reliability and Validity Measures

Indicator	Item Loading	AVE	CR	CA
I prefer to play online mobile games rather than go out with classmates to have a group study.	0.738			
I cannot do my assignments in school on time because of playing online mobile games.	0.872			
I cannot attend classes on time because of playing online mobile games.	0.795			
I have a low grade in most of my subjects because of playing online mobile grades.	0.644			

I spent a lot of time playing online mobile games.	0.699	0.531	0.918	0.774
I get a lot of friends because of playing online mobile games.	0.656			
I play online mobile games as my spiritual sustenance in a time that I am lonely.	0.607			
I play online mobile games to relax because of study pressure.	0.694			
I have less sleep because of playing online mobile games.	0.748			
I think playing online mobile games has increased my self-confidence.	0.793			

Notes: All item Loadings are significant at 0.001 (p < 0.001). AVE = average variance extracted; CR = composite reliability; CA = cronbach's alpha

Mean Scores of the Item Measures

Table VI. Respondents Attitude on Playing Online Mobile Game

Indicator	WM	SD	Interpretation
I prefer to play online mobile games rather than go out with classmates to have a group study.	2.38	1.03	Less Favorable
I cannot do my assignments in school on time because of playing online mobile games.	2.38	1.11	Less Favorable
I cannot attend classes on time because of playing online mobile games.	1.88	0.91	Less Favorable
I have a low grade in most of my subjects because of playing online mobile grades.	2.77	1.04	Moderately Favorable
I spent a lot of time playing online mobile games.	2.48	1.14	Less Favorable
I get a lot of friends because of playing online mobile games.	2.84	1.12	Moderately Favorable
I play online mobile games as my spiritual sustenance in a time that I am lonely.	2.96	1.14	Moderately Favorable
I play online mobile games to relax because of study pressure.	2.84	1.07	Moderately Favorable
I have less sleep because of playing online mobile games.	2.71	1.19	Moderately Favorable
I think playing online mobile games has increased my self-confidence.	3.02	1.05	Moderately Favorable
Overall Mean	2.58	1.13	Less Favorable

Notes: 1.00 – 1.81 Unfavorable; 1.81 – 2.60 Less Favorable; 2.61 – 3.40 Moderately Favorable; 3.41 – 4.20 Favorable; 4.21 – 5.00 Highly Favorable.

The statement “I think playing online mobile games has increased my self-confidence” obtained the highest mean score, interpreted as Moderately Favorable (M = 3.02, SD = 1.13).



While the statement “I cannot attend classes on time because of playing online mobile games” got the lowest mean score, interpreted as Less Favorable ($M = 1.88$, $SD = 0.91$). The overall attitudes of the respondents on playing an online mobile game was interpreted as Less Favorable ($M = 2.58$, $SD = 1.13$).

Table VII. Respondents Academic Performance

Rating	Interpretation	f	%
1.0 – 1.4	Excellent	0	0
1.5 – 1.9	Superior	26	19.40
2.0 – 2.4	Very Good	77	57.46
2.5 – 2.9	Good	28	20.90
3.0	Pass	3	2.24
Total		134	100

Notes: Mean – 2.19, SD – 0.33 Very Good

Table VIII. Correlation between Respondents Gaming Profile, Attitudes on Playing Online Mobile Game and Academic Performance

	r – value	p-value	Interpretation
<i>Hours Spent playing Online Mobile Game</i>			
At School	0.206	0.069	Insignificant
At Home	-0.188	0.039	Significant
<i>Commonly Played Online Mobile Game</i>			
At School	0.203	0.045	Significant
At Home	0.222	0.588	Insignificant
Reasons for Playing Online Mobile Game	0.155	0.681	Insignificant
Attitudes on Playing Online Mobile Game	-0.008	0.301	Insignificant

Notes: Academic Performance – dependent Variable; Significant at $p \leq 0.05$

The result revealed that the number of hours consumed by the students on playing online mobile games at home was found significantly correlated with student’s academic performance ($r = -0.188$, $p = 0.039$). However, the direction of the relationship was inverse which shown an increasing number of hours spent, it corresponds to the decrease in student’s academic performance.

Also, the kind of online mobile games played by the students at school obtained a significant and direct correlation with academic performance ($r = 0.203$, $p = 0.045$). On the other hand, the number of hours spent at school, commonly played online mobile games at home, reasons for playing, and attitudes on playing an online mobile game show an inverse correlation with academic performance. The findings were supported by several studies [14]-[18].

The Internet has different negative and positive effects on its users [19] [20]. Another study suggests a lot of educational benefits that can be obtained in using internet such as better access to information and better student-teacher communication [21].

Outside of academic setting, most of the hours of the students were spent on playing online mobile games that resulted to absent of classes, tardiness at school, failing grades on a specific course and missing a community social life involvement [19] [20] [22]. Similarly, online gaming consumed a lot of times to the extent that some of the gamers put so much time and effort which affects their sleep, hygiene,

health and wellness, exercise, school, work and family relationships [23] [24] [25] [26] [27]. Also, it affects the learning interest of the students that tend to drop out in school [28].

Researchers and experts stated that one of the most addictive happened in using the internet was online gaming, also consider as one subtype of internet and computer addiction [17] [29] [30]. According to various researchers there are more males as compared to females are delinquent in using internet [19] [31]. Online games are most popular among males than females [32] – [34].

Based on some research conducted, there was a significant relationship existed between the amount of time spent using the internet and higher ratings of distractibility to academic task by young gamers [20]. A significant relationship was found out between the amount of time spent on using internet and poor performance at school [15]. The same result revealed that the relationship between online gaming engagement and academic performance among university students shows a lowered school grades of the addicted players than the non-addicted peers [16] [18].

V. CONCLUSIONS AND RECOMMENDATION

Based on the revealed study findings, it is concluded that playing online mobile games has significant bearing with academic performance of university students. The outcome of the study accentuates the importance of the factor’s students’ amount of time spent on playing online mobile games at home and the commonly played online mobile game at school. The poor performance of the students in their academics was linked to playing online mobile games.

The performance of the students may improve and strengthen by giving serious intervention that will manage the students access on the internet. The university may limit or establish a policy about the student’s usage and access of the internet to address the problem. The inclusion of students in the health and wellness program for employees in EVSUTC will also prevent this problem among students.

Informing the guardian of the students about the effects of internet usage specifically on playing online mobile games in order for the students to have proper guidance. For future research that may be conducted similar to the study, an increase number of respondents is recommended and including other factors that are not mentioned in the study to confirm and verify herein results. Further, researchers recommend to conduct study on online mobile games addiction on academic performance and case study on online mobile games on economic performance of business operators.

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