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Video Game Engagement And Academic Achievement: A Correlational Study

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ABSTRACT

This study sought to investigate the correlation between video game engagement and academic achievement. The sample consisted of participants from diverse backgrounds, and measures of video game addiction and academic performance were obtained. The results revealed an inverse relationship between video game engagement and academic performance; however, this correlation was established to be negligible. These findings suggest that while there may be a slight association between excessive video game use and lower academic performance, it is not a significant determinant of overall academic success.

Keywords - Video game engagement, academic achievement, gaming platforms, players, correlation

Introduction

The popularity of video games has reached unprecedented levels in recent years, captivating a vast and diverse audience across the globe. From casual mobile games to immersive console experiences, video games have become a dominant force in the entertainment industry. With the proliferation of smart phones and other portable devices, gaming has become more convenient and readily available than ever before. The ease of access has opened up gaming to a wider range of individuals, including those who may not have considered themselves traditional gamers.

Furthermore, the rise of professional e-sports has propelled video games into the realm of competitive sports. Major tournaments, leagues, and championships draw millions of viewers worldwide, turning gaming into a spectator event on par with traditional sports. The emergence of e-sports has not only elevated the status of gaming but has also attracted a new wave of enthusiasts who enjoy watching and supporting their favorite teams and players. The popularity of video games extends beyond entertainment, as they have also become a significant cultural phenomenon. Gaming has influenced various aspects of popular culture, from movies and TV shows to music and fashion. Characters and storylines from beloved games have become iconic and recognizable, further solidifying the impact of video games on contemporary culture. The popularity of video games can be attributed to their accessibility, technological advancements, social aspects, emergence of e-sports, and cultural influence. With an ever-growing fan base and continuous innovation, video games have firmly established themselves as a dominant force in the entertainment industry, captivating audiences of all ages and backgrounds.

Video games have long been a subject of debate regarding their impact on cognitive development. Regular engagement with these games can help improve memory retention and focus. Video games often feature non-linear narratives and open-world environments, allowing players to make choices and experience consequences. This can promote cognitive flexibility and decision-making skills as players navigate through complex virtual worlds and adapt to changing circumstances. Many video games involve three-dimensional environments and require players to navigate and manipulate

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objects in space. This can enhance spatial reasoning abilities, including mental rotation, visualization, and spatial awareness. It is important to note that the positive effects on cognitive development can vary depending on the type of game, duration of play, and overall balance with other activities.

Video game engagement encompasses various aspects, such as the frequency and duration of gaming sessions, the intensity of emotional and cognitive involvement during gameplay, and the level of enjoyment and immersion experienced while playing. Video game engagement can be measured through self-report assessments, observation of gaming behavior, or analysis of gaming metrics, and it reflects the extent to which individuals are invested and absorbed in the gaming experience. Factors that contribute to video game engagement include game mechanics, storyline, graphics, social interaction within games, and individual preferences and motivations. The various platforms selected for video game engagement in this study include console gaming, virtual reality, cloud gaming and retro gaming. A console gaming platform refers to dedicated hardware devices designed specifically for playing video games. Examples of popular console platforms include PlayStation, Xbox, and Nintendo Switch. These platforms provide a standardized gaming experience with their own operating systems, controllers, and exclusive game titles. A virtual reality platform enables users to immerse themselves in a computer-generated virtual environment. VR Virtual reality) platforms typically consist of a headset that displays virtual content and often include handheld controllers or motion tracking devices for user interaction. Users can explore virtual worlds, play games, and even engage in simulated training or educational activities. Cloud gaming platforms utilize remote servers to process and stream video games directly to users' devices over the internet. Instead of requiring powerful local hardware, users can play games on a variety of devices, including smartphones, tablets, or low-end computers, by streaming the game content from the cloud. A retrogaming platform is focused on providing access to classic or retro video games from previous generations of gaming consoles or arcade machines. These platforms often offer emulators or specialized hardware that can run older game software, allowing players to relive nostalgic gaming experiences.

The operational definition of the term video game engagement refers to the hours spent on the video games in a day. The researcher has delimited the platforms of engagement, after careful analysis to include console gaming, virtual reality, cloud gaming and retro gaming.

The impact of playing video games on academic achievement is a subject of ongoing research, and the findings are mixed. The longitudinal study by Adachi, P. J., & Willoughby, T. (2013) found that strategic video game play was positively associated with self-reported problem-solving skills and academic grades among adolescents. Durkin, K., & Barber, B. (2002) explored the relationship between computer game play and various positive outcomes, including academic achievement. The findings suggested that moderate amounts of computer game play were not detrimental to academic performance and could even be associated with some positive aspects of development.

A review article by Howard, J., et al. (2011) highlighted the potential educational benefits of video games, such as improved problem-solving skills, critical thinking, and cognitive abilities. These skills can indirectly contribute to academic achievement. Rutherford, T., et al. (2019) examined the relationship between video game use and academic performance among undergraduate students. The results suggested a small negative association between time spent playing video games and academic performance. It's important to note that the impact of video games on academic achievement can be influenced by various factors, such as the type of games played, the amount of time spent playing, and individual differences. While these studies provide some insights, it's essential to consider the broader context and recognize that individual experiences may vary. Excessive video game play, particularly when it interferes with academic responsibilities and other productive activities, may have a negative impact on academic achievement.

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Relevance of the study

It aims to explore the popularity of different gaming platforms, providing valuable insights into the preferences and choices of gamers. Understanding the popularity across gaming platforms can inform game developers, industry stakeholders, and researchers in designing and optimizing gaming experiences that cater to user preferences, ultimately enhancing user satisfaction and engagement.

Establishing the correlation between video game engagement and academic achievement has important implications for understanding the potential impact of gaming on educational outcomes. By examining the relationship between these variables, the study contributes to the existing body of knowledge regarding the repurcussions of video game engagement on academic performance. This information can be useful for educators, parents, and policymakers in developing informed strategies to strike a balance between gaming activities and academic pursuits.

Lastly, investigating the effect of various gaming platforms on player engagement provides valuable insights into how different technological platforms influence player experiences and levels of engagement. Understanding the factors that contribute to player engagement can assist game developers in designing games and platforms that foster immersive and captivating experiences, leading to enhanced player satisfaction and retention.

Overall, this study's significance lies in its potential to inform and shape the gaming industry, educational practices, and policymaking by providing insights into platform popularity.

Objectives

1. To analyze the popularity across different gaming platforms.

2. To establish correlation between video game engagement and academic achievement.

Procedure

A sample of 280 participants aged 21-30 were selected by snowball sampling method to obtain participants with high engagement in video games. Efforts were made to ensure diverse representation in terms of academic backgrounds and socioeconomic status. Participants were required to complete a survey consisting of two main sections: video game engagement and academic achievement. The video game engagement section gathered information about the frequency of video game play and platforms used. The platforms were delimited to console gaming, virtual reality, cloud gaming and retro gaming, for which the participants provided the preferences in gaming. Video game engagement in the present study implies the number of hours spent in a day playing video games. Here, the researcher has taken 15 hours to be a high engagement score and a mean value of 7 to be an average score and below 2 to be a low engagement score. The academic achievement section collected data on participants' academic performance in the previous examination conducted.

Additionally, controlling for relevant variables, such as socio-economic status and study habits, helped to reduce potential confounding factors and increase the reliability of the results. This study does not establish causation, as it focuses on exploring the correlation between video game engagement and academic achievement within the selected age group.

Result

1. Popularity across different gaming platforms.

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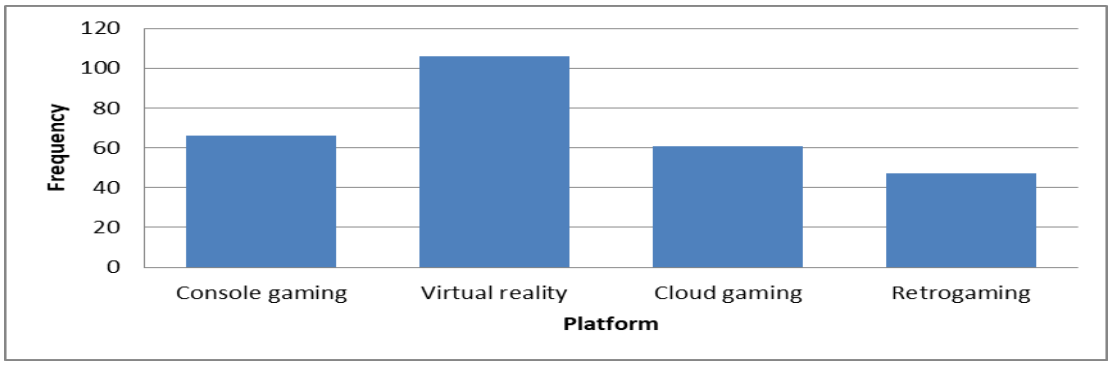

Fig 1: Popularity across different gaming platforms

As depicted in the figure 1, the findings of the study revealed the frequency distribution of various gaming platforms among the participants. The data was represented using a bar graph, displaying the number of participants who reported using each platform.

The bar graph clearly depicts the varying levels of popularity among the different gaming platforms. Virtual reality gaming emerged as the most commonly reported platform, with a significantly higher frequency of 106 participants. This suggests a substantial interest and adoption of virtual reality technology for gaming experiences. Console gaming, although slightly lower in frequency compared to virtual reality, still garnered a notable number of participants with 66 individuals choosing this platform. This indicates the enduring appeal and widespread usage of dedicated gaming consoles. Cloud gaming and retro gaming platforms exhibited relatively lower frequencies, with 61 and 47 participants, respectively. This suggests a comparatively lesser prevalence of these platforms among the study participants.

2. Correlation between video game engagement and academic achievement

The analysis focused on determining whether there is a significant correlation, positive or negative, between these variables within the selected age group.

Table1: Correlation between video game engagement and academic achievement

		Video game exposure	Academic achievement
Video game exposure	Pearson Correlation	1	-.261**
	Sig. (2-tailed)		.000
	N	280	280
Academic achievement	Pearson Correlation	-.261**	1
	Sig. (2-tailed)	.000	
	N	280	280
**. Correlation is significant at the 0.01 level (2-tailed).			

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As depicted in Table 1, the correlation analysis between academic achievement and video game engagement, as measured by the Pearson correlation coefficient, revealed a negative correlation of -0.261 ($p < 0.001$, 2-tailed) at a significance level of 0.01. The negative correlation coefficient of -0.261 indicates that there is a weak negative relationship between academic achievement and video game engagement among the participants. This implies that as video game engagement increases, academic achievement tends to decrease to some extent. However, it is important to note that the strength of the negative correlation is relatively weak. The p-value of less than 0.001 indicates that the observed correlation is statistically significant, even at a high level of confidence (0.01 level of significance).

Discussion

The result of this study was supported by several studies, which are discussed in this section. Çakıroğlu et al. 2017 reported the inclusion of gamification elements in the classroom had an indirect impact on academic performance by enhancing student engagement. Additionally, recommendations were provided on how to incorporate gamification elements effectively in an actual classroom setting. Brunborg et al. (2014) found a correlation was found between video game addiction and decreased academic performance. The results by Eow & Baki (2009) indicate modest connections between engaging in computer games and the academic performance of students. Sahin et al. 2016 observed that while there might exist a negative correlation between game addiction and academic achievement, it is important to note that this correlation can be characterized as insignificant or minimal. The regression analysis by Hamlen 2014 examining the relationship between video game strategies and Grade Point Average (GPA) yielded statistically significant results. Weis & Cerankosky 2010 reported video games have the potential to replace educational after-school activities and hinder the progress of reading and writing skills in certain children. Gnambs et al. 2020 reported that engaging in video games can lead to a slight decrease in educational benefits, although this impact is relatively modest and does not affect fundamental competencies.

A few studies contradicted the results reported in the present study, which are discussed in this section. Business Simulation Games had beneficial effects on behavioral engagement, cognitive engagement, and learning outcomes (Huang et al. 2022). Gao et al. 2013 observed that professionals involved in the field of education should contemplate the integration of exergaming in schools as a means to augment academic achievement specifically among Latino children. Concepcion et al. 2016 reported that students who were more involved in playing video games achieved higher academic performance, as indicated by their higher Grade Point Average (GPA). Haghbin et al. 2013 suggested that the outcomes of the study do not provide evidence for establishing a cause-and-effect relationship between video game usage and academic achievement.

The results revealed a negative correlation between video game addiction and academic achievement, although this correlation was found to be negligible. These findings suggest that while there might be a slight association between excessive video game use and lower academic performance, it is not a significant or influential factor in determining overall academic success.

Implications

The study highlights the need for awareness and moderation when it comes to video game engagement. While the correlation between video game addiction and academic achievement was deemed negligible, it is important for individuals, especially students, to strike a balance between gaming activities and their academic responsibilities. Educators can play a vital role in promoting healthy gaming habits by encouraging responsible use of technology and fostering time management skills among students.

Not all students may be equally affected by video game use, and external factors such as study habits can significantly influence academic performance. This calls for personalized approaches that address

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the unique needs and circumstances of students.

Moreover, the findings highlight the importance of promoting a holistic approach to education that encompasses various after-school activities. While video games may displace certain educational after-school activities, it is crucial to provide a range of opportunities for students to engage in activities that enhance their academic, social, and physical development. Encouraging a diverse array of extracurricular pursuits can help maintain a healthy balance between leisure activities and educational growth. While the study provides valuable insights, there are still unanswered questions regarding the long-term effects of video game engagement on academic achievement and the underlying mechanisms at play.

Conclusion

In conclusion, the present study examined the correlation between video game engagement and academic achievement. The findings indicated a negative correlation between video game addiction and academic achievement, although this correlation was determined to be negligible. These results suggest that while there may be a slight association between excessive video game use and lower academic performance, it is not a significant determinant of overall academic success.

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