

Strategy Multiplayer Online Battle Arena Game Skills and Learning Behavior: A Correlational Study Among Gamers in Panabo City

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Abstract:

E-sports has now become one of the most popular leisure activities worldwide, especially Multiplayer Online Battle Arena (MOBA). It is a form of a sport competition that can be organized and played individually or by team using video games. However, despite its acclaimed positive results and outcomes, several studies reveal that video games can become problematic and may result to negative outcomes and sometimes, functional disabilities to gamers. This study focuses on Strategy Multiplayer Online Battle Arena (MOBA) skills and understanding and explaining of how MOBA are currently integrated in learning behaviors. This study sought to investigate the factors and concepts of the Strategy MOBA skills as it relates to learning behavior. In the results, the mean of the level of Strategy MOBA game skills of the respondents is 2.767 with a standard deviation of 0.966 which shows that the level of Strategy MOBA game skills of the respondents are moderate while the mean of the level of learning behavior of the respondents is 2.811 with a standard deviation of 0.921. This shows that the level of learning behavior of the respondents is moderate. It has also found out that people who played MOBA games has been found to be slightly related to personality traits such as low self-esteem, low self-efficacy, and low self-confidence.

Keywords —: Correlational research, Strategy MOBA game skills, learning behavior, Panabo City

I. INTRODUCTION

The playing of e-sports has now become one of the most popular leisure activities worldwide, especially Multiplayer online battle arena (MOBA). Esports, sometimes termed as electronic sports, e-sports, or eSports, is a new form of sports competition which uses video games to test user's strategic ability. Esports often takes the form of organized, multiplayer video game competitions, particularly between professional players, individually or as teams. However, there are several literatures suggested that video game involvement can become problematic and is sometimes associated with functional deficiency and negative results despite its valuable outcomes [1]. Internet gaming disorder (IGD) was added in Section III of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders as a condition warranting further study in May 2013 [2]. Because of this, Internet gaming was formally recognised as a mental health disorder, albeit tentatively, in psychiatric nomenclature. A growing amount of the empirical bases available to support the existence and exact nature of

video game addictions [3]. This concern in exploring the role of self-control related processes in the onset of problematic video gaming behaviours was mainly driven by the current view that these "disorders" might adequately be conceptualized as addictive behaviours centrally characterized by uncontrolled use [4].

According to [5], Gaming Disorder is characterized by a pattern of online and/or offline gaming behaviours that includes loss of control and interest in daily activities. Additionally, these symptoms must occur within a 12-month timeframe and the behaviour pattern must be of sufficient severity and lead to significant impairments (i.e., personal, family, social, educational, occupational) across important areas of life ('negative consequences'). Furthermore, despite of its popularity, several researches revealed its adverse effects to health and other aspects [6]. Moreover, studies are lacking that investigate self-control-related processes in MOBA gamers, yet the structural characteristics of this type of game might be susceptible to promote heightened disordered involvement in comparison to other more studied types of video games. However, Games can improve

human mental processing [7] and can improve skills of individuals in different facets such as psychological, social, and cultural [8].

MOBA Games

Multiplayer Online Battle Arena (MOBA) is a type of game in which each participant controls a single creature with a set of unique abilities that improve over the course of a game and which contribute to the team's whole strategy. The ultimate goal is for each team to destroy their opponents' main structure, located at the opposite corner of the battlefield.

Study has already discovered that the gameplay in MOBAs is highly dynamic and complex and that players experience high levels of enthusiasm and competition while playing compared to other games. Exploring for potential reasons for the escalation in negative circumstances in MOBAs, one significant reason might be the practical impossibility of achieving the game [9].

According to [10], gaming had been part of humanity. Also, [11], [12] mentioned that gamers who put a large amount of time into video games can experience symptoms such as mood modification, lenience, and behavioural salience, which are typically associated with substance-related addictions.

According to [13], the excessive use of the internet gained attention at the dawn of the 21st century in the face of Internet Addiction Disorder (IAD).

Learning Behavior

Learning Behaviours are learned actions that enable students to access learning and interact with others productively in the community. These behaviours are developed in and outside of school.

The learning behaviours of the gamer typically focus on the context of schools, social media, and video games. Specifically, describing behavior in the case of MOBA games, the related disciplines of bullying in the real world and cyberbullying (CB). The theory of bullying has along history in psychological research and typically takes place in the contexts of schools [14].

As being observed, through playing Multiplayer Online Battle Arena (MOBA), there are possible increases of Cyberbullying (CB). CB can be recognized as an aggressive and recurring behavior that is displayed by a group or a person using automated methods of contact over a longer period [15].

This study focuses on Strategy Multiplayer Online Battle Arena (MOBA) skills, understanding and explaining of how MOBA are currently integrating learning behaviours. In this case, this study sought to investigate the factors and concepts of the Strategy MOBA skills as it relates to learning behaviours (personal, social and educational).

Theoretical Framework

The Social Cognitive Theory (SCT) is a social learning theory that seeks to predict, understand, and change human behavior [16]. According to SCT, behavioural change is made possible by a particular sense of control. If persons believe that they can take action to solve a dilemma instrumentally, they have the will to do so and has the commitment to do it. Within the SCT, human behavior is thought to be determined by a mixture of personal, environmental, and behavioural factors. The SCT theory captures the interplay of personal determinants such as attitudes and motivation.

Effects of MOBA Games: Learning Behaviours

Players that had been involved too much in online games such as Multiplayer Online Battle Arena (MOBA) typically encounter Cyberbullying (CB) which includes acts like using sexual or racial remarks, harassing or threatening others. Additionally, there is evidence that CB is connected to lower self-esteem, increased suicidal. According to [17], negative or toxic behavior occurs when a participant comes across an adverse event during a game, which generates anger and frustration, leading to a harmful and toxic type of communication using pings and text chat.

Effects of MOBA Games: factual knowledge

Digital game-based education can be applied as an additional option to classroom teaching. The reason for digital game-based learning is to address new and ICT based instructions. By means of educational games learners should be able to apply factual knowledge, and gain experiences in the virtual that can shape their behavioural patterns. In schools, too, computer games have been effectively used to teach algebra and geometry [18], and computer programming [19].

Conceptual Framework

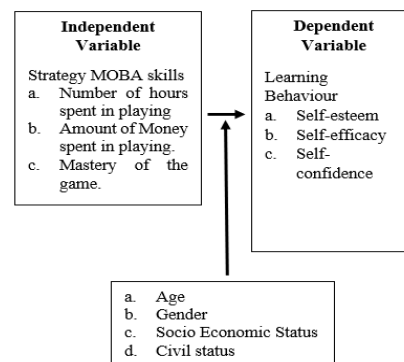


Fig. 1 Conceptual Framework

Statement of the Problem

This study determines the relationship between strategy MOBA skills and learning behaviours among Panabo gamers. Specifically, this research seeks to answer the following questions:

RQ1. What is the demographic profile of the participants of the study in terms of:

- a. Age
- b. Gender
- c. Socio Economic Status
- d. Civil Status

RQ2. What is the level of the Strategy MOBA skills in terms of:

- a. Number of hours spent in playing
- b. Money spent in playing
- c. Mastery of the game

RQ3. What is the level of learning behaviour in terms of:

- a. Self-esteem.
- b. Self-efficacy
- c. Self-confidence

RQ4. Is there a significant difference in the level of Strategy MOBA skills according to:

- a. Age
- b. Gender
- c. Socio Economic Status.
- d. Civil Status

RQ5. Is there a significant difference in the level of learning behavior according to:

- a. Age
- b. Gender
- c. Socio Economic Status.
- d. Civil Status

RQ6. Is there a significant difference in the level of Strategy MOBA skills and in the level of learning behaviour?

Null Hypothesis

HO1. There is no significant difference in the level of Strategy MOBA skills according to:

- a. Age
- b. Gender
- c. Socio Economic Status
- d. Civil Status

HO2: There is no significant difference in the level of learning behavior according to:

- a. Age
- b. Gender
- c. Socio Economic Status
- d. Civil Status

HO3: There is no a significant difference in the level of Strategy in MOBA skills and in the level of learning behaviour.

II. METHODOLOGY

Research Design

The researchers used a descriptive survey research design that examined the relationship between the Strategy MOBA skills and learning behaviour.

Research design is the framework of study methods and techniques chosen by a researcher. The design allows researchers to hone on research methods that are suitable for the subject matter and set up their studies up for success. Further, Descriptive research aims to describe a population, situation, or phenomenon accurately and systematically. It can answer what, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to explore one or more variables [23].

Locale of the Study

The study was conducted at Barangay New Pandan, Panabo City, Davao Del Norte, officially the city of Panabo, is a 3rd class city in the province of Davao Del Norte. The Barangay New Pandan population as determined by the 2015 Census was 6,636. This represented 3.59% of the total population of Panabo.

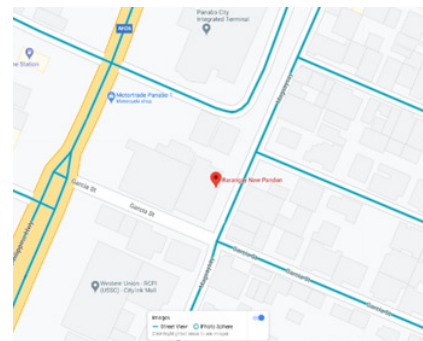


Fig. 2 New Pandan, Panabo City

Respondents of the Study

The study selected 60 participants that are residents in Barangay New Pandan, Panabo City as respondents of the research. All participants of the study are chosen using a purposive sampling strategy regardless of their gender and age, which ranges from 18 and above.

Sampling Technique

The respondents of the study are selected using a purposive sampling strategy in which it is used to select MOBA Gamer in Barangay New Pandan Panabo City. In this study, the researcher which was chosen as the sample respondent of more than fifty (50) MOBA gamers. It is already fulfilling the standard minimum acceptable sample size for the correlational study. The minimum acceptable sample size for the correlational study is not less than 30.

According to [24] a purposive sample, also referred to as a judgmental or expert sample, is a type of nonprobability sample. The main purpose of a purposive sample is to produce a sample that can be logically presumed to be representative of the population. This is often accomplished by applying skilled knowledge of the population to select in a nonrandom manner a sample of elements that represents a cross-section of the population.

Statistical Treatment

The statistical tools to be utilized in the study are the following:

- Weighted Mean. This will be used to determine the levels of the Strategy MOBA skills and the levels of learning behavior.
- T-test. It is the analysis of two populations means through the use of statistical analysis. This will be utilized in determining the significant difference of the levels of Strategy MOBA skills and the levels of learning behavior when classified according to their age, gender, socio economic status and civil status. This will also use to determining if strategy MOBA skills significantly influence learning behaviours.
- ANOVA. Way to help the study to figure out if you need to reject the null hypothesis or accept the alternate hypothesis. This will be also use in determining the significant difference of the levels of Strategy MOBA skills and the levels learning behavior when classified according to their age, gender, socio economic status and civil status.
- Pearson r. –it is known as the best method of quantifying the relationship between variables. This will be used in knowing the degree of the relationship between the Strategy MOBA skills and learning behaviour.

Data Collection Procedure

The researchers used the materials and instruments for gathering data were the online survey questionnaires and the collaboration of Google form. Online surveys have significant advantages over other designs. An online survey is the

logical collection of data from the target audience by giving invitations to participate for the conduct of the study [25].

In conducting the study, the researcher asked permission to the target participant of Barangay New Pandan, Panabo City and explained to them the aims of the research. Also, the researcher informed the target citizens to the possible consequences giving with the full knowledge of the possible risks and benefits to be used in this research, this was done through giving informed consent. The informed consent catered the protection of the respondents to their confidentiality by assigning codenames to each. Upon the approval from the target participant to do the research and sign the informed consent, the researcher administered the questionnaires by sending a link of the survey questionnaire in google form to the participants through Facebook. Further, the data will be collected answered online, after such the data will be tallied and subjected to statistical interpretation using appropriate statistical tools.

Research Instrument

The two most used research instruments in quantitative research studies include questionnaire and tests [26]. In this case, the researcher used questionnaire in the form of online survey and test material (Google form) to collect, measure and analyse data from the participants of the study. Online surveys have significant advantages over other formats and survey functions is growing in popularity [27]. The researcher designed questionnaire that consist of a set of question to obtain data from the respondent. In constructing research questionnaire, the researcher includes:

- Validity and reliability of instruments: Validity is the degree to which an instrument measure what it is purports to measure. The accuracy and consistency of survey/questionnaire forms a significant aspect of research methodology which are known as validity and reliability [28].
- Deciding what information should be sought: The researcher listing specific objectives to be achieved by the questionnaire.
- Questionnaire Items: The researcher assures that each item on the questionnaire related and developed to measure a specific aspect of objectives of the study.

Ethical Consideration

The researcher adheres to ethical norms in research through giving an inform consent. Rules promote the aims of research, such as knowledge and truth. Research often involves a great deal of collaboration and expertise among many different people in different disciplines and organizations, ethical standards promote the values that are important to collaborative work, such as trust, accountability, mutual

respect, and fairness [29]. Ethical considerations is one of the most important parts of the research and dissertations may become a failure if this part is missing [30]. The following represent the most important principles related to ethical consideration that a researcher disserted:

Respect for the dignity and privacy of research participants should be prioritised. This is to let all participants became aware of the purpose and aims of the research that they are going to involve. Participants has the freedom to reject their participation at any time without negatively impacting on their involvement in future services or the current study.

Full permission should be obtained from the participants prior to the study. The researcher ensures that the person participating in the study is fully informed about the objectives of the research. Written consent be provided for them to get their approval. After such, they have actively participated in the given questionnaires. In addition, the participant can make an informed decision as to whether they will participate in the evaluation or not.

The safety of the privacy of research participants must be ensured. Any identifying information is not made open or accessed by anyone but the researcher. The researcher ensures such identifying information excluded from any reports or published documents. Also, researcher contemplate on how reports are organized to ensure that there is no opportunity for people to be identified even though person's name are not used.

Research participants should not be subjected to harm. Damage can be both psychological or physical and therefore can be in the form of stress, pain, anxiety, diminishing self-esteem or an invasion of privacy. The researcher ensures that the evaluation process does not in any way harm (unintended or otherwise) participants.

III. RESULTS AND DISCUSSIONS

This section is the analysis and interpretation of the data gathered based on the response of the participants. The presentation of data are arranged in the following sequence: the demographic profile, the level of Strategy MOBA skills in terms of number of hours spent in playing, Money spent in playing, Mastery of the game, the level of learning behavior in terms of self-esteem, self-efficacy, self-confidence, test of significant difference in the level of strategy MOBA skills according to age, gender, socio economic status, civil status, test of significant difference in the level of learning behavior according to age, gender, socio economic status, civil status, test of significant difference in the level of Strategy MOBA skills and in the level of learning behaviour.

Table I presents the demographic characteristics of respondents. In this study, there were a total of 60 participants: 45 males and 15 females. The highest percentage of the respondents belonged to 18 – 25 years old and most of the gamers is single and belong to the middle class.

TABLE I
 DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

Demographic Characteristics	Frequency	Percentage	
Age	18 – 25	45	75.00
	26 – 35	15	25.00
	36 above	0	0.00
Gender	Male	45	75.00
	Female	15	25.00
Social Economic Status	Lower Class	17	28.333
	Middle Class	43	71.667
	Upper Class	0	0.00
Civil Status	Married	6	10.00
	Single	54	90.00
	Widowed	0	0.00
	Divorced	0	0.00

Table II shows that the level of strategy in MOBA game skills of the respondents. The mean of the level of number of hours spent in playing is 2.900 with a standard deviation of 0.775. This reveals that the number of hours spent of the respondents in playing is moderate. Also, the mean of the level of money spent in playing is 2.667 with a standard deviation of 0.933. This indicates that the money spent of the respondents in playing is moderate. In addition, the mean of the level of mastery of the respondents is 2.733 with a standard deviation 1.191. This illustrates that the mastery of the game of the respondents is moderate. Furthermore, the mean of the level of strategy in MOBA game skills of the respondents is 2.767 with a standard deviation of 0.966. This confirms that the level of strategy in MOBA game skills of the respondents is moderate.

TABLE II
 STATISTICAL RESULTS ON THE LEVEL OF STRATEGY MOBA GAME SKILLS

	Hours	Money	Mastery	MOBA Skills
Valid	60	60	60	60
Missing	0	0	0	0
Mean	2.900	2.667	2.733	2.767
Std. Deviation	0.775	0.933	1.191	0.966

Learning behavior pertains on the actions that enables individuals to interact with other in the community. In terms of the respondent's learning behavior about self-esteem, self-efficacy, and self-confidence, statistics show that the level of learning behavior of the gamers are moderately affected with these three aspects with a computed means of 2.733, 2.567, and 3.133, respectively, as shown in Table III.

TABLE III
STATISTICAL RESULTS ON THE LEVEL OF LEARNING BEHAVIOR OF THE GAMERS IN NEW PANDAN, PANABO CITY

	Hours	Money	Mastery	MOBA Skills
Valid	60	60	60	60
Missing	0	0	0	0
Mean	2.733	2.567	3.133	2.811
Std. Deviation	0.936	0.963	0.892	0.921

As shown in Table IV, answers on HO₁ are revealed. The results expose that there is a significant difference in the level of strategy MOBA game skills when grouped according to age with a p-value of 0.01 rejecting the null hypothesis and accepting the alternate null hypothesis. This means that the level of strategy in MOBA game skills vary in age range.

When grouped in gender, results also show that it is also a factor in formulating strategies in MOBA games as perceived in the results. Since the p-value is 0.001 which is less than .005, there is a significant difference in the game skills of the respondents in terms of gender.

Meanwhile, the p-value of the socio-economic status variable is 0.083, the null hypothesis is not rejected. This means that the socio-economic status of the gamers does not intervene with their strategy building when playing MOBA games.

Furthermore, the level of strategy of the gamers when grouped in civil status differs. Since the p-value is 0.043, the null hypothesis is rejected. Hence, civil status is a factor on the respondent's level of strategy in playing MOBA games.

TABLE IV
SUMMARIZED STATISTICAL RESULTS ON THE LEVEL OF STRATEGY IN MOBA GAME SKILLS GROUPED TO AGE, GENDER, SOCIO- ECONOMIC AND CIVIL STATUS

	Mean Square	df	F	p-value
Age	30.730	1	114.370	0.001
Gender	16.274	1	50.004	0.001
Socio-economic Status	3.944	1	3.694	0.083
Civil Status	5.331	1	8.142	0.043

The results of the survey, as shown in Table V, reveal that the gamer's age has an impact on their learning behavior towards playing MOBA games. With a p-value of 0.265, the null hypothesis is rejected, and the alternative hypothesis is accepted.

Table V also explains the result for HO₂. It shows that there is a significant difference in the level of learning behavior when group according to gender with a p-value of 0.018.

Hence, gender is also a factor in the respondent's learning behavior towards playing MOBA games.

Moreover, the socio-economic status of the respondents has a significant difference in the level of their learning behavior. With a p-value of 0.178, it indicates strong evidence against the null hypothesis. Thus, it is rejected.

On the other hand, the civil status with a p-value of 0.609 which is greater than 0.05, it confirms that there is no significant difference in the learning behavior of the gamers when grouped to civil status.

TABLE V
SUMMARIZED STATISTICAL RESULTS ON THE GAMER'S LEARNING BEHAVIOR WHEN GROUPED TO AGE, GENDER, SOCIO-ECONOMIC AND CIVIL STATUS

	Mean Square	df	F	p-value
Age	6.496	1	9.439	0.265
Gender	4.57	1	5.899	0.018
Socio-economic Status	7.532	1	12.286	0.178
Civil Status	1.207	1	1.369	0.609

Table VI also uncovers the correlation between the level of Strategy in MOBA skills and in the level of learning behaviour.

TABLE VI
CORRELATION RESULTS BETWEEN THE RELATIONSHIP OF STRATEGY IN MOBA GAME SKILLS AND LEARNING BEHAVIOR

	Pearson's r	p
Strategy MOBA game – Learning Behavior	0.544	0.001

The Pearson's r-value is 0.544 which means that there is a positive relationship in the strategy MOBA game skills and learning behavior.

Since p-value is 0.001 < 0.05, then the null hypothesis is rejected, and the alternate null hypothesis is accepted. There is significant relationship in the strategy MOBA game skills and Learning behavior. According to the study there are some evidence that the addictive online game use has been revealed to be related to the character traits such as low self-esteem [20] and low self-efficacy [21]. Moreover, the overuse of online game may also lead to psychological problem and it can affect the practice of real-life behavior [22].

IV. CONCLUSION AND RECOMMENDATIONS

Conclusion

The study sought to investigate the factors and concepts of the Strategy MOBA skills as it relates to learning behaviours. This study hypothesized as follows:

In research question number 1 is about the demographic profile of the respondents of the study. There was a total of 60 participants: 45 males and 15 females. The highest percentage of the respondents are belonged to 18 – 25 years old and most of the gamers is single and belong to the middle class. For the research question number 2, it is about the level of strategy MOBA game skills in terms number of hours spent in playing, money spent in playing, mastery of the game in which, the overall result is moderate level of strategy MOBA game skills means that is slight effective. Furthermore, in research question number 3, it is about the level of learning behavior towards MOBA games in terms of self-esteem, self-efficacy, self-confidence. The result shows that the level of learning behavior is moderate proving that it is not hindrance in playing MOBA games. In research question number 4 and 5 is about finding the significance of strategy MOBA game skills and learning behavior in terms of moderating variable (age, gender, socio-economic status, civil status). The results revealed that the moderating variables affect the two variables but the moderating variables socio-economic status does not affect the learning behavior towards playing MOBA game.

For the research question number 6, it is about determining the relationship between strategy MOBA games and learning behavior. As the result presented, this study proved that there is a significant difference between the levels of two variables. The results shows that the level of Strategy MOBA game skills and learning behavior of gamers in Barangay new Pandan, Panabo City is moderate. The result revealed that people who played MOBA games has been found to be slightly related to personality traits such as low self-esteem, low self- efficacy, and low self-confidence.

Recommendation

Several MOBA games nowadays are rapidly increasing and people are eager to complete their goals in playing. Based on the findings generated from the respondents through survey questionnaires, the researchers recommend the following:

First, gamers are recommended to lessen their playing time since it affects the learning behavior and to minimize the level of hours in playing MOBA games.

Next, parents should be effective in implementing rules to avoid negative effects of online games such as addiction and this addiction may lead to some personality traits such as low self-esteem, self-efficacy, and self-confidence.

Lastly, for future researchers, another study that focuses on the critical thinking skills of gamers is highly recommended to

improve self-awareness of the gamers. This is to further examine the extent of a gamers capability of thinking critically.

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