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Investigating Impact of Playing Video Games towards Students

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ABSTRACT

The huge popularity of video games and their ability to make players indulge, the turnout of players to play video games substantially led to the video game industry transitioning from an entertainment side to being involved in most other aspects of life. Education, entertainment, and the promotion of social interactions are examples of these sectors. According to several studies, there is a link between video games and player behavior. However, other research has refuted this type of association. In this study, we will look at these two sorts of studies from two perspectives. First, we will investigate what type of skills or reactions the user will get after playing various games. These reactions can be explicit or implicit, positive or negative, such as development, improved social relationships, improved problem-solving skills, or violence, aggression, anxiety, or stressful reaction.

1.0 Introduction

It is undeniable that the digital age altered students' attitudes to learning. As with everything, there are two sides to the debate about the impact of video games on student achievement. Over 12,000 high school students in Australia have studied in recent years. According to the survey, students who play games online practically every day scored 15% higher than the typical student in arithmetic and reading and 17% higher in science. However, it is impossible to verify that video games were the source of the improvement. One of the reasons for these higher scores is because when you play online games, you must solve puzzles in order to advance to the next level. This challenges students to use the science, reading, and math abilities they learned throughout the day. Apart from that, according to research, some students' academic performance is being negatively impacted by video games. There are lots of video games accessible. According to studies, some kids as young as six have developed addictions. Rightfully so, educators and parents are worried. Even young children today are thought to struggle with mental health issues and social anxiety due to video game addiction. There seems to be a connection between sadness, self-esteem, and how much time a person spends playing video games. Other than that, we have 2 negative and 2 positive impacts of playing video games towards students. The impact on personal growth, The impact on academic performance, Aggressive attitudes and beliefs, finally, attention and impulsivity.

2.0 Literature Review

2.1 Video games with positive impact

Many studies are focusing on the negative consequences of video games on their participants, such as violence and social detachment. However, more research into the positive features of video games is required. There is no doubt that video games influence player motivations, social implications, and mental health. The in-game environment in most popular video games is dynamically changed, which means that the activities of the players in-game may vary as the game itself changes. This causes the player to adjust to the changes, which may gradually change the player's behavior. This shows that the player's personality may change and become more adaptive in real life.

2.1.1 The impact on personal growth

Online games help relieve stress in their university lives, which is consistent with the findings of Ari et al. (2020). Academic, family, and social pressures, as well as uncertainty about the future, all contribute to increased psychological stress among today's college students. Online games allow college students to escape reality and express their suppressed emotions, and some students even use verbal catharsis as a form of release. These findings are consistent with those of Pine et al. (2020), who discovered that college students enjoy the happiness that comes with the release of stress when gaming. The greatest human need, according to Maslow's hierarchy of needs theory, is self-actualization. Similarly, college students must be appreciated and expect to succeed (Zhong and Yao, 2012). According to Liao et al. (2017), people will build virtual personalities on the Internet through self-remodeling, and virtual personalities are frequently distinct from the real world. In reality, inequalities in economic conditions, living places, material conditions, status, and an increasingly competitive environment frequently limit college students' achievement experiences. More personalized and immersive worlds in online games will blur the boundaries between physical reality and virtual reality (Young, 2009; Soutter and Hitchens, 2016; Kuo et al., 2017), resulting

in a simple approach for college students to obtain achievements. To summarize, the aims for meeting the demand for self-actualization include obtaining self-worth and reaching potential (Liao et al., 2017).

2.1.2 The impact on academic performance

Despite the notion that playing video games is intellectually lazy and sedating, research has demonstrated that it promotes a wide range of cognitive skills (Granic et al., 2014). Gamers have faster and more accurate attention allocation, as well as higher spatial resolution increased mental rotation in visual processing when compared to non-gamers; these skills are transferable to other spatial tasks outside of the game setting (Green and Bavelier, 2012). Scholars also believe that problem-solving abilities can be developed. Overall, there are many useful learning principles embedded in good online games (Adachi and Willoughby, 2013), which could be used for classroom learning tomorrow. Online games are a vital medium of communication and learning for this generation that grew up with the Internet, and they offer significant potential for schools and workplaces to promote engagement, creativity, and lifelong learning abilities (Gee, 2005; Turkay and Adinolf, 2015; Granic et al., 2014). According to the present overall analysis results, the online game condition has a more beneficial learning effect than the traditional teaching condition. Online gaming, in addition to improving learning and memory (Sitzmann, 2011; Wouters et al., 2013), has the ability to drive individuals to participate in educational environments, hence increasing students' interest in learning (Clark et al., 2016).

Table 1. Positive effects of video games

Game type	Benefit	Impact on the players
Cooperative-based	Social Benefits	Short-term, immediate cooperative play
		Effects on "helping" behaviors in the short and long term
		Lowers sentiments of hostility
Prosocial		Reduce players' access to hostile thoughts.
		Increases future prosocial and cooperative behavior
Role-playing		Improve your group organization and leadership abilities.
		Learning social skills and prosocial behaviors quickly
Shooter/Action	Cognitive skills	Quicker and more precise attention allocation
		In visual processing, higher spatial resolution
		Mental rotation talents that have been improved
Strategic		Make better use of resources
		More effectively filter out irrelevant information
Role-playing		Improve your memorization, analytical skills, previous experience, and intuition.
		Improve problem-solving abilities by working together.

Puzzle	Emotional Benefits	Enhance pleasant feelings through mood management.
		Inspirational and networking resources.
		Create social connections.
Playing		Enhance pleasant feelings through mood management.
		Inspirational and networking resources.
		Create social connections.
Strategic	Motivational Benefits	Increase intelligence and abilities, as well as resilience in the face of defeat.
		Create an incremental intelligence theory.
		Use failure as a motivator to engage and strengthen one's efforts.
		It is useful for "training" new behaviors.
		Result in long-term educational success

2.2 Video games with negative impact

According to a large-scale survey of Norwegian adolescents, video game addiction is positively associated with internal behavior problems such as depression and conduct disorders. Furthermore, terrible experiences that a player may have when playing video games may have a tight association with similar problems in real life. Other research has found that some video games, such as first-person shooter games and other violent video games, can cause an increase in the emergence of external behavior problems in players, such as aggressive behavior. These conclusions are based on the fact that violent video games contain numerous violent and aggressive sequences that can be translated into real-life violence.

2.2.1 Aggressive attitudes and Beliefs

On the other hand, it also gives negative impacts. When we observe people engaging in a particular behavior, we develop assumptions about why they are doing so. This method is relatively straightforward for many of these selections. When we witness another person eating, it is most likely because they are hungry (or bored). At times, information is unavailable to make appropriate behavioral attributions. Instead, we rely on heuristics or mental shortcuts to make speedy conclusions while avoiding unnecessary information gathering or the generation of various possible explanations. These heuristic decision-making processes, which are frequently dependent on knowledge structures built over a lifetime, result in errors. Aggressive children, for example, have a hostile attribution bias. This is a proclivity to interpret ambiguous provocations (behavior that could be interpreted as benign or hostile) as hostile (Crick and Dodge 1994; Orobio de Castro et al. 2002). These people see other people's actions as hostile, although most others would regard the same action as unintentional or intentional. Multiple longitudinal studies have linked violent video game play to this tendency, with violent video game players demonstrating increases in this tendency (Anderson et al. 2010; Gentile et al. 2011; Möller and Krahe 2009). Before asking participants to explain the cause for the behavior (e.g., it was done on purpose, the hallway was busy), a standard measure requires them to read ambiguous tale stems describing a social encounter exhibiting ambiguous behavior (e.g., being bumped in a hallway). Individuals who reported high levels of violent game play were more likely to make hostile attributions about the ambiguous behavior in these studies. In one of these longitudinal investigations (Anderson et al. 2010), high-frequency violent game play early in the school year predicted increases in hostile attribution biases, which predicted physical aggressiveness later in the school year.

2.2.2 Attention and Impulsivity

The Excitement Hypothesis (Gentile et al. 2012) provides a theoretical explanation for these effects. Video games (and other forms of screen media in general) are inherently engaging and entertaining. They have a number of indications that naturally engage the attention of players, such as violence or sexualized images (Linder and Gentile 2004), as well as more fundamental attention-grabbing characteristics, such as sound effects, video editing, or flickering lights (Kubey and Csikszentmihalyi 2002). This constant "grabbing" of attention may raise individuals' threshold for stimulation necessary to capture attention, making more mundane jobs such as listening to a teacher, parent, or employer more difficult. Alternatively, it is possible that youngsters with attention deficits are more drawn to video games and other forms of electronic media. Gentile et al. (2012) discovered support for both of these accounts. In other words, video game activity appears to increase attention problems (as shown by Swing et al. 2010), while persons with attention problems are likewise drawn to video games. In conjunction to this, the effect of video game play on impulsivity has also been shown to be bidirectional (Gentile et al. 2012). Individuals who participated in violent games were more likely to agree with statements such as "I do things without thinking" and "I act on the spur of the moment" (Swing and Anderson 2014). This finding also confirmed a novel pathway via which violent media exposure promoted aggressive behavior (Swing and Anderson 2014).

Unfortunately, game designers may find it difficult to construct games that avoid producing difficulties like these. Part of the appeal that people have for video games is that they are interesting and capture their attention. It may be beneficial for game designers to create games that involve slow-paced thinking, as this may positively influence attention and impulsivity.

Table 2. Negative effects of video games

Type	Example	Emotional effects
Fantasy/roleplaying	Everquest, Dark Age of Camelot, Ultima Online, and Star Wars Galaxies	Social disengagement, anxiety, despair, and physical ailments, as well as an increase in the proportion of dependent people
	Guild Wars	
	World of Warcraft, Final Fantasy, Gothic	
Action/adventure	Resident Evil, Tomb Raider, Grand Theft Auto	Anger and Aggression
Fighter	Mortal Combat, Tekken	Increased likelihood of bad results, including angry and violent behavior
Sports	FIFA Soccer, Pro Evolution Soccer, Fight Night Round 2	Reduced share of persons at risk becomes obvious
		Players may be anxious about the outcome of the game, while winning the game may elicit feelings of pride or joy 600.
Shooter	Counterstrike, ghost recon, farcry	Delinquent and aggressive behavior
	Halo II	Cooperatively or competitively
	Counterstrike, Battlefield, Call of Duty	Increased share of dependent persons

3.0 Research methodology

Qualitative research design was used in this study and total of 30 participants responded this interview session. A semi structured interview question was used and the samples were chosen randomly. Thematic analysis was done to get the finding of study.

4.0 Interview findings

Themes	Extracts
Addiction	Candidate 1: "I play video games when I am free. I'm not fully addicted because I can control myself by not playing too long." Candidate 2: "I believe I may be addicted to playing video games. Sometimes I skip my meals just to play."

Based on the interview above, Out of 30 participants, 19 stated that they are not addicted and are able to control themselves, while 11 stated they are addicted and have difficulties overcoming their addiction.

Themes	Extracts
Responsibilities	Candidate 1: Yes, it made me forget time. Candidate 2: No, cause I don't play that often.

Based on the interview above, out of 30 participants, 15 stated that video games have distracted them from their responsibilities while 15 stated their responsibilities haven't been affected even after playing video games.

Themes	Extracts
Academic	Candidate 1: "Yes, whenever I play video games it makes me forget to do homework and studies." Candidate 2: "No, because I play after my studies."

According to the interview, from 30 participants, 13 stated that videogames have negatively affected their academic performance and 17 stated that playing video games have had a positive effect from playing video games such as improved creativity.

Themes	Extracts
Socialization	Candidate 1: "Playing games helps me improve my communication skills." Candidate 2: "No, because I play alone, I don't interact with others."

From the interview, out of 30 participants, 18 stated that playing video games positively affected and improved their social skills and 12 stated that video games did not improve their social skills. According to Christopher Bailey, et al (2006) is that video games will help encourage students to communicate with each other and work together to achieve common objectives.

5.0 Conclusion and Recommendations

In summary, the findings from the qualitative data support video games as a beneficial medium for both learning and socialization. The data suggests that video games can be used to foster creativity, but should also be careful when it comes to their duration as they can suffer addiction from it. As for our recommendation, students should set a time limit like an hour a day to play video games in order to get the positive impacts such as relieving stress, improve communication skills and gain the benefits without any negative impacts.

6.0 References

Adachi, P.J.C. & Willoughby, T. (2013). More than Just Fun and Games: The Longitudinal   Relationships between Strategic Video Games, Self-Reported Problem Solving Skills, and Academic Grades. 42(7). Doi: 10.1007/s10964-013-9913-9

Anderson, C.A., Shibuya, A., Ihori, N., Bushman, B.J., Rothstein, H.R., Shibuya, A., Swing, E.L., Sakamoto, A. & Saleem, M. (2010). Violent Video Game Effects on Aggression, Empathy, and Prosocial Behavior in Eastern and Western Countries: A Meta-Analytic Review, 136(2), 151-173. Doi: https://doi.org/10.1037/a0018251

Ari, E., Yilmaz, V. & Elamastas Dikec, B. (2020). An extensive structural modal proposal to explain online gaming behaviors, Vol 34. Doi: https://doi.org/10.1016/j.entcom.2020.100340

Clark, K.R. & Qian, M. (2016). Game-based Learning and 21st century skills: A review of recent research, Vol 63, 50-58. Doi: https://doi.org/10.1016/j.chb.2016.05.023x

Crick, N. R. & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*(1), 74–101. Doi: https://doi.org/10.1037/0033-2909.115.1.74

Gee, J.P. (2005). Learning by Design : good video games as learning machines, Vol 2(1). Doi: https://doi.org/10.2304/elea.2005.2.1.5

Gentile, D. A., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., & Khoo, A. (2011). Pathological video game use among youths: A two-year longitudinal study. *Pediatrics, 127,* e319-329. Doi: http://www.drdouglas.org/drdpdfs/GCLSLFK_Longitudinal_2011.pdf

Gentile, D.A., Linder, J.R., Lynch, P.J. & Walsh, D.A. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance, 27(1), 5-22. Doi: https://doi.org/10.1016/j.adolescence.2003.10.002

Gentile, D.A., Swing, E.L., Lim, C.J. & Khoo, A. (2012). Video Game Playing, Attention Problems, and Impulsiveness: Evidence of Bidirectional Causality, 1(1), 62–70. Doi: https://doi.org/10.1037/a0026969

Granic, I., Lobel, A. & Engels, R.C.M.E. (2014). The benefits of playing video games, 69(1), 66-78. Doi: https://doi.org/10.1037/a0034857

Green, C.S. & Bavelier, D. (2012). Learning, Attentional Control, and ACtion Video Games, 22(6), 197-206. Doi: https://doi.org/10.1016/j.cub.2012.02.012

Kubey, R. & Csikszentmihalyi, M. (2002). Television addiction is no mere metaphor, 286(2):74-80. Doi: https://www.researchgate.net/publication/11531116_Television_Addiction_is_no_mere_metaphor

Kuo, C.Y., Sun, J.C.Y, Hou, H.T. & Lin, Y.Y. (2017). Exploring Learners' Sequential Behavioral Patterns, Flow Experience, and Learning Performance in an Anti-Phishing Educational Game, Vol 20 (1), 45-60. Doi: https://www.jstor.org/stable/jeductechsoci.20.1.45

Liao, J., Ali, R. & Huang, M. (2017). The effect of user experience in online games on word of mouth : A pleasure-arousal-dominance (PAD) model perspective, Vol 75, 329- 338. Doi: https://doi.org/10.1016/j.chb.2017.05.015

Moller, I. & Krahe, B. (2009). Exposure to violent video games and aggression in German adolescents: a longitudinal analysis, 35(1), 75-89. Doi: https://doi.org/10.1002/ab.20290

Pine, R., Sutcliffe, K., McCallum, S. & Fleming, T. (2020). Young adolescents' interest in a mental health casual video game, Vol 6, 1-7. Doi: https://doi.org/10.1177/2055207620949391

Orobio de Castro, B., Veerman, J.W., Koops, W., Bosch, J.D. & Monshouwer, H.J. (2002). Hostile Attribution of Intent and Aggressive Behavior: A Meta-Analysis, 73(3), 916-934. Doi: https://doi.org/10.1111/1467-8624.00447

Sitzmann, T. (2011). A meta-analytic examination of the instructional effectiveness of computer-based simulation games, 64(2), 489-528. Doi: https://doi.org/10.1111/j.1744-6570.2011.01190.x

Soutter, A.R.B. & Hitchens, M. (2016). The relationship between character identification and flow state within video games, Vol 55, 1030-2038. Doi: https://doi.org/10.1016/j.chb.2015.11.012

Swing, E.L. & Anderson, C.A. (2014). The role of attention problems and impulsiveness in media violence effects on aggression, 40(3), 197-203. Doi: https://doi.org/10.1002/ab.21519

Turkay, S. & Adinolf, S. (2015). The effects of customization on motivation in an extended study with a massively multiplayer online roleplaying game, 9(3). Doi: https://doi.org/10.5817/CP2015-3-2

Wouters, P., van Nimwegen, C., van Oostendorp, H., & van der Spek, E.D. (2013). A meta-analysis of the cognitive and motivational effects of serious games. Journal of Educational Psychology, 105(2), 249-265. Doi: https://doi.org/10.1037/a0031311

Young, K. (2009). Understanding Online Gaming Addiction and Treatment Issues for Adolescents, Vol 37, 355-372. Doi: https://doi.org/10.1080/01926180902942191

Zhong, Z.J. & Yao, M.Z. (2012). Gaming motivations, avatar - self identification and symptoms of online game addiction, 555-573. Doi: https://doi.org/10.1080/01292986.2012.748814