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Critical Studies of Technology, Psychology, and Education on Online Games

[1]Dwi Sulisworo*, [2]Ratna Yunita Setiyani, [3]Khairul Shafee Khalid, [1]Vera Yuli Arviana
Corresponding Author: * dwi.sulisworo@uad.ac.id
[1] Universitas Ahmad Dahlan, Indonesia
[2] Universiti Kebangsaan Malaysia, Malaysia
[3] Universiti Teknologi PETRONAS, Malaysia

Abstract

Online games are developing rapidly and have an impact on children's behaviour. This study aims to explain the phenomenon of online game addiction from the perspective of psychology, technology, and education. The method is narratively qualitative—data obtained from online focus group discussions. The results of this study explain that online games today tend towards addictive behaviour. This situation is supported by the use of current technology in programming that allows the provision of varied features to increase the game's attractiveness. This addictive behaviour affects other behaviours that can affect the development of attitudes. This behaviour change affects learning performance. The teacher should adjust learning strategies in the digital era to adapt to children's new behaviours today related to online games.

Keywords: *online game, collabortive game, education, psychology, technology*

Introduction

Online games are one of the products of the rapid development of information and communication technology. The new features of this game allow for interactive and collaborative communication between game users in different regions in real time. The utilization of intelligent systems on new games makes for a higher level of addiction in users of all ages. When children outside of school play online games with their peers, inadvertently, this activity pushes on various aspects such as cohesiveness, competition to achieve winning, and team building. This activity also able to make children addicted to playing online games. This situation sometimes makes children lack in learning the standard material provided by the school.

However, the benefits of this online game are also a new alternative in several fields of study to utilize it in a structured manner in the learning and training process. The issue of serious gaming is an indication that the game has been adapted in learning to achieve certain competencies. The advantage of being able to play online games that have artificial intelligence capabilities collaboratively creates a lot of potential for online games to be used in education. There are three aspects that need to be studied in this collaborative online game, namely technology, psychology, and education. Understanding these three aspects will provide explanations in responding to online games for students. This understanding is currently a gap as many parties argue with each other between agreeing and disagreeing of children playing online games. The purpose of this study is to provide a multidisciplinary explanation of online games and their impact on children.

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Methods

This research is qualitative research obtained from the results of discussions with learning media experts, psychology, educators, and game developers. The data was obtained through a focus group discussion asynchronously online. Each expert writes a perspective related to online games with the previously explained in this research. The data is processed with a narrative descriptive approach to obtain a comprehensive picture. Some secondary data is used to add an explanation of the results of the discussion.

Results and Discussions

A. Aspects of Psychology

A study conducted by Ref. [1] concluded that there is a relationship between a person's loneliness condition and a tendency to online addiction. According to the study, subjects who did not experience loneliness were 7.98 times more likely to experience addiction to online games compared to subjects who experienced loneliness. What this means is that people are addicted to online games because they don't want to be lonely. This study also showed that subjects who had high affiliated needs were 12,156 times more likely to experience addiction to online games compared to subjects who had low affiliated needs. Meanwhile, the calculation results for loneliness and affiliated needs contributed to online game addiction by 40.7% and the rest was determined by other factors outside the factors studied, for example: peer influence, achievement motivation, group conformity etc. The more dominant variable towards online game addiction is affiliated needs.

Gaming addiction is one type of internet addiction that encapsulates the maladaptive psychological dependence on a particular family of IT artifacts – online gaming. To capture it, many researchers have adopted the criteria of Internet addiction [2] or a broader set to diagnose compulsions that are not related to problematic substances, namely behavioral addiction [3]. These works are largely built on closely related disorders – pathological gambling problems, described in the DSM-IV (Diagnostic and Statistics Manual of Mental Disorders – Fourth Edition; American Psychiatric Association, 1994). Since there is no official cut-off point for classifying a person as an addiction [4], most studies on this topic have so far treated addiction to online games and other technologies as a sustainable concept – ranging from low to high levels of addiction [5], and therefore it is assumed that all users may have a certain level.

Like other behavioral addictions, addiction to online games can be manifested through the six core symptoms [3]. These include conflict (for example, playing online games meaningfully contrary to other important tasks), withdrawal (that is, negative emotions arise if a person is unable to play online games), relapse and reinstatement or recovery (that is, the inability to voluntarily reduce the time spent on online games), and salience (that is, playing online games dominates one's life and takes over other tasks). Other less severe symptoms are indications of high involvement. The severe symptoms of addiction [6] includes tolerance (need to increase the time spent on online games), euphoria (the sound of excitement from playing online games), and cognitive salience (often thinking about online games).

In most cases, addiction does not develop overnight. In general, when contemplating addiction, people often consider it a process. After the initialization of the "addiction process", a person pursues some actions for the effect or motive of appetite (for example, reduction of pain, increased influence, manipulation of arousal, or fantasy). Different addictive behaviors are empirically grouped as serving hedonistic motives (e.g., drug use, sex, gambling) or nurturant (e.g. compulsive, work addiction, shopping addiction, love, exercise). However, other motives or additions that make sense (for example, to achieve fantasy or oblivion), and all addictions can share similarities in function to shift the subjective experience of the self [7].

The first aspect of addiction is the desire to be different. The process of addiction is revealed for some individuals but not others and may reflect individual differences before engaging in addictive behaviors or as individuals continue to engage in addictive behaviors (that is, individuals may vary along the dimensions of the "predisposition to addiction"). Anecdotally, many self-describing addicts have reported feeling "different" from others long before developing an easily identifiable addiction. This includes feelings of relative discomfort, loneliness, anxiety, or incompleteness. Once a behavior is tried that reduces or eliminates the basic sense of discomfort, a process begins to unfold. It is possible that 50% of the variance of addictive behaviors is associated with the genetic cause of this sense of subjective discomfort. The extent to which there are people from birth to addiction remains a subject of debate [7].

Alternatively, many people report not feeling different before engaging in problematic addictive behaviors. Among these individuals, behaviors can be tried that are considered highly valued or pleasant, perhaps with effects that occur rather quickly, that want to be repeated. In this case, a process begins to unfold by inducing a contrast between the state of arousal, influence or cognition induced by enhanced or potentially addictive behaviors, and the basic state of arousal, influence, or cognition. Initial reactions to potentially addictive behaviors may be experienced more positively compared to others (among those who are relatively vulnerable). That is, addictive "appetite" can fall along the continuum, and those people at one extreme may find certain behaviors very interesting. Involvement in the extreme level (frequency or valence) of these behaviors, which tend to be subject to social distancing or other consequential, can identify the degree of behavioral addiction [7].

The second aspect of addiction considers the overthinking of and the desire to perform a behavior, the excessive time spent planning and engaging in the behavior, and possibly recovering from its effects (for example, from "drunkenness"), and less time spent on other activities, although it has the potential to reduce the effects of appetite. That is, addictive behavior "spills over" into several dimensions of a person's daily life. It may be labeled more generally as "preoccupation" [7].

Tolerance and withdrawal are two characteristic criteria of physiological addiction, and, arguably, can also be considered as aspects of the more general concept of preoccupation (or as a feature that contributes to preoccupation). Tolerance refers to the need to engage in behavior at a relatively greater level than in the past in order to achieve a level of previous appetite effects. As tolerance increases, a person is likely to spend more time discovering and engaging in addiction. Thus, tolerance can show an increase in preoccupation. Withdrawal refers to the physiological or acquired discomfort experienced at the sudden cessation of addictive behavior. If withdrawal symptoms are present, and worsen, a person

tends to spend more time recovering from the effects after addiction, and focus in thinking and action on how to overcome them (for example, by using again). That is, a person is more preoccupied with addiction when one spends more time discovering, engaging, and recovering from that behavior, and this may reflect the process of tolerance and withdrawal [7].

The third element of the concept of addiction is 'gluttony' or satiation. After acute involvement in addictive behaviors, the impulse may not work for some period of time. In other words, the addiction is 'turned off'. However, it is only to be immediately repeated. This period of satiation is not well studied or considered. Some thoughts regarding this period have to do with feeling distracted from life problems or feeling independent or maintained for a while. If these feelings continue, arguably, one might speculate that individuals will achieve a resolution of a subjective sense of discomfort (or "imbalance") that precedes involvement in addictive behavior [7].

Among the defining elements of addiction, loss of control has a rather long history. A person may report a desire to stop addictive behavior but, despite this, does not have the ability to predict exactly when the fight with the behavior will begin, how it will manifest itself, or when it will stop. That is, addictive behavior may become more and more automated. Difficulties in refraining from addictive behaviors despite attempting to do so may be central to the loss of the addictive control aspect about "accrasia"). Many people claim to struggle with addiction; feeling forced, feeling incomplete control; and it was observed that they may neglect fundamental self-care, indicating a loss of willpower.

B. Aspects of Technology

The development of online games includes theory and techniques from various disciplines ranging from technology, entertainment, and behaviour sciences [8]. The technology for online games can be categorized into hardware and software. For hardware, online games played on gaming consoles such as Playstation, Xbox and others require powerful central processing units (CPU), graphics cards, large storage drives and memory to ensure the games runs smoothly. Servers are needed to allow multiple players to connect to the game from anywhere. Thus, infrastructure and network capacity and internet speed are among the network requirements to ensure the smoothness of the player's gaming experience.

Algorithm is a one of the key components in any game development. The algorithm of a game determines how the game should respond correctly to any options selected by the player. Frontend development and backend development are the two types of game development. The frontend development is about the design and style of the game. Developers can use programming language such as HTML5 or Javascript for frontend development. The backend development is about developing the workings of the game. To develop the backend component of the game, game developers use programming languages such as Python, C++, C#, and Java and frameworks such as Microsoft .NET. These programming languages and framework contain libraries, patterns, servers' software, and other tools to develop game applications.

User satisfaction and experience in playing games online has become a priority. This makes game development to become more complicated [9]. One of the technologies that could enhance user experience in games is the use of virtual reality (VR) and augmented reality to create that digital world

in which users can immerse themselves into the game. VR provides a digital environment that users can interact. VR applications are developed by creating the 3D assets using tools such as Blender, Maya Sketchup and many others. Through the VR headset, users can immerse themselves in the digital world of the game thus adding a sense of realism to the games. The immersiveness of VR and AR contributes to the addiction of online games. Ref. [10] stated that VR games are addictive because of the sense of realism that it brings to the players. The addiction is enhanced further with challenges and tasks the users need to complete. Pokemon Go! is an example of such AR application that is very addictive. The task in the game is to collect as many as Pokemon or digital monsters as possible. The thrill of chasing the digital monsters make the players addicted [11].

While VR and AR provides the visual immersiveness, artificial intelligence (AI) in online games brings experience immersiveness [12]. The adoption of AI enables players to interact with nonplayer characters (NPC) to intelligently adapt and respond to the player's actions while exhibiting appropriate behaviours depending on their role within the game context [13]. In serious games, the components of AI used in real-time facial recognition to detect human emotions, natural language processing to interpret and manipulate human language and game balancing that is to match the difficulty of the player's task to the player's skills [14]. Massive Multiplyer Online Role Playing Games (MMORGPs) such as World of Warcraft are example of games that use AI to create life-like situational developments for the players to progress in the games. The complexity of these situations in the games ensures the players to be constantly engaged to the game. The player meets other players in MMORGPs thus, creating relationships that they could not form in the real world. These players could even work together to achieve the same objective in the game. The immersion in the virtual world, the social motive and achievement motive are the some of the psychological factors that cause players to become addicted [15].

C. Aspects of Education

Education is faced with the complex challenges of a social change that cannot be avoided in our lives the most dominant information and communication technology sector. Science technology on how to apply science to utilize nature for human welfare and comfort there are many benefits of technology, one of which is as a means of entertainment, for example for online games [16]. Technology is currently closely related to education, the existence of Covid also helps in improving education using technology, but children often abuse the use of technology. Addictive behavior is a level where individuals are able to behave in accordance with standards of personal freedom and standards in responding to the environment as expected by certain groups, cultures and ages. Adaptive behavior is influenced by environment, intelligence, emotional intelligence and social support [17].

Games are an integral part of human behavior and experience, during which the availability and use of computer technology increases dramatically and changes the world of recreation [18]. This is becoming a common activity for children and adolescents more interested in using fun-seeking games related to games can lead to normal relationship devotion. Such games can be conceptualized as a continuum from pleasant activities to patalogical and even addictive uses. The risk of using game

addiction feels immune to the dangers of technology, feels mentally healthy professionally, and wants to continue to explore new info [19].

There are several factors that influence the development of adaptive behavior of children, the first is physical condition, personality, education, religious environment as well as culture. The current situation is very unlikely that children do not intersect with education and technology, this is what must be straightened out to be good at the use of technology so that this does not have a negative effect on education, it is undeniable that this affects learning performance in children because it can shift children's focus on learning to become addicted to online games [20]. Factors that cause addictive behaviors to online games are family factors and social factors, the meaning of family factors is to get the necessary facilities such as cellphones and internet quotas, this is what causes children to spend less time with family and children also ignore social relationships with their friends and finally their lives because the internet and games take over their minds [21]. The negative aspects of online games addiction is that it affects various aspects of life, including personal, school, social, financial, and aspects in family relationships [22].

Compensation for this behavior in learning can be by creating a trying corner in which the corner has a variety of literacy packaged in the form of games to make learning more interesting. Online games can help children's literacy in both read, write, and count. Teachers can use quizzes in the application store, invite children to watch educational films related to learning and provide a schedule for the division between playing and learning, control and accompany children when playing games. Integrating between games and learning is currently very much in the device. This can be seen with various applications that children can play and learn. There are also applications in the form of quizzes that have game-like filters and have deadlines to create excitement like games, make ice breaking related activities that focus on multiplication, reading, and writing. In addition, there are some online applications such as search engines and accessibility programs for visual disturbances requiring accurate images so that the image content on the web pages is related to adjacent ones. In simple terms the random pairing of players together the destination game players type a word or phrase and then press the enter key to send it to the game. After both players have typed the exact same string, a new image appears; they don't need to type a string at the same time, but each having to type the same string at some point while the image is on this screen is to guess what label your pair will give to the image [22].

The following four cases demonstrate the possible behaviour of children using online games and other types of applications for learning.

Case 1: Children addicted to playing online games prefer to be alone and busy with online game play. They display less interaction with their surrounding environment. This can be diverted by creating a "trying corner" where there is various interesting literacy such as knowing about the solar system, the multiplication of snakes and ladders, making things related to science simply. This attracts children to know about various unique things so that children's interest is more interested and distracted from online games [23].

Case 2: Children like to play smartphones that contains applications and features that improve children's abilities, create quizzes with games on the smartphones. This can make children become technology literate who continue to use in terms of positivity and usefulness [24].

Case 3: Children can play online games with a storyline that develop student's decision-making and critical thinking skills. The storyline consists of scenarios in require the students to think critically and decide on the options to take. Through the games, students could watch interesting educational clips, instead of YouTube to enhance their critical thinking in various ways.

Case 4: Children can use social media such as TikTok and Instagram for learning. They can follow content related to learning such as how to calculate quickly, learn easily and coolly, follow content that learns a foreign language.

This kind of behavior unwittingly increases the concentration of the children. This brings positive impact to the growth of the child. The children will have a high desire to continue learning and to explore further in learning new things through online games. Children can use their gadgets to play online games for learning. The development of online games has seen the applications contains various positive and cool features to create children's interest in learning while playing.

Conclusion

In this era, the influence of information technology on child development is very significant. This technology sometimes makes it addictive for children to play online games in various forms. But on the other hand, this technology has the potential to be used as a tool for children's learning assistance. Good mentoring can prevent excessive use of technology in children. Shared awareness from parents, teachers, and education policymakers is indispensable for the productive use of technology.

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Authors

Dwi Sulisworo is a lecturer at the Physics Education Study Program, Ahmad Dahlan University, Yogyakarta, Indonesia. He has a research interest in the learning strategies by utilizing information and communication technology. He has many publications in various reputable journals. (email: dwi.sulisworo@uad.ac.id).

Ratna Yunita Setiyani is a lecturer at the Psychology Department, Universitas Aisyiyah Yogyakarta, Indonesia. Now, she studies in the same area for Doctoral degree at Universiti Kebangsaan Malaysia. She has a research interest in the family planning, community psychology, and resilience. She is popular as motivator and counseling. (email: ratnayunitasetiyani@gmail.com).

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Khairul Shafee Kalid a senior lecturer from the Department of Computer and Information Sciences under the Faculty of Science and Information Technology, Universiti Teknologi PETRONAS, Perak, Malaysia. His area of expertise on knowledge management tools and it use in organizations. (email: khairulshafee_kalid@utp.edu.my).

Vera Yuli Arviana is a lecturer at the Elementary School Teacher Education Study Program, Ahmad Dahlan University, Yogyakarta, Indonesia. Her research and community service activities are focused on the use of technology in elementary schools. She has many books and articles published in various reputable journals. (email: vera.erviana@pgsd.uad.ac.id).