Analysis of User Motivation and User Interface Toward Screen Addiction

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ABSTRACT

In the last decades, a great deal of research has been done on the interaction between people and digital technology. Every corporate and public company is now impacted by modern digital technologies including social media, business analytics, the Internet of Things, big data, advanced manufacturing, 3D printing, cloud and cyber-solutions, and MOOCs. Digital technologies have been thoroughly researched in both academia and business. One of the technologies that young people employ is playing digital or video games, which are played by millions of adolescents and young adults worldwide. The popularity of the impact of playing video games on people's everyday lives has increased significantly in recent years, along with the video game industry. The

research aim was to assess the connection between user motivation and user interface to comprehend its effects on a student population. To carry out this study, a questionnaire was distributed to tertiary students at Universiti Teknologi MARA Kedah Branch in Malaysia who were enrolled in a variety of programmed and courses. User motivation and user interface, specifically in relation to video game analysis, are the main elements used in this research. According to the results of the analysis, there is a significant correlation between user motivation and user interface, which underlies the current rise in screen time due to technology and has been linked to mental health issues. Therefore, a special recommendation for game-based learning in reducing screen addiction may derive from a better understanding of the function of user motivation and user interface.

Keywords: user motivation; user interface; video game; screen addiction

INTRODUCTION

Digital technology has become increasingly pervasive in the lives of the millennial generation, offering numerous benefits, and supporting various fields and user experiences. With the proliferation of platforms such as cell phones, computers, virtual worlds, websites, portable devices, and video games, technology has left a significant impact on society. However, it is important to address the issue of addiction that arises from this widespread usage.

This study specifically examines the addiction problem associated with video game usage, prompted by the need for further investigation and understanding. Previous studies have shown that excessive cell phone use among younger individuals has been linked to car accidents. Considering this, understanding how students select video game interfaces and how these interfaces contribute to addiction is crucial.

To strengthen this research, a comprehensive review of relevant literature was conducted, encompassing the definition of addiction and related paradigms. This literature review serves as a foundation for generating prospective guidelines and employing appropriate techniques within a specific framework.

By investigating the relationship between user interface preferences and addiction in the context of video games, this study aims to contribute to the understanding of digital technology addiction and offer potential solutions to mitigate its impact.

LITERATURE REVIEW

The literature review conducted for this study explored prior and recent research related to screen addiction among students, specifically focusing on user interface preferences in video games. With the ongoing industrial revolution and the increasing adoption of digital technologies, it has become crucial to adapt to these technologies. Digital technologies have permeated various aspects of daily life, including education, employment, and entertainment, with video games being one of the fastest-growing industries in the digital realm (Vargo, 2021; Gee, 2003).

Positive Effects of Video Games

Video games have not only been associated with amusement but have also gained recognition as a potential educational tool. Researchers have found that video games can provide valuable learning experiences, surpassing traditional classroom instruction in terms of engagement and educational outcomes. Playing action video games has been linked to cognitive enhancements, improved visual attention, perceptual skills, and brain plasticity (Fries et al., 2013; Wong & Chang, 2018). Additionally, video games designed with strategic elements can enhance critical thinking and problem-solving abilities (Boyan & Sherry, 2011).

Negative Effects of Video Games

However, video games also have negative consequences, such as excessive screen time and its potential impact on health. Studies have identified associations between video game addiction and symptoms of depression, anxiety, and stress (Boyan & Sherry, 2011). Negative outcomes, including social anxiety disorder and low academic performance, have been observed in relation to video game addiction (Carnagey et al., 2007; Prem Kumar, 2019).

Video game playing can have both positive and negative effects, influencing player addiction and user motivation. Educational video games, particularly those tied to grading or specific topics, can maintain player interest and improve their skills (Bittner & Shipper, 2014). Personal satisfaction refers to the individual's subjective experience of feeling content and accomplished by aligning their behaviors with their beliefs and attaining their goals. This contributes to their overall well-being. Intense emotions, spanning from elation to sorrow, enhance the richness of the human existence, molding perspectives and impacting choices. The interaction between personal fulfillment and intense emotions is constantly changing, since achieving objectives might elicit positive emotions, while failing to do so may result in negative ones. The profound emotional terrain, characterized by its depth and power, enhances the intricacy of human relationships and individual development, underscoring the inescapable link between personal satisfaction and the wide spectrum of emotions that imbue our encounters. Personal satisfaction and strong emotions also contribute to the enjoyment and skill development derived from video game playing (Hainey et al., 2016).

User Motivation and User Interface Design

User interface, as the means of interaction between users and technology, plays a significant role in shaping the user experience. Interactive technologies and human-computer interaction facilitate two-way information flow, where users request data or take actions, and the technology responds accordingly (Zhang Y (2020). Interfaces should possess interactivity, user-friendliness, and an engaging nature to promote user engagement and collaboration. Interactivity allows users to actively participate with the system, while user-friendliness emphasizes simplicity and ease of use, reducing the amount of time needed to learn how to use it. An aesthetically pleasing design enhances the user experience by using visually attractive features. Users are motivated to participate through features that prompt significant activities and contributions. Additionally, cooperation is incentivized through collaborative tools or rewards, which encourage users to work together. Feedback mechanisms, consistency, accessibility, and responsive design enhance the user experience by ensuring it is smooth, captivating, and collaborative (Shaked, 2011). The type of user interface employed can significantly influence user engagement in video game play and

overall user experience (Borrego, et. al., 2021).

Multimedia elements, such as sound, text, animations, images, and videos, accompany user interaction, providing information and enhancing comprehension (Liu, 2021). A user-friendly interface that allows customization and adaptive information processing is increasingly essential (Ferreira, et. al., 2017). Gamification and game-based learning environments have been developed to increase student motivation and engagement, resulting in better learning outcomes (Chu & Fowler, (2020); Ryan & Deci (2000).

Empowering users with control over applications and services positively impacts their overall experience. Playing games allows users to understand and appreciate the gaming interface, enhancing their engagement and enjoyment (Ermi, 2005).

In summary, the reviewed literature demonstrates the multifaceted nature of video game addiction, the impact of user motivation, and the significance of user interface in shaping the user experience. These findings lay the foundation for the present study, which aims to investigate the connection between user motivation, user interface, and screen addiction in the context of video game usage.

MATERIAL AND METHOD

In this section, the researcher utilized Google Forms as the primary data collection tool. The study gathered responses from undergraduate students who completed a questionnaire. A total of 579 participants took part in the study, providing their responses anonymously and voluntarily. Among the respondents, 30.5% identified as male, while 69.5% identified as female. The participants were undergraduates from the Kedah Branch of the University of Technology, with ages ranging from 19 to 24. The students represented diverse faculties, including art and design, accounting, administrative science and policy studies, business management, computer and mathematical sciences, and information management. The educational backgrounds of the participants varied, with 71.5% holding diplomas and 28% holding bachelor's degrees.

To reach out to the participants, the researchers used the WhatsApp application to establish communication and inform the respondents about the study's objectives and procedures. Clear assurances were provided regarding the privacy and confidentiality of the information shared by the participants. They were explicitly informed that their data would only be used for research purposes and would not be disclosed to any external parties.

The data collection process involved the administration of a questionnaire designed using Google Forms. This online platform allowed for convenient and secure participation, ensuring that participants could provide their responses easily. Ethical considerations, including informed consent, participant privacy, and anonymity, were considered throughout the study. The researchers adhered to the necessary ethical guidelines and regulations governing human subject's research.

Following the data collection phase, the collected responses were subjected to analysis and examination. Appropriate statistical techniques and software were employed to analyze the data and address the research objectives and hypotheses. The limitations of the study, such as potential biases or constraints, were acknowledged and discussed to provide transparency and context for the findings.

FINDINGS AND DISCUSSION

The study, titled " Analysis of user motivation and user interface toward screen addiction" was carried out via an online survey with 579 participants from various undergraduate courses. According to the respondents' overall impressions, video games are their favorite user interface for the variety of experiences, according to the research. User preference and experience played a part in the study's findings, but video games gave researchers an opportunity to go beyond those considerations.

POPULATION OF STUDENTS

A total of 579 individuals participated in the study, voluntarily and anonymously completing the questionnaire. Among the respondents, 30.1% identified as men, while 69.9% identified as women. The study focused on undergraduate students from the University Teknologi MARA Kedah Branch, specifically those between the ages of 19 and 24. The participants represented various faculties, including the College of Creative Arts, as well as the faculties of Accounting, Business Management, Computer and Mathematical Sciences, Administrative Science and Policy Studies, and Information Management. Out of the total respondents, 71.2% held diplomas (N=412), while 28.8% held bachelor's degrees (N=167). Communication between the researchers and participants took place through the WhatsApp app, ensuring the privacy of the data provided by the respondents and its sole use for the study. The study results are presented in Table 1 below.

Table 1
Demographic Background

Variable	N	%
Gender		
Female	405	69.9
Male	174	30.1
Age		
19 years old	142	24.5
20 years old	226	39
21 years old	56	9.7
22 years old	76	13.1
23 years old	56	9.7
24 years old	23	4

Faculty		
Faculty of Art and Design	68	7
Faculty of Accountancy	82	14.2
Faculty of Administrative Science and Policy Studies	114	19.7
Faculty of Business Management	268	46.3
Faculty Computer and Mathematical	34	5.9
Faculty Information Management	13	2.2
Semester		
Diploma	412	71.2
Bachelor	167	28.8

Video Game Play

Most respondents—61.3%—who were asked how much time they spend playing video games each day—answered that it was less than three hours. Then, 3 to 6 hours were devoted to playing video games. The questionnaire now includes a question asking about the gaming hardware that respondents have utilized. The device that the respondents used is displayed in the results in Table 2 below.

Table 2
Gadget use most often

Gadget	**N**	**%**
Smart Phone	557	96.2
Computer / Laptop	392	67.7
Tablet(iPad/Tab)	46	7.9
Video Game Console	35	6

In response to the question, 77.3% of students (N = 446) said they like playing video games, as opposed to 22.7% of students (N = 131) who said they didn't. In a typical day, 61.2 percent of them play for three hours or longer, while 8.2 percent play for close to 12 hours, or one-fourth of a 24-hour period. Table 3 shows that most respondents prefer to download video games than borrow them.

Table 3
Prefer a acquire in playing the video game

Acquire	N	%
Download games	526	90.8
Buy game from shop	34	5.9
Buy from online store	14	2.4
Borrow the games	4	0.7

Type Of Video Game Play by Students
The video game stands apart from others in the action, adventure, combat, platform, racing, role-playing, shooter, simulation, sports, and strategy game genres (Peever et. al. (2012). The responses on the Likert scale show that action games are a favorite pastime for most respondents (58.1%). 33.4% of all games played are educational games, which employ game-based learning to instruct students in classrooms, as seen in Figure 1.
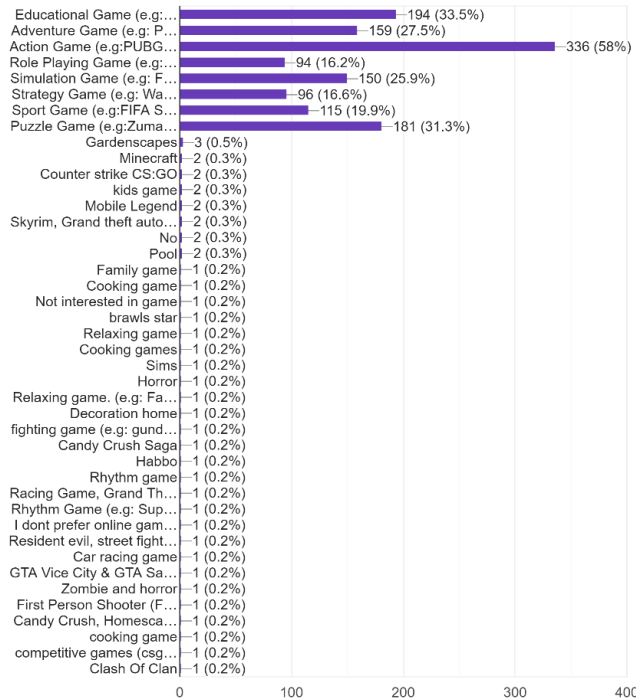
Figure 1: Game genre that most play by respondents

As shown in Figure 2, with 154 replies, PUBG is the video game that respondents pick to play the most, followed by Candy Crush with 153 responses. World of Warcraft, League of Legends, and Fortnite were the respondents' least favourite games.
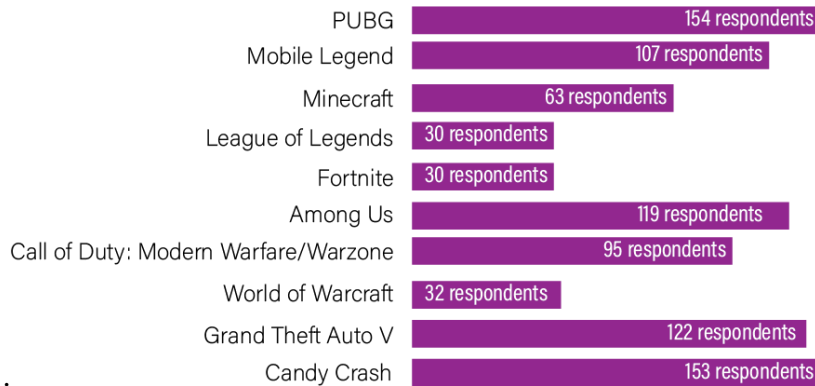

Figure 2: Most preferable video gameplay by respondents

Result Of Poor Sleeping Patterns

Throughout childhood and adolescence, prevalence rates of sleep disruption ranged from 20 to 40%, according to (Simola et al., 2010). When asked about their worst sleeping habit (N:357), 61.9% of participants admitted that playing video games was a factor. Students who like playing video games at night could find it challenging to fall asleep if they keep playing. Most respondents

to the surveys, which are thought to be a reliable technique for assessing sleep, stated that they play video games for three hours or more or more each day.

According to research done on teens in Hong Kong (aged 10 to 19), technology increases the likelihood that people would acquire bad sleeping patterns, with 86% of the sample using electronic devices with displays and 56% claiming to have sleep issues.

An Attribute of Behavior
Because the analysis's objective is to identify the user motivation, it was important to ask questions that evaluated each respondent's traits because of playing the video game. The ongoing evolution of gaming behaviors, which is correlated with the game's design, is one of the factors determining how players act when they play video games. Overall, the respondents said they were happier, less stressed, and happier, calmer, and more thrilled when they played video games, with 64.8% saying they enjoyed it. It had no effect on the respondents' overall (N:11) 1.9% and (N:12) 2.1% preference for the qualities of behaviors they picked after playing video games, even though some of them exhibited undesirable traits like paranoia and selfishness.
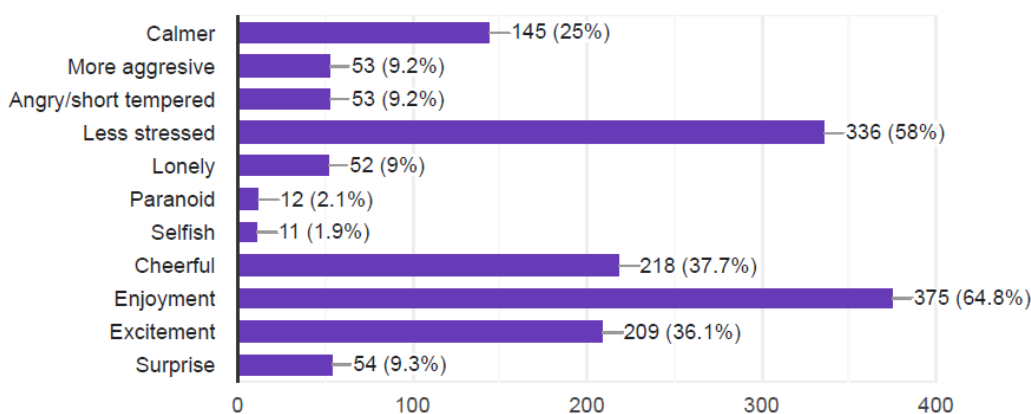

Figure 3: Behavior characteristic after playing video games

When asked whether they play video games, most respondents said "no," claiming that this had no impact on their participation in class or completion of their work. Also, it was shown that students that play video games are less stressed. In addition, 72.6% of respondents believe that playing video games affects how people act.

Preferable In Game Interface
Character design and game awards are the respondents' second and third preferred game interface features, according to their replies for the study on interface preferences, which are shown in Figure 4. In terms of the factors that influence why kids play video games, achievement has been the most significant one. Students receive a sense of satisfaction after winning a game. Character design is essential in two game genres: action games and adventure games. Some players use the requirement to complete every task given by the game's creator to move to a higher level as their drive to demonstrate their aptitude for critical thought and problem-solving.
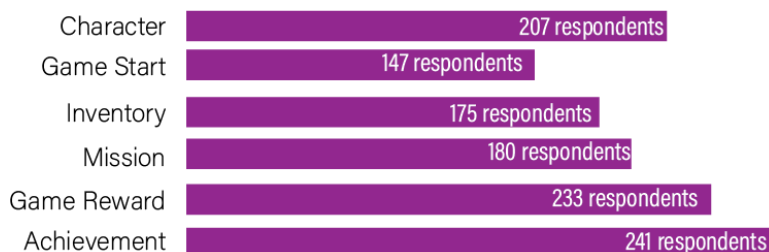
Figure 4: The preferable item in the game interface

User Interface Game-Based Learning

The user interface is a key element of an information system from the user's point of view. It has never been easy to design user interfaces (UI) for software. The methodology for developing user interfaces must thus combine tools, strategies, and procedures that may utilize the most recent advancements in hardware and software. It helps designers to provide a better user experience by tailoring a user interface to everyone. Understanding user experience (UX) and user interface is required to track and enhance client happiness (UI). Three other factors, player motivation, learning material, and gameplay, may support the learning process and influence how much is learnt and how essential the key attributes are (Abubakar et al., 2017). When designing a user interface for game-based learning, interface requirements might include text, picture, visual viewpoint, music, sound effect, voice, color, graphic, layout, shape, and texture.

SIGNIFICANCE OF RESEARCH

This research holds significant implications for both academia and practical applications. By understanding the relationship between user motivation, user interface design, and screen addiction, researchers can contribute to the existing knowledge base on technology addiction and human-computer interaction. The findings can also inform the development of interventions, guidelines, and design principles aimed at promoting healthier screen usage and reducing screen addiction in society.

CONCLUSION & RECOMMENDATIONS

According to the findings of this study, video games appear to have lesser harmful impacts on undergraduate students at the University Teknologi MARA Kedah Branch. The evidence indicates that playing video games does not immediately lead to detrimental changes in behavior. However, it is important to note that excessive gameplay may still contribute to the development of negative behavioral traits, which can affect respondents' overall lifestyles. Poor sleep behavior may also be a consequence, highlighting the need to identify and intervene with players who are at higher risk of experiencing health problems at an earlier stage. It is noteworthy that most respondents admitted to spending a significant amount of their free time playing video games due to physical addiction. Nevertheless, considering the ongoing fifth industrial revolution, excessive online gaming has

facilitated advancements in internet connectivity. Previous studies from the mid-1990s have also emphasized the use of online gaming to address video game addiction.

In addition to the user interface, the research findings indicate that several factors are associated with user motivation. Encouragingly, respondents reported being inspired to engage in both video games and game-based learning due to ranking and reward systems. This is particularly relevant for educators who have incorporated video games as an alternative educational approach, leveraging incentives and grades. Incorporating elements from video games into the user interface can enhance game-based learning in the classroom. Respondents suggested that teachers should create unique and creative games to maintain student interest. To make the gaming experience more engaging, educators should delve into the dynamics and various aspects of the game.

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Conflict of Interest

The authors certify that there are no competing interests to consider.

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Authors' Contributions

The authors declare that are solely responsible for the following: the conception and design of the study, the collecting of data, the analysis and interpretation of the results, and the creation of the paper.

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