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The Effect of online Games Play on Academic Performance: SLIATE as Case Study.

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ABSTRACT

With the growth of coronavirus disease 19 (COVID-19), most of the people's lifestyle has changed drastically, which could cause depression and anxiety The rapid integration of digital devices and online gaming into students' lives has prompted a comprehensive exploration of their impact on academic performance. This research investigates the habits, preferences, and behaviors of final-year students at the Sri Lanka Institute of Advanced Technological Education (SLIATE) regarding digital device usage and online gaming. The study employs a descriptive survey research design, utilizing a questionnaire distributed across four Advanced Technological Institutes in different districts. The conceptual framework addresses variables such as the use of digital devices, online gaming habits, sleeping patterns, and behaviors. Operational definitions and operationalization of variables provide clarity in measurement. Hypotheses posit both positive and null influences of digital device use, online gaming, sleep patterns, and behavioral intention on academic performance.

Results reveal a digital landscape where 80% of students actively participate in gaming, predominantly on smartphones. Online gaming preferences span diverse genres, with notable gender-based differences. Sleep patterns and behavioral shifts, influenced by game characters, pose potential challenges to academic commitments. In conclusion, the study underscores the need for a balanced approach to digital engagement. While gaming offers educational potential, challenges such as sleep disruption and behavioral changes necessitate informed strategies. The findings inform educators, game developers, and policymakers in navigating the evolving digital landscape, aiming to optimize the benefits while safeguarding students' well-being and academic success

Keywords: Digital devices, online gaming, academic performance, student behavior, sleep pattern, Online Learning, SLIATE, ATI, Educational Technology, student habits, technology in education

1. Introduction

With the enormous growth of technology, difficult to circumvent the encouragement of technology over human lives in numerous aspects, especially expediency in higher education sector. Although, from 2020 onwards all physical setting changes to online platform because of the outbreak of COVID-19. Students encourage to involvement with different digital devices such as mobile phones, laptops, tablets, etc… with internet access (Dhawan, 2020). The development and use of Digital devices with internet may either ease or make students life harder and more complicated. The consequences of this opening the windows to online gaming through the internet which is more attractive habit, moreover huge number of humans widely used as leisure activity. Increase of online population is directly corelated with speed fiber internet and popularity of home computer. These are advent factors of "Video Gaming addiction", a performance pattern developed by individuals and video games. (Lin et al, 2010). There are so many platform connecting players together from different geographical locations rather than playing individual online games, today it is a most demanding tend among youngsters.

Online games may destroy their mind volume and certainty, which is more harmful than destroying bodies by using drugs. Students forget commitments with studies and personal life, bets on online gaming which have enormous influence in the lives of their family, also addiction of online games directly affect to the forgotten of pre-occupied works such as assignments, exams and influence to absence for lecturers (Irene, 2019).

There are some games have specific goal to achieve by fitting certain categories such as collector, achiever, storyteller, performer, etc.. motivate to spend plenty of times sitting in front of screen. These may motivate youngsters that they are fantasy world heroes. They used mind catching user environment objects and colors, also when level up rewarding. Moreover, some students escape from the harsh realities of their life and change in to valued character that in the fantasy world star. Some students are playing online games over the night, one boy died in Sri Lanka because his parents had confiscated his mobile phone, because he played games until

4.00 a.m. and exposed aggressive behaviors (Ceylon Today, 2021). The students who habitually played violent video games did multiple school shooting in three towns which are Paducah, Kentucky, Jonesboro Arkansas, Littleton, Colorado. killed 13 people and wounded 23 in Littleton, by Eric Harris and Dylan Klebold, also before killing themselves enjoyed playing the bloody video Doom. (Anderson & Bushman, 2001)

Most of the higher educational institutes all over the world used social networking sites for determinations. There are no boundaries to whom, what, how and when online gaming can spread, also it has such a philosophical impact not only the youngsters, but dynamically every age group as well. Virtually any one can able to go on a computer with internet and punch through the keys and mouse in order to get a high score, chat with players, get the retest items, and level up as fast as possible.

Finding the effect of online game with academic performance among SLIATE students are of grate importance hence there is no known information regarding GPA results behavioral vs online game. Under this, try to identify variety of factors and academic performance of 1st year 1st semester students in SLIATE. Operationally define academic performance as attendance, continuous assignment marks and final grade for end semester examination.

2. Literature review

The students those who are playing video games indicates the significantly lower GPAs than the students those who did not involve with playing video games (Jancee,2011). This research was not account for extracurricular activities, employment, or course load and this non-player group is not involve with campus activities and therefore they have more time on focusing studies.

Popularity of internet is rocketing, also the world wide web has become essential tool of modern families. As result most of youngsters and college students spent leisure time by playing video games lengthy time which is more harm to their brain activities. These may cause to depression, anxiety, low self-esteem and alienation in inter personal relationships among college students, moreover some are trying to fulfill their goal of self-realization through the virtual reality of video games, some behavioral impulse shows beyond the control and negative psychological damages happen. According to the study 88.8% college students were playing internet video games (Lin et al. 2013). The addiction of online games is the reason to stay students stay up all night, the two factors duration and interaction have an impact on visual working memory. Researchers suggest to develop parent -child activities to reduce the time spent on video games and avoid the potential threat caused by over-involvement.

The development of technology makes humans life either easier or more complicated. As results of technology growth more people are addicted to online games as one of their leisure activities. The online game is a technology rather than genre also technical mechanism for connecting worldwide players rather than particular game playing pattern just like a computer network. According to the studies students are showing outshined in their class as reveled by their academic grades and no significance changes in academic performance even they played online games (Irene, 2019). Even there is no significant changes in academic grades he recommended parents to guide the children, also students to find other activities to avoid the use of online games.

Research on gaming prove, with the time spend with video games for male students has limited predictability for the relationship between attendance and time spent playing games, also no predictive value with final marks and time spend for the gaming. Moreover, their statics shows moderate negative correlation has limited predictability for the relationship between time on gaming and positive school experience with male students, they like to playing video games than their teachers and the boys felt more sleep at school since they spent more hours with gaming also, girls fall behind in their assignments. When consider about their attendance there are no any correlation in between attendance and playing games. More adolescent girls spend time with games without considering to get high marks in school. (Terry & Amjad, 2018)

According to Wadanambilage & Kodithuwakku (2019) There is a co-relation in between the internet usage and the academic performance of Sri Lankan Undergraduates. The GPA of the students those who have more involvement with ICT is higher than the students with low ICT interest. According to them ICT use by bright students because to use digital devices at least students should have basic knowledge, so Researchers suggest educational administrations to add ICT practical components in to Sri Lankan Higher Education Curriculum with the effective and efficient usage of ICT with their learning process.

The mobile phone game addiction has both positive and negative attitudes. (Karunanayake et al,2020). Some students are aware about drawbacks of gaming and they need to stop it, while other participants are even not considering about negative impact of gaming. Majority hurts the negative impact of academic performance, more aggressiveness, decline mental and physical health because of game addiction, they have good idea about impact of online gaming for themselves and their social relationships also, wasting money and time. On the other hand, rest of students reduce their stress loneliness and games helps to reduce their feelings of sorrow and enhance self-identity. In this study most of the students born in 21st century and from the birth they have very good ICT literacy also, experienced with different digital devices. Their parents are running with busy schedules and no time to concentrate on them even no time to talk with children. Without parents help it is impossible task to rescue teenagers from online game addiction so researchers suggest parents give more concern and time to their kids. Fortunately, they found few participants have positive aspect on stopping playing online games.

Including collage students all youngsters are poses to public health thread by spending more time with video games. Males and females, experimental and non-experimental youngsters and adults showing high level of aggression by association with gaming. By long term online game addiction is positively related to the main mechanism underlying long-term development of aggressive personality (Anderson & Bushman, 2001).

According to concepcion et al. (2016) studies the students spent more time on video game playing were earn higher grades in examinations also, deviant activities was unrelated to grades. There is no relationship between use of video game and academic performance depend on deviant behaviors also, no interaction between deviant behavior and video game playing. Even most people specially parents and teachers think video game playing giving negative impact on academic performance it will give positive influence on final GPA by using as education tool. The students are not participating with deviant behaviors not affect with academic performance by spent time with video game and students showing deviant behaviors are getting low academic achievements.

The students spent more and less time with video games, there was significance and distinct different in the final GPA. The student burns more time with games perform lower grade GPA while others getting higher grades. Most of addicted students were spent less time per week for studies and they have trouble paying attention in classes. By getting high demand on themselves they would spend more time on game playing also they are not managing time appropriately enough to ensure that they get enough sleep (Weaver et al. 2013).

3. Statement of Problem

Fast-growing technology has introduced an electronic device which is not limited to massages and calls and far more like computers with features and functions in a mini version and handy. The smart divise revolution era began with the introduction of the blackberry smartphone equipped with many features such as web browsing, camera, email, internet and gaming. Beginning these smartphones were produced to simplify an adult's job. However, youth become fascinated with this device as time pass. Even though digital devises provide many functions, Youngsters use this for chat, to browse social media, to take selfies, to exchange pictures and gaming which seems to unrelate to their learning (Singh & Samah, 2018). Most students including school children to higher educational students addicted to plying online games using digital devises. According to Lin et al. (2013), the students suffer from worsened leering ability, concentration problems, poor academic performance and decreased interaction with other people in every week as a result they spend more time on playing online games.

In Sri Lanka, usage of internet increasing rate increased by 20% in 2017 by rising in no of internet connections (Sunday Observer, 2018). According to weerasundara (2014) the internet usage and online gaming made negative impact on mental health of the youngsters by considering several suicides amid and mental health problems. The study observed the changes of life style because of digital devise use and online game playing will affected to the family relationships (Thivanka, 2016). A 15 years old school boy lived in Mathara, Sri Lanka suicided by himself after his parents had confiscated his mobile phone due to his addiction online video game. The investigations found most of school children in same age addicted with online video games because all school academic activities conducting via online platform due to pandemic situation of COVID-19 (Newswire, 2021). Same type of incidence reported by Daily Mirror (2021), a 14-year grade 9 school boy in Jaffna, Sri Lanka had committed to suicide by hanging since his mother took his mobile phone to prevent him from online game addiction. Not only Sri Lanka the nearest country India also reported same type of incidence, 13-year- old boy suicide by himself because his mother scolded him for spend of Rs. 40,000 for online battle royale game called free fire (India Today, 2021).

According to the article by Ruwan Jayakody (Sunday Morning, 2021) In Colombo Educational Zone A/L Students are emerging public health concerns because of online gaming. Specially more male students are spending plenty of time with online games and causes to the symptoms of sadness, anxiety and irritability also their academic performance or job-related functioning suffers. Due to gaming some are having jeopardised or lost a job or educational opportunities or a significant relationship. According to Mr. Raveen Wijayatilake the CEO of Gamer.lk approximately 3 million people in Sri Lanka interesting in gaming and it 14% from total population. Out of them more populations showing in Colombo Area. The past decade saw a flourishing in the digital game downloading with the increase of internet bandwidth speed.

Online game playing may lead to important influence in enhancing students' performance as it might boost teaching and learning experiences (Singh & Samah, 2018). However, students have difficulty in balancing their academic life with their entertaining with games even though they want to make learning a priority in their lives. Students seem to be motivated playing games, collecting reward, levelling up and adopt game characters in to life rather than downloading their class assignments and joining with lecturers. Online game has impacted students' life in various areas especially education, such as increasing computer literacy, enhance analytical thinking, math skills reading, quantitative analysis, increases self-confidence and self-esteem.

With a higher number of students using different digital devises on daily basis, and expose to playing online games with advantages and disadvantages in their lives, there is a strong need to analyse the extent to which online game playing have its impact on students' academic performance. Also, online games playing is reported to have bad influences like addiction, wasting time on downloading games and playing games, aggression, frustration, wake up till late night, and isolation from physical society. Such results call for more research to see the impact of the online game playing on students' academic performance. Although many studies have investigated the impact of online game playing on university students' academic performance, few have focused on the Sri Lankan context. Hence, this study should contribute to valuable findings. The purpose of this quantitative study is to investigate the regular playing of online games by students and the impact of on line game playing on students' academic performance.

4. Objective of the Study

The current pinnacle of Digital Device development is presented by smartphones, Laptops, Tablets and many more where it has become an indispensable gadget in day to day life. Because digital devices provide a wide variety of functions that can be applied to diverse domains, including communication, learning, game playing (Han & Yi, 2018) and integrated into daily life. Aa per J Clement (2021) 85% of global internet users played video games on any device in 1st quarter of 2021. According to the Gamer.lk CEO approximately three million civilians (14% from total population) in Sri Lanka are playing games. Globally, there is a tremendous increase in Digital Device use among students especially those who are in higher education (Ng et al., 2017) and the number of users is increasing day by day in a noticeable way. This new trend should be assimilated by higher education institutes to create a ubiquitous learning environment (Han & Yi, 2018). Now a days students are more interested to playing online games also, online gaming involves various factors inter-related to the students learning process. However, students are spending a substantial amount of time on digital devices with internet facility and more interesting to spent time with playing online games, it is being in great doubt whether they are using this modern technology for their education purpose.

The general objective of this research is to investigate how the time spent to playing online games by using digital devices impact students' academic performance who are educating in SLIATE.

Specific Objectives

1. To investigate how the students at SLIATE use Digital Devices regularly.

2. To Investigate how online game addiction, consequence students at SLIATE to achieve semester attendance percentage.

3. To investigate behavioral pattern of game addicted SLIATE students.

4. To investigate how SLIATE students spent their leisure time.

5. To investigate how behavioral intention to online game playing effect classroom learning and academic performance among students at SLIATE.

Significance of the study

Students.

The results of this research will help the final year students of SLIATE have an understanding on the outcome of online games on their academic performance. Also, by referring this study other students also can get idea how online gaming is effect with their academic performance.

Parents

By referring this study parents can get idea about online games and how they affect to their children and help or share with other parents the evidence about certain games or ideas in terms on how they guide their children. Parents can get understand the behavior and study routine of their children when they engage with such activity.

Teachers

The study will provide additional knowledge to the teachers what strategies to use to educate students about well-known effect of online gaming to students. Teachers can benefit from this study and guide students.

SLIATE

When SLIATE higher authorities are updating new curriculum, they can decide whether their including "effect of online gaming for students' academic performance" chapter under information technology subject in non-IT Courses and for IT Students under professional issue subject, by referring this study.

Future researchers

They can take this study as guide and reference when they will be conducting study related to certain topic.

5. Methodology

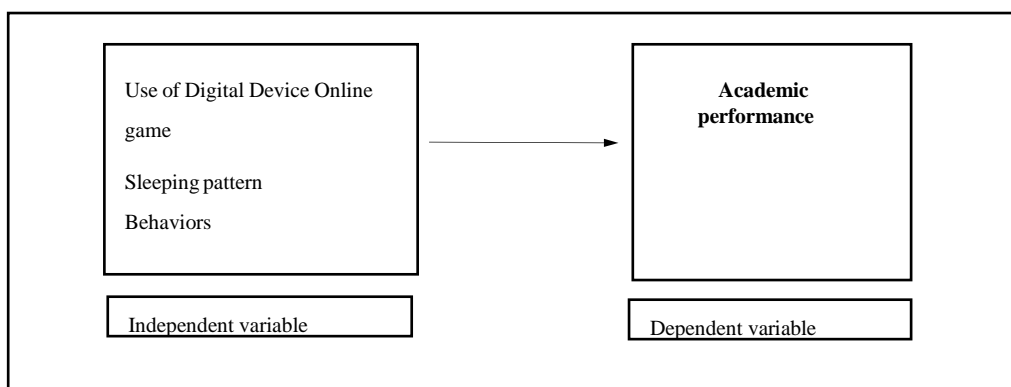### 5.1 Conceptual Framework with the Research Design

Figure 1. Conceptual framework

5.2 Operational Definitions

Table 1: operational definition

Variable	Operational Definition
Use of Digital Device	What are the digital devices using by students and how long they will use (No of hours) per day. Checking whether their using digital devices for educational purpose or any other purpose specially playing games.
Online Game	When students are using digital devices how long they would spent for online games. What is the type of games being played by students and no of hours spent for a games per day. Whether their playing one game at a time or several games and check whether those are individual or group.
Sleeping pattern	Most of students using off peak data for downloading games and playing games so they are spending time on late night from this variable checking no of hours spent in late night and waking up early in the morning or because of delay they missing participating for lecturers and late participations.
Behaviors	When students are spending more time with video games check whether is it effect to their mental health and behaviors like aggressiveness. Whether students show depression and anxiety symptoms by playing games more times per day or they used it as leisure activity and effectively done their studies.

5.2 Operationalization of variables

Table 2: operationalization of variable

Variable	Operationalization of variables	Some Questionnaire Statements
Use of Digital Device	The devices used by students to playing games. The time spent on devices by students	No of hours spent per day What is the digital device more convenient to use? Which is your primary mode of gaming?
Online Game	The time spent for online gaming per week. the type of games is popular among SLIATE students and they like to same type of game or different types. The incidence students more attraction with playing games. The students joining with video gaming clubs.	The average week how many hours do you spend gaming? Since the beginning of the semester, what game category has been your primary centre of playing? I have membership with video gaming club
Sleeping	Students are spending time in late night to download and playing games, causes to miss the lecturers and late participation.	I spend night time to use off peak data to download games. I missed lecturers because I didn't wake up early morning
Behaviors	spend more time on playing games affect to student's mental health they perform aggressiveness and sometimes depression thoughts change their behaviors as characters on the game. Some students playing games as leisure activity and improve math skills, analysis and accurately visual information recognition.	Playing online games can stimulate anger and violence due to performing My attitude changes according to the characters on the game Games improves my high level of analytical thinking Improved my ability to rapidly accuracy recognize visual information

5.3 Hypothesis

H1: There is a positive influence of digital device use on academic performance.

H0: There is no positive influence of digital device use on academic performance.

H2: There is a positive influence of playing online games on academic performance.

H0: There is no positive influence of playing online games on academic performance.

H3: There is a positive influence of sleep on time on academic performance.

H0: There is no positive influence of sleep on time on academic performance.

H4: There is a positive influence of behavioral intention on academic performance.

H0: There is no positive influence of behavioral intention on academic performance.

5.4 Population, sample and sampling

The study is constructing under a descriptive survey research design and planning to distribute questionnaire among four different ATIS, students from different disciplines. is Sri Lanka Institute of Advanced Technological Education (SLIATE) is a non-profit Government Higher Educational Institute which is under the Ministry of Education. They provide middle level managers for the industry and comprise 19 Advanced Technological Institutes (ATI) all over the Island. Due to the convenient gathering of data, I am going to select only four ATIs located in different districts respectively Dehiwala, Galle, Kandy and Ampara. All these four ATIs are offering different HND courses also, HNDIT, Accountancy and English courses are common in them. All participants are final year students of above three courses and there are students from full time and part time. The ages of the participants ranging from 20 to 50 under three categories respectively 20 to 30, 31 to 40 and 41 to 50 also, categorize by the gender.

The students select from different geographical locations from urban and rural to find the digital device usage and game playing addiction by analyzing location. According to the Gamer.lk CEO most of the Colombo students are addicted to online games. Final year students selects assuming they have more experience and digital literacy than 1st year students. The three departments are selected based on the syllabus outline. HNDIT students have to follow all IT related subjects and the students from Different A/L streams such as mathematics, biology commerce, art and technology. HNDA syllabus all semesters have IT component in their syllabus, and they also use digital devices and all the students from A/L Commerce stream. The English department students also selected from all the A/L streams and majority from Art stream and their syllabus does not contain IT component as a subject. All part time students are working somewhere else and joining lectures in weekends.

To gather the data from SLIATE as a sample select these three different departments from four different locations.

5.5 Method of data collection

Planning to create an online questionnaire using google form. A link to the online questionnaire is sent to the students by group email, official WhatsApp groups and through head of department of each respective course and circulate among students for data collection. The cross-section survey is planning to conduct release immediately after final year 1st semester results release by SLIATE approximately December 2021 to January 2022. The questionnaire is created by taking approximately 20 minutes to complete.

To understand the influence of SLIATE student's usage of digital devices, level of involvement in online gaming and their behavioral pattern, survey structures of past literatures have been studies to summarize and construct the survey structure of this research. The questionnaire is divided mainly in to three parts. The first part of the questionnaire asking students demographic details such as gender, age, location, consent concerning the use of GPA, etc… and digital device usage of students. The second part contains two sections for online game players and non-players. For online game playing students must answer questions including the types of games, time duration spent, motivation and many more questions. Non-players must answer the reason why they are not playing online games and how they spend their leisure time. From the second part of the survey students must answer either section I or II. Without answering at least any section they can't move to the third part of survey, and it is not allowed both sections for one respondent.

The third part of the survey includes sleep and behaviors of students. For this part should answer by both game playing students and non-playing students. This includes regarding whether they are early sleeping or late and behavioral pattern. This is a common section and created based on both game playing students and other students who spent leisure time in different way. The questions using four-part Likert scale (1= strongly disagree, 4 = strongly agree). There is no neutral scale to avoid the effects of central tendency. The last section asks participants to report on credit for each subject and final semester GPA.

5.6 Method of data analysis

The data is planning to collect using google from and analyzing to determine if there are any significance differences between the two groups, control group (the students not playing online games) and experimental group (the students playing online games) in terms of final semester GPA, which is going to use as an indicator to determine if playing video games has an impact on academic performance. Collect google form results excel sheet and converted it in to Statistical Package of Social Science (SPSS) format and analyze using SPSS version 20.

The data is analyzing using a series of descriptive statistics analyze, correlations analyses, and one-way Analysis of variance. Planning to study the independent variables of use of digital devices, on online game playing, sleeping patterns and behaviors, in the experimental group the students who are playing video games and with the control group of students those who not playing games, as operationally defining by the indication on the survey of player status and by the amount of time spent in the playing of video games. the dependent variable academic performance is going to study as measurement by final year first semester results published by SLIATE examination division.

6. Results and Discussion

In our study, we found that a significant majority of students, comprising 80%, actively participate in gaming activities, underlining the prevalence of digital engagement among the student population. When examining the devices used for these digital pursuits, smartphones emerge as the primary choice for 70% of participants, followed by laptops at 20%, and tablets at 10%. The average daily digital engagement across these devices is approximately 4 hours.

Further delving into gaming preferences, a noteworthy 75% of game-playing students opt for mobile phones, with laptops and tablets accounting for 20% and 5%, respectively. In the realm of online gaming, a diverse distribution of engagement hours is observed: 10% dedicate more than 5 hours daily, 20% spend between 3 to [insert maximum hours] hours, another 20% allocate 1 to 3 hours, while 30% limit their gaming sessions to 0 to 1 hour. Intriguingly, 20% of participants do not partake in online gaming at all.

Examining game genres, our findings showcase a rich tapestry of interests, with shooter, survival horror, sandbox, puzzle, action, and racing games dominating the landscape. Gender-based preferences are apparent, with males favoring shooters and racing, while females exhibit a penchant for sandbox and puzzle games. Notably, both genders share a collective interest in other game types. However, despite this avid engagement in gaming, only 20% of students are current members of gaming clubs, revealing a potential area for growth and community building.

Shifting our focus to sleeping patterns, our study uncovered that 70% of students utilize midnight off-peak data for game downloads. Surprisingly, only 30% are motivated to wake up explicitly for this purpose, while the remaining 50% incorporate game downloads into their study routines. Furthermore, 20% of students have reported missing lectures due to oversleeping, emphasizing the potential impact of late-night digital activities on academic commitments.

In terms of behavioral shifts, a substantial number of students acknowledge changes in attitude influenced by game characters. Additionally, 20% of respondents admit to experiencing feelings of anger and violence, particularly among those engaged in shooter and action games. A smaller but notable 5% report alterations in personal style, such as hairstyles, spectacle frames, eyebrows, and tattoos.

Discussing these results, it becomes evident that digital devices, particularly smartphones, play a central role in students' lives, necessitating a thoughtful approach to curriculum and content delivery. The diverse gaming landscape opens up opportunities for developers and educators to cater to varied interests, potentially enhancing the educational aspects of gaming. However, the challenges of sleep disruption and behavioral changes warrant attention, pointing to the importance of balanced digital engagement and the need for supportive interventions and awareness programs. This study provides a nuanced understanding of the intersection of digital engagement, gaming, and student life, offering valuable insights for educational institutions, game developers, and policymakers alike.

7. Conclusion

In conclusion, our research illuminates a complex interplay between digital device usage, gaming behaviors, and academic life. Striking a balance between harnessing the positive aspects of gaming and mitigating potential negative consequences requires a collaborative effort from educators, game developers, and policymakers. By doing so, we can create an environment that maximizes the benefits of digital engagement while safeguarding the well-being and academic success of students.

This research offers valuable insights into the digital behaviors and preferences of students, shedding light on the prevalence of gaming and digital device usage in their daily lives. Most students engage in gaming activities, with smartphones being the preferred device. The study indicates a significant time investment in digital activities, raising concerns about potential impacts on sleep patterns and academic commitments. The findings also reveal diverse gaming preferences among students, with distinct genre inclinations based on gender. However, it is notable that a considerable portion of students lacks membership in gaming clubs, presenting an opportunity for educational institutions to explore initiatives that promote responsible gaming and community engagement. The research highlights the need for a nuanced approach to understanding the relationship between digital activities and student behavior, acknowledging both the positive and potentially adverse effects. As we navigate this digital age, educators and policymakers can leverage these findings to develop informed strategies that balance the benefits and challenges associated with students' increasing reliance on digital devices and online gaming.

8. Implications and Recommendations

The findings of this research bear several implications for various stakeholders. Educational institutions need to acknowledge and address the prevalence of digital device usage and online gaming among students. There is an opportunity to integrate educational aspects into popular game genres, fostering a synergistic relationship between gaming and learning. Workshops on time management and the establishment of gaming clubs with a focus on responsible practices can contribute to a more balanced digital engagement. Game developers can collaborate with educators to design games aligned with academic goals, incorporating features that encourage short gaming sessions to mitigate disruptions to sleep patterns. Policymakers should consider formulating guidelines promoting responsible digital engagement and supporting initiatives that raise awareness about the potential impacts of online gaming. Teachers can leverage students' diverse gaming preferences to create engaging learning experiences while monitoring behavioral changes and offering support when needed.

The following recommendations emerge from the study. Educational institutions should conduct workshops and monitor attendance issues related to late-night gaming. Game developers can explore incorporating educational elements into popular game genres and work on features that encourage responsible gaming practices. Policymakers should establish policies promoting responsible digital engagement and advocate for digital literacy courses. Teachers can leverage students' gaming interests for interactive learning experiences and collaborate with students to establish a healthy balance between academic and gaming activities. Additionally, students are encouraged to be mindful of their gaming habits, allocate sufficient time for academic commitments, and seek support when experiencing negative impacts on mental health. Overall, implementing these recommendations and considering the implications

will contribute to fostering a balanced approach to digital engagement, ensuring that the educational benefits of online gaming are maximized while minimizing potential negative consequences..

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