

Screen Addiction: Analysis of Video Game User Motivation and Interface Preference

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Abstract. According to some, video games are an excellent source of entertainment; and according to some, video games are better than watching television due to the interactivity when playing them. Video games are also defined as a form of digital entertainment that engages its audience through gameplay. Today's people are captivated by computers and video games, especially mobile games. Some studies have recognized that they have been helpful in various spheres of life, and the reach is undeniable whereby the hours spent on video games may result in video game addiction. This study attempts to define the factor of video game addiction through an analysis questionnaire focusing on two variables: user motivation and user preference. A questionnaire was distributed for the analysis to 577 respondents from higher education universities. This study also, directly and indirectly, contributes to the body of knowledge in gamification and contribution to create a model or framework for game-based learning.

Keywords: digital technology, video game, addiction, user motivation, user interface

1 Introduction

Digital technology has influenced our lifestyle in various ways, especially in the current digital revolution, or the Fourth Industrial Revolution [1]. The public understands the need to be updated with the technology to keep life more on track, especially in ICT. The improvement of digital technology year by year has also rapidly affected people's lives, whereby 32.7% of the world population has access to the Internet [2]. The Internet is a must whereby it uses as a medium in interacting with others. Most students are addicted to their technological devices, and forcibly separated from technology for those who experienced withdrawal from addictive substances as shown by a research in December 2013 by the University of Maryland [3]. The use of digital technology has stimulated technical literacy, social interaction, and cultivated excitement among higher education students[4]. Research states that young people bring their most used devices, such as tablets, smartphones, or laptops, to bed to talk to friends online, watch a film, and play a game[5].

Video games are defined as a form of digital entertainment, whereby they engage the audience through gameplay. Video games show that kids play video games and get more experiential and powerful forms of learning than in the classroom[6]. The research states that in the recent digital and interconnected world, from an early age, people worldwide mostly play video games as a part of their everyday life[7]. Nowadays, people spend about 40 (not attributed to work-related time) hours per week on the Internet. In contrast, video game players who play two to seven hours per day become less aware of what is happening around them, even when they are not playing[8]. Playing a video game can be attributed to an opposing side of emotion: sadness, depression, violent behavior[9], and an increased risk of suicide[10],[11]. In other countries such as South Korea, the younger generation's attachment toward video games has been classifying online games as potentially creating an antisocial addiction[12]. There is also a benefit from playing video games to one's psychological well-being; it can positively affect prosocial behavior during a social activity, which is defined as a proxy for social well-being[13].

Addiction to technology has increased the rate of road accidents, primarily when people use their devices while walking and driving[14]. Another study reported that young drivers with mobile phone addiction were prominently featured in automobile accidents; this study supports community concerns about mobile phone use[15]. Certain technologies like online games and applications on a smartphone are so addictive that they give "psychological highs" to those who use them [16]. Technology is addictive and has many adverse outcomes. It has also been stated that video games are a good user motivation.

User motivation, as we know, can cause a person to experience self-improvement in several ways. According to [17], pressure toward a specific instrumental outcome can make a person engage with activity, primarily in motivational activities. The difference is, the activities can be intrinsically motivated, which is inherently enjoyable and satisfying. From the perspective of [18], identification for the motivation factor that entices people to play the game is an achievement for satisfaction in upgrading the skill in the game, socializing by creating long-term relationships with the team join, and last but not least, an immersion that involves the player in discovering the hidden object in the game, role-playing and customizing the virtual character inside the video game as their selection.

This study aims to analyze the association with the students who spent time playing video games and various attributes for this research. A questionnaire has been distributed to 577 respondents in higher education institutions aged 19 to 24-years-old from Universiti Teknologi MARA Kedah Branch, contributing to creating the game-based learning model or framework for higher education.

2 Literature Review

2.1 Digital Technology

As stated by [19], digital technologies and learning environments have become situations that are transforming the "time for learning" to learning "all the time". It has grown toward the need for technology. As we know, digital technologies do not just refer to hardware, but also software resources that can produce, share information, and store the information in electronic ways and knowledge in a digital environment[20]. Connecting with digital technologies is a must for

people in the era of Industrial Revolution 5.0. Everything can be reached using the Internet in a minute; in some research [21],[22],[23], they found that digital technology is a way to promote professional, social, and personal experiences. Ease in accessing the information rather than using the traditional method. People have been adopting digital technologies in their lifestyle, which is to follow the trend. The growth of a new generation of digital technologies has transformed the way people engage in activities, especially in academic research and lifestyle. In the digital and interconnected world, a part of everyday life is playing video games, and this starts from an early age [24].

2.2 Video Game

As digital technologies have been growing in this era, video games also motivate in terms of creating a remarkable amount of goal-directed behavior to explore, collaborate, create leisure opportunities, and compete with others in the digital world. It was stated by [25] that the increase in the revenue of the video game industry was more than the film industry's, and that the number of people playing games has never been higher compared with the year of 2020[26]. Video games are an entertainment medium that people can spend much time engaging with "because they are fun to play, rather than doing nothing." Video games have several activities that make people engaged with external rewards such as getting beneficial money and collaborative networking from the video games. Some of the video games can cause people to receive a negative external reward, in which they may need to pay a tangible cost such as subscription fees and item purchases; and the most affected aspect would be their social life, in which they would be more lost in their world, making their parents angry because too much time is spent playing the game, rather than helping with house chores. As video games have been interpreted as an adverse effect, especially in debating a gaming addiction disorder, it also has a positive impact. In the research by [27], playing one of the video game genres, such as eSports, can build up skills for problem-solving, as the gameplay also improves the strategic thinking of the player, developing cognitive and kinesthetic skills.

2.3 Addiction

In multiple analyses, a significant portion of the relationship between video games and addiction has similarities with the symptoms of depression, anxiety, and stress. A research by [27], which is regarding the gaming disorder, has many features related to addictions, especially substances and gambling disorder. Video games have been associated with video game addiction's negative consequences, especially mental disorder as well as physical and social decline[28]. It is significant to address its relationship with the symptoms of depression and anxiety as the effects of playing a video game. Some research identified social phobia and school grades as negative consequences tracked from the Singaporean youth in a rare longitudinal study that has worsened after developing the condition in playing video games[29]. The excessive and compulsive use of computer and video games can result in emotional and social problems as the gamer cannot control the excessive feeling[30], especially when they get a reward for each completed level in a video game. For example, the video game that they play has given money as a reward; hence, it can be one reason that makes the player addicted to playing the video game often. Instead of addiction, video games can also give motivational factors such as social integration and strengthening friendship networks while playing them[31],[32].

2.4 User Motivation

Playing video games can produce two consequences, either positive or negative, which can make the player addicted or ameliorate negative feelings such as good user motivation. Focusing on an educational video game is one of the parts that has motivation in playing because some of it is related to the grading section in a specific subject. As for the personal satisfaction research by [33], people who have intrinsic motivation in playing video games experience pleasure when they lose themselves in the addiction to video games, and it also develops their skills while playing video games with solid emotions[34],[35]. Followed by the high level of curiosity or interest[36],[33], but it was not developed from external pressure or particular rewards from playing video games.

3 Method

Gaining consent to participate in design or research is merely an initial step. To better include the undergraduate student as the participant in this research for the user motivation and interface preference, it is essential to have valid and adjusted research methods as well as tools to collect data. The research's primary tool is based on quantitative data collection, computer-based questionnaire measurement, and data collected using the Google Forms platform. The questionnaire is the screening test questions which participants have to answer accordingly. The purpose of using an online questionnaire is to reach the Internet-based population, as it can be difficult to reach participants nowadays [37],[38] and it can enable communication with people who are reluctant to meet face-to-face [37]. The questionnaire was used to generate data about participants' demographic, such as age and gender, and their perception of the video game, user motivation to play the video game, and interface evaluation as preference.

3.1 Respondents and survey

The data used for the analysis presented in this study uses Google Forms as a platform for students to answer the questionnaire. A total of 577 respondents completed the questionnaire voluntarily and anonymously. Among the respondents, 30.2% were male and 69.8% are female. The respondents are undergraduate students from Universiti Teknologi MARA Kedah Branch aged 19 to 24-years-old. The students were from six faculties: Faculty of Art and Design; Faculty of Accountancy; Faculty of Administrative Science and Policy Studies; Faculty of Business Management; Faculty of Computer and Mathematical Sciences; and last but not least, Faculty of Information Management. The variable is shown in Table 1. Most of the students were from the diploma programme with (N:410) 71.1%, and (N:167) 28.9% were bachelor students. The respondents were approached using the WhatsApp application by the lecturers. The respondents were informed that the data they provided would be confidential and only used for research purposes, and it would not be transferred to third parties.

Table 1. Demographic Background.

Variable	N	%
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Gender		
Female	403	69.8
Male	174	30.2
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Age		
19-years-old	141	24.4
20-years-old	226	39.2
21-years-old	55	9.5
22-years-old	76	13.2
23-years-old	56	9.7
24-years-old	23	4
<hr/>		
Faculty		
Faculty of Art and Design	68	11.8
Faculty of Accountancy	82	14.2
Faculty of Administrative Science and Policy Studies	113	19.6
Faculty of Business Management	267	46.3
Faculty of Computer and Mathematical Sciences	34	5.9
Faculty of Information Management	13	2.3
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Semester		
1	74	12.8
2	87	15.1
3	48	8.3
4	209	36.2
5	125	21.7
6 and above	34	5.9
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4 Findings

In this study, the students' perceptions reveal how they view the video game as user motivation and the interface preference for the diversity of experiences. Video games provided the means to move beyond user experience and preference that contributed to the finding in this study.

4.1 Playing video game

The respondents were asked how much time they devoted to playing video games, whereby the majority answered less than three hours per day with a 60.5% result. Most of the respondents, with 77.4%, like to play video games. The results shown in Table 2 below show the gadgets that the respondents have used.

Table 2. Gadget used most often.

Gadget	N	%
Smart Phone	492	86.2
Tablet(iPad/Tab)	44	7.7
Video Game Console	35	6.1

Based on the response, most students (N:446) 77.3%, appeared to like playing video games compared with (N:131) 22.7% who dislike playing video games. Of this, 61.2% regularly play for three or more hours in one day, and 8% of the respondents spend almost 12 hours, half of the overall 24 hours daily. In Table 3 below, respondents acquire some behavior from playing video games whereby most of the respondents choose to download games compared with borrowing games.

Table 3. Prefer method of acquire video games

Acquire	N	%
Download games	525	91
Buy game from shop	33	5.7
Buy from online store	14	2.4
Borrow the games	4	0.7

4.2 Video Game Genre

The video games were differentiated according to their game genres, such as action, adventure, fighting, platform, racing, role-playing, shooter, simulation, sports, and strategy [39]. Based on the responses, using the Likert scale, most respondents like to play action games, resulting in

58.1%. The second-highest game genre played is educational game with 33.4%, which is game-based learning whereby the lecturer uses it as an alternative method in teaching a subject in the classroom as seen in Figure 1 below.

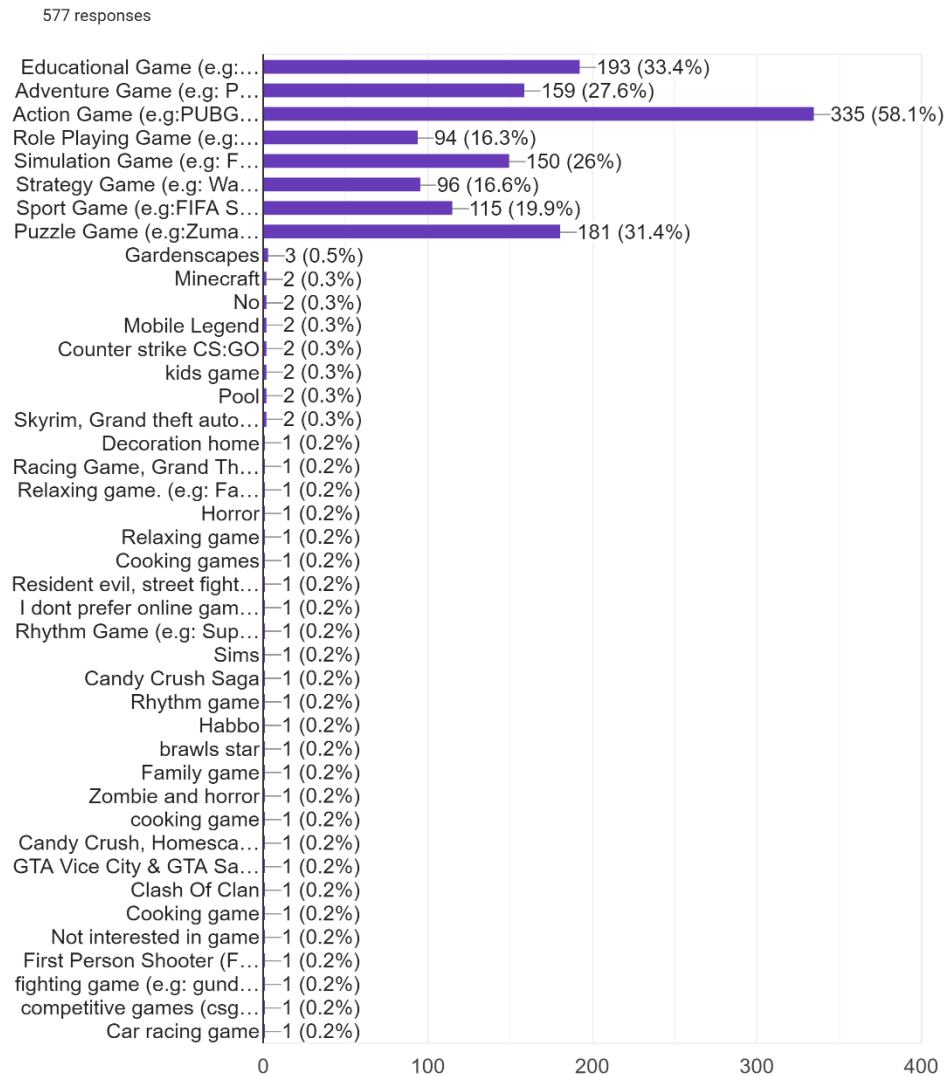


Figure 1: Most played game genre by respondents

The most preferred video game that the respondents chose was PUBG, with 154 respondents; Candy Crush with 153 respondents; and the least preferred was League of Legend and Fortnite with 30 respondents for both games, as seen in Figure 2 below.

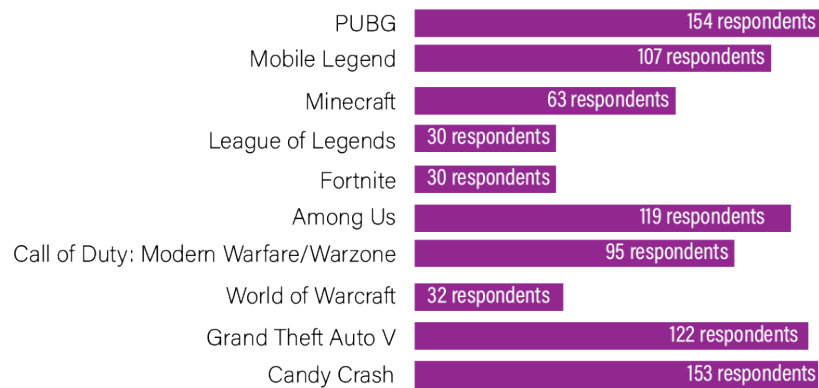


Figure 2: Most preferred video game by respondents

4.3 Attribution of Bad Sleeping Habit

According to [40], [41] in worldwide prevalence rates ranging from 20% to 40%, it was common during childhood and adolescence to experience sleep disturbance (SDs). One of the questions was related to the harmful sleep habit whereby (N:357) 61.9% answered yes as they played video games, which contributed to the lifestyle habit. The questionnaire is considered a reliable tool for sleep assessment whereby most of the respondents stated that they spend their time playing video games for more than three hours per day. As per the study that reported on Hong Kong adolescents (aged 10 to 19-years-old), technological use increases the risk of sleep habit, whereby 86% of the sample were used to watching their screen which is the electronic devices in their lifestyle, and 56% have experienced sleep deprivation.

4.4 Characteristic of Behavior

As the analysis aimed to find the user motivation, there was a need to ask questions that evaluate each of the respondents' characteristics as a result of playing video games. The persistence of the development of gaming behavior is related to the nature of the game itself as one of the factors of behavior in playing video games[42]. Overall, the respondents stated that they enjoyed, were less stressed, and became more cheerful, calmer, and more excited after playing video games. There were also some of them who experience bad behavior, such as being paranoid and selfish, but it did not affect the characteristics of behavior which is less from the respondents with a total of (N:11) 1.9% who chose what they feel after playing the video games.

Most of the respondents who answered no for the question stated that video games have not negatively affected class attendance nor assignment performance. In the finding, they also stated that when they are playing video games, it helps to reduce their stress as well as commit to studies. Seventy-two point six percent of respondents also believe that playing video games affects the way people act/ behave.

18. Since playing video games, I am (choose the characteristics that most fits you)
577 responses

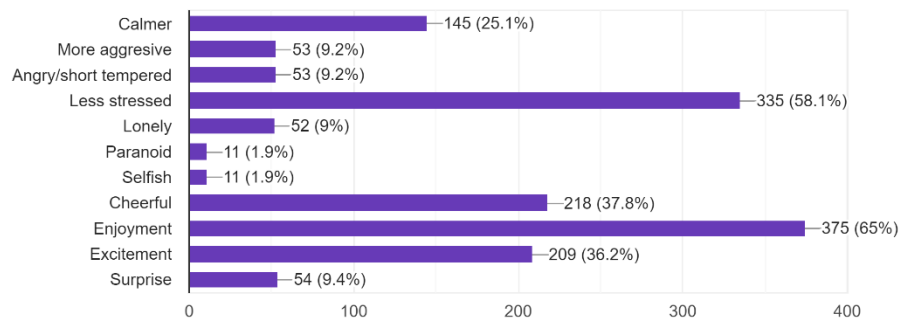


Figure 3: Behavior characteristic after playing video games

4.5 Preferable in Game Interface

For the interface preference research, the respondents have shown in Figure 4, the preferred items in the game interface. The most preferred item is achievement, with a result of (N:241) 41.7%, followed by the game rewards and character design. Character design has an essential role in several game genres such as action games and adventure games. Some of the players relate it to the motivation to demonstrate their thinking skills and problem-solving skills as they must complete each task given by the game developer to advance to a higher level in video games. Other respondents have also stated that the mission and inventory are one of the items in the video game that attracts them to play the video game again.

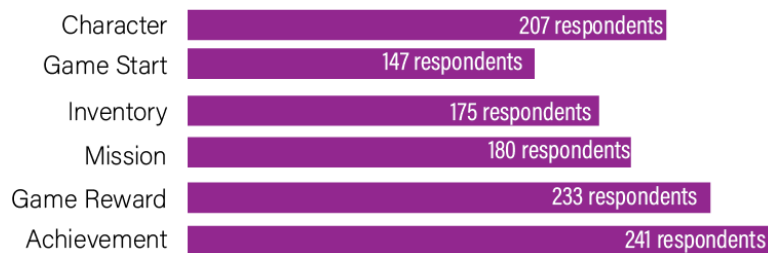


Figure 4: The preferred item in the game interface

4.6 Motivation in Playing Game

In the study by [43], it is indicated that gamers are motivated to continue playing video games when the game developer creates a reward to make the player excited, which can lead to more dedication to the game. The motivation in this study has been divided into two categories. The first category is for motivation by playing a video game only. As for the video game, 85.4% of the respondents were motivated to play the rewards/ranking system and synchronize with the preferred item in the game interface: achievement. The second category focuses more on game-based learning, which is the motivation of 62.6% of respondents attracted to playing video games; and is the different method used by the lecturer as an alternative in teaching. Grading

for the subject is one of the motivations for the respondents. The respondents will contribute to playing video games as it is one of the subject's requirements. The study also analyzes that 84.2% of the respondents think that game-based learning in the classroom positively affected the performance in class, and they understand the subject better as the games are related to the syllabus.

5 Conclusion

This study has reported that there are fewer negative consequences of video games among undergraduate students at the Universiti Teknologi MARA Kedah Branch. There was little evidence of acute adverse effects on behavior from playing video games. The excessive player developed a negative characteristic of behavior compared with the positive, which affects each respondent's lifestyle. Nevertheless, bad sleep habits could be caused as a result, and it is a must to manage the players who are most at risk of developing health problems that cannot be solved later. Several respondents already spend most of their time playing video games as it genuinely makes them addicted. Currently, worldwide practitioners are specializing in the treatment of video game addiction and bad sleep habits. However, since we are in the Industrial Revolution 5.0 era, the contribution of excessive online gaming has facilitated internet connectivity. In the mid-1990s, most of the articles focused on online gaming for video game addiction treatment.

The result also identified the following factors to be associated with user motivation as they stated that the rewards and ranking system motivated them to play both of the video game genres (video game and game-based learning) which motivates well, as the lecturer uses video games as an alternative method in teaching, especially in rewards and grading. As for the interface, preference from the video game can be one guideline in creating better game-based learning in the classroom. The students also suggested that the lecturer come up with innovative and creative games to keep them active. In order to make the game more interesting, the lecturer needs to delve deeper into how the game works and every detail of it. Therefore, it is recommended for future research to create a model or framework for game-based learning for a more relevant and practical method to attract students toward the subject.

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