

A Study on Digital Habit and Cyber Safety among Middle Schoolers

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Abstract

We refer to today's middle school children as 'digital natives' on the basis that their technical abilities will naturally protect them. However, this study involving middle schoolers shows a dangerous lack of awareness. The aim of the study is to explore the 'Digital Life' of middle schoolers' habits regarding screen time, their cyber-hygiene, the risks they face online, and their general psychological well-being.

For the study, the survey was done through google form. 460 students consented to participate from one of the public schools of North Delhi, in which (166) were from grade 6th, 150 from 7th and 144 from 8th among which 222 were girls and 238 were boys. The survey questionnaire was built up with the discussion of the experts, mentors and review of literature.

The result data were analysed using cross-tabulation across gender and grades, supported by percentages and graphical representations. Thus, we tried to understand the interaction happening across age and grades in their digital life.

The results indicate diverge digital diets across gender- especially playing multiplayer games for boys and scrolling short stories in social media for girls strongly proves the uses and the gratification theory by Katz(1973) in the middle schoolers. The increase of screen use was also observed as grade increases. Interestingly, for second objective also, the students were showing awareness of two-factor authentication password as the grade increases. Despite the protection through technical security, but as they entered in the platforms, the middle schoolers, especially, boys witnessed online risk exposures to lobbies, viral challenges and cyber bullying. This is safety paradox. Finally, the screen use, online exposure to risk has taken toll on their sleep that has indirectly exhausted their cognitive resources. Thus, we can clearly observe the psychological impact on the middle schoolers due to digital life.

INTRODUCTION

In today's digital world, middle schoolers are becoming more and more involved in a complicated network of online interactions, gaming environments, and social media sites. Although technology provides huge educational and social advantages, it also puts young users at risk in several ways, such as through cyberbullying, exploitative gaming features, and permanent digital footprints.

This study explores the online behaviors and vulnerabilities of middle schoolers to understand how equipped students are to navigate digital threats while reducing potential risks of psychological well being.

Digital Diet and Screen Use

Digital Diet and Screen Use refers to the pattern that people exhibit while using screens in their daily life. It can be observed through the frequency and duration with which targeted audience engage in consuming contents in their digital devices and the nature of content they select to consume in their everyday life. This dimension examines how and what, users persistently and consistently recur to consume in their digital life, which ultimately shapes their digital world. Katz, Blumler, and Gurevitch (1973) have posited their explanation on media consumption through Uses and Gratification Theory. They recognized the audience's role in media consumption. It means that students purposefully pick certain digital platforms to engage in a range of activities, including social media scrolling as a means of satisfying different gratifications, such as fun-seeking. Within this framework, screen time behaviour is measured by number of hours and the nature of content the targeted audience(student's) predominantly use for the non-academic or leisure activities during a regular school day using digital devices.

Cybersecurity and Cyber-Hygiene

The second dimension, Cybersecurity and cyberhygiene aims to ensure safety and security of the individuals in their routine life. It examines the precautions an individual takes to protect their information from the criminals in their routine life. Few mechanisms include password management, and enabling two-factor authentication(2FA).

Traditionally, Frincke and Bishop (2004) proposed "Castle Model" to ensure cybersecurity of the organizations to create protection for individuals. Thus, it was the organizations that formed layers to protect the individuals. However, since now, the cybercrime has become the part of our routine life illustrated in Cyber- Routine Activity Theory (Felson & Cohen(1979), therefore, the focus had shifted from organizations to the individuals themselves, who are the target for the criminals directly. von Solms and van Niekerk (2013) proposed Defence in Depth Strategy and suggested that each individual should manage strong and unique passwords for each email identities so that the information should be protected from hackers and ransomwares. Applied to personal cyber-hygiene, no single protective layer is deemed sufficient on its own; rather, individual user actions (such as credential security) combine with technical safeguards to form a comprehensive defense system against threats.

Online Risk Exposures

Online Risk Exposures refers to individual's risks and exposure to digital challenges like harassment, dangerous viral challenges, cyber bullying that creates toxic environment for the digital users. As Discussed in Routine Activity Theory(**Felson & Cohen(1979)**) criminal activities have been part of daily routines. **Infact**, Yar(2005) extended further, and described abusive and offending behavioural practices followed by abusers on the users due to absence of supervision. In digital platforms , such risky behaviours are acquired by the peers through observational learning (Bandura, 2001) and constantly rewarded by group members. In the digital platforms , abusing, torturing, offending has become the reasons for pride for the abuser and normalized by the group members. This online exposure has put user's mental health at stake.

Psychological Well-Being

We can infer from other dimensions of the digital life, such as digital diet, frequency and duration of screen use, constant challenge of digital security and online risk exposure have impact on focus, sleep and emotional regulation of the users. PERMA Model of Flourishing (Seligman, 2011), the Positive Emotion, Engagement, Relationship, Meaning and Accomplishments are at risks for the user's to the toxic online exposures. It was observed that the constant stress within digital users (Brod, 1984) depletes the ego of

the individuals (Baumeister, 1998) and their drains cognitive self-control resources, disrupts sleep quality, diminishes focus, and impairs emotional regulation capacity. To cope with this technostress, the emotion focused coping mechanism is used and they indulge in risky behaviours and increased use of digital screen time.

Thus, this study explores these dimensions in the middle schoolers of 6th to 8th grades and examines the digital life of students across grades and gender.

Problem Statement

Despite being "digital natives" who spend significant time online, middle schoolers frequently lack the comprehensive cybersecurity awareness, emotional regulation, and technical knowledge required to protect their digital footprints and psychological well-being from modern cyber threats, exploitative algorithms, and peer-driven online harassment.

Research Gap

While existing research heavily documents overall screen time or focuses singularly on cyberbullying, there is a lack of holistic studies examining how 13- and 14-year-olds manage the *intersection* of digital security (passwords/privacy) and digital well-being (diet/gaming). Furthermore, specific localized data for middle school students in the Indian educational context regarding modern threats like viral challenges is limited.

PRESENT RESEARCH

Objectives

1. To measure the digital diet and screen use of middle schoolers.
2. To examine the level of cybersecurity and cyber-hygiene followed by middle schoolers.
3. To assess the prevalence of exposure to cyberbullying, toxic gaming environments, and viral internet challenges.
4. To explore the psychological impact of digital habits on students' focus, sleep and impact on academics

METHODOLOGY

Participants and Study Site

460 individuals from Reputed School of North Delhi were chosen out of which 222 were females and 238 were males, 167 from Class 6th, 150 from Class 7th and 143 from Class 8th. Ethically, their names were kept anonymous. The data was collected from the school's lab. However, their names were not asked during the survey since it was ensured that their responses will remain anonymous and will only be used for the purpose of research. Purposeful sampling was used for the study.

Figure 1 Showing Distribution of students as per Gender and Grades.



Research Design: Cross Sectional Research Design in which one Shot data was collected over the span of 15 days with the guidance of school.

Variables:

1. Independent Variable: Gender, Grade 6th, 7th, 8th
2. Dependent Variable: Digital Screen use, Digital Diet, Cybersecurity, Cyber hygiene, Risk and Exposure, and Psychological and Well Being Impact

Method of Data Collection

The data was collected through Self-administration through an anonymous digital survey based on the Likert scale and multiple choice questionnaires that have been planned earlier. It is going to be conducted through the use of school tablets/labs for gaining a good response rate.

Data Analysis

Quantitative data (survey questions) were analyzed using descriptive statistics (percentage and means), and cross-tabulation was conducted (such as between gender and grades) using software such as MS EXCEL.

Precautions & Ethical Considerations

In this protocol, the protection of the rights and privacy of student participants is guaranteed through mandatory signing of consent by the students. Confidentiality is also ensured in this protocol through the removal of any identifying data from survey. Given the nature of sensitive topics under discussion, the safety protocol ensures the management of any disclosure of trauma or abuse, and also guarantees the right of participants to not answer any question they choose.

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RESULTS AND INTERPRETATION DIGITAL DIET AND SCREEN USE

Table # 1 On a typical school day, how many hour do you spend on screens for non-school activities?

Grade	Sex	0-1 Hours	2-3 Hours	4-5 Hours	6+ Hours
6 th	F	62.0%	34.2%	2.5%	1.3%
6 th	M	49.4%	42.7%	4.5%	3.4%
7 th	F	33.3%	61.1%	5.6%	0.0%
7 th	M	38.5%	41.0%	15.4%	5.1%
8 th	F	30.4%	56.5%	10.1%	2.9%
8 th	M	42.5%	47.9%	8.20%	1.4%

Table # 2 How often do you actively track Or check your daily screen time?

Grade	Sex	Every day	Some times	Rarely	Never
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6 th	F	29.1%	45.6%	15.2%	10.1%
6 th	M	27.0%	34.8%	21.3%	16.9%
7 th	F	26.4%	43.1%	15.3%	15.3%
7 th		21.8%	43.6%	26.9%	7.7%
8 th	F	27.5%	50.7%	15.9%	5.8%
8 th	M	41.1%	35.6%	15.1%	8.2%

Fig 2:Screen Time & Digital Diet

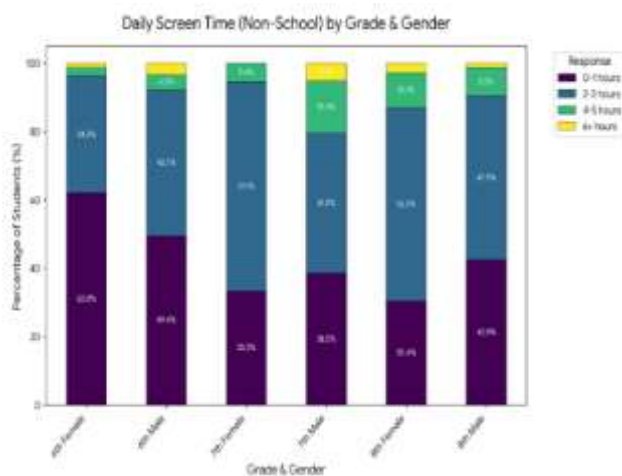
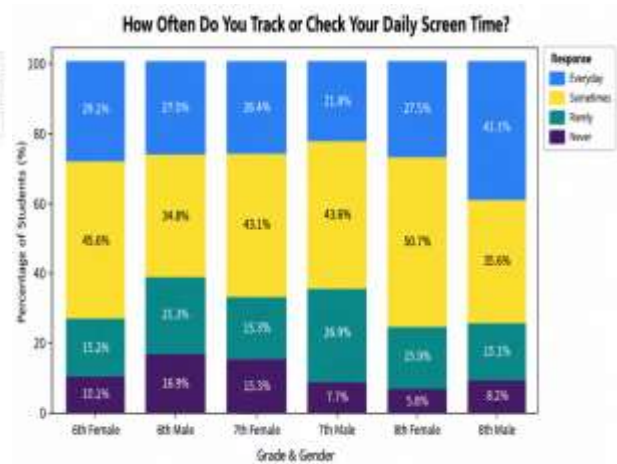


Fig 3: Monitoring Screen Time

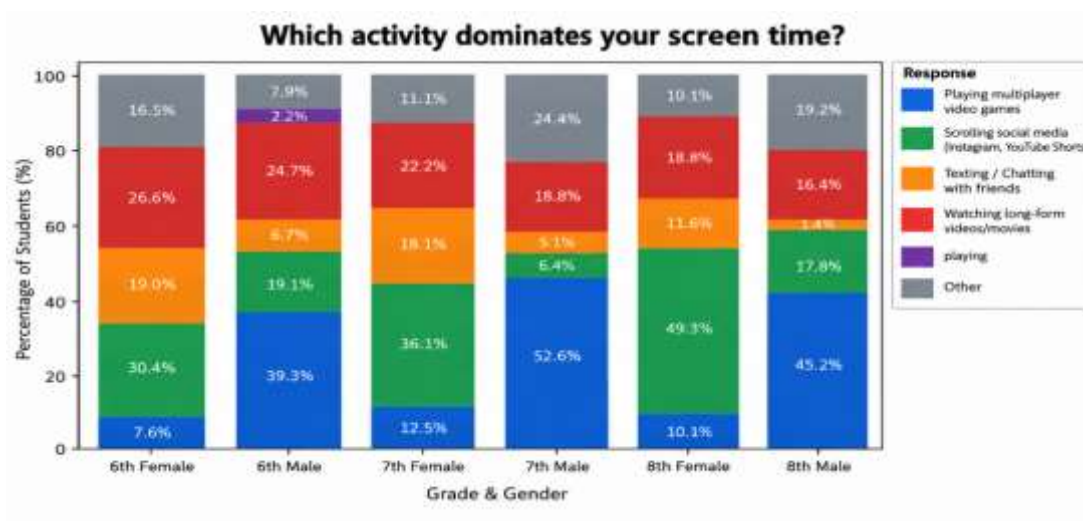


Results suggests at the sixth grade, most students (62.0% of girls and 49.4% of boys) spend less than an hour per day on screens. However, this percentage goes down as the majority of students are found in the 2-3 hours range during eighth grade. The highest number of heavy users (4+ hours) among males is found during the seventh grade at 20.5% (15.4% at 4-5 hours and 5.1% at 6+ hours).

Table #3 and Figure 3 showing Digital Diet in percentage for both males an females across grades.

Grade	Gender	Playing multiplayer video games	Scrolling social media (Instagram, YouTube Shorts)	Texting / Chatting with friends	Watching long-form videos/movies	Other
6 th	F	7.6	30.4	19.0	26.6	16.5
6 th	M	39.3	19.1	6.7	24.7	7.9
7 th	F	12.5	36.1	18.1	22.2	11.1
7 th	M	52.6	11.5	6.4	5.1	24.4

Grade	Gender	Playing multiplayer video games	Scrolling social media (Instagram, YouTube Shorts)	Texting / Chatting with friends	Watching long-form videos/movies	Other
8th	F	10.1	49.3	11.6	18.8	10.1
8th	M	45.2	17.8	1.4	16.4	19.2



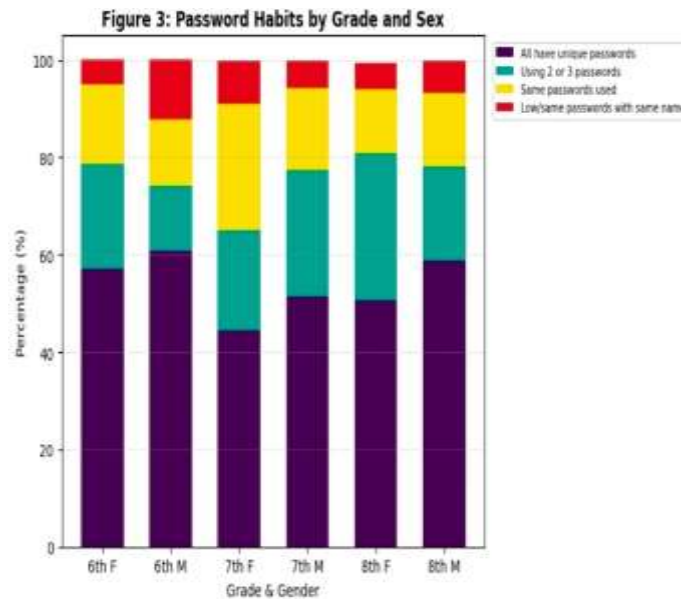
Diverge Interests (Diet): Screen time among boys is dominated by the use of multiplayer games and reaches its peak among 7th graders who spend their screen time playing games. On the other hand, girls enjoy scrolling social media posts (Instagram, YouTube Shorts) which increases from 30.4% at sixth grade to 49.3% at eighth grade.

OBJECTIVE 2: CYBER SECURITY AND CYBER HYGEINE

Table and Fig 4 Shwoing Best Password habit

Grade	Sex	All have unique Passwords	Using 2 or 3 Passwords	Same Passwords	Use same passwords with same genre
6 th	F	57.0%	21.5%	16.5%	5.1%
6 th	M	60.7%	13.5%	13.5%	12.4%
7 th	F	44.4%	20.8%	26.4%	8.3%
7 th	M	51.3%	26.9%	17.9%	3.8%
8 th	F	50.7%	30.4%	13.0%	5.8%

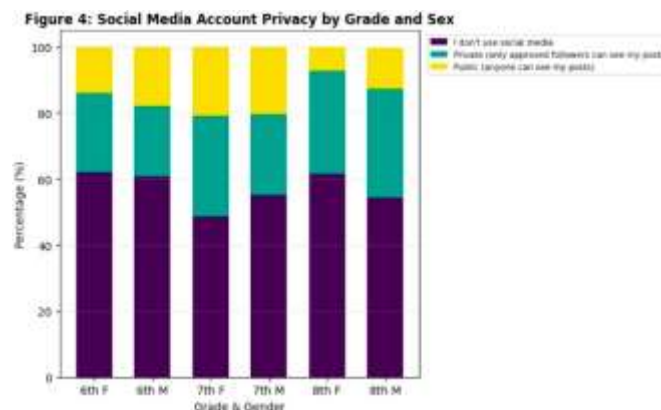
8 th	M	58.9%	19.2%	15.1%	6.8%
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Best Password: While the majority of users have good password hygiene, the percentage of those who understand more advanced security measures increases with age.

Table and Fig 6 showing Social Media Account Privacy by Grade and Sex

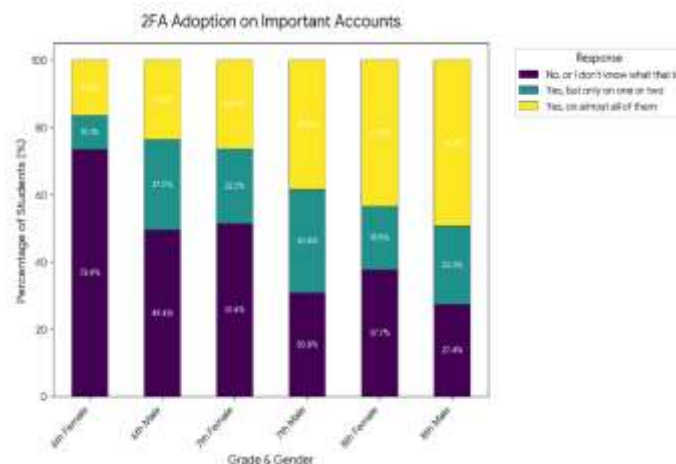
Grade	Sex	I don't use social media	Private (Only approved followers can see my posts)	Public (Anyone can see my posts)
6 th	F	62.0%	24.1%	13.9%
6 th	M	68.5%	13.5%	18.0%
7 th	F	48.6%	30.6%	20.8%
7 th	M	55.1%	24.4%	20.5%
8 th	F	59.4%	33.3%	7.2%
8 th	M	54.8%	32.9%	12.3%



Public and Private Accounts: Although the percentage of students who did not use social media decreased significantly from 6th grade to 8th grade, the number of students who used the platforms decreased as well. In particular, 8th grade females were less likely to use social media accounts publicly (33.3%) and more likely to keep them private (7.2%) than 8th grade males, who were more likely to use social media accounts publicly (12.3%).

Table and Figure 6 Showing Two-Factor Authentication (2FA) on important accounts?

Grade	Sex	No, or I don't know what that is	Yes, but only on one or two	Yes, on almost all of them
6 th	F	73.40%	10.10%	16.50%
6 th	M	49.40%	27.00%	23.60%
7 th	F	51.40%	22.20%	26.40%
7 th	M	30.80%	30.80%	38.50%
8 th	F	37.70%	18.80%	43.50%
8 th	M	27.40%	23.30%	49.30%



Two-Factor Authentication (2FA): 2FA is the best example of this scenario. According to the results, 73.4% of female students and 49.4% of male students in 6th grade either did not use 2FA or did not understand what it was. In the 8th grade, the percentage of students who use 2FA on all of their important accounts increases significantly, with 49.3% of males and 43.5% of females indicating that they use it.

OBJECTIVE 3: To measure the prevalence of exposure to cyberbullying, toxic gaming environments, and viral internet challenges

Table 7: showing Playing games encouraging Loot Boxes

Grade	Sex	Never	Rarely	Frequently
6 th	F	84.8%	11.4%	3.8%

6 th	M	73.0%	20.2%	6.7%
7 th	F	87.5%	4.2%	8.3%
7 th	M	59.0%	28.2%	12.8%
8 th	F	75.4%	20.3%	4.3%
8 th	M	52.1%	21.9%	26.0%

Table 8 Showing witnessing dangerous viral challenges

Grade	Sex	No, never	Yes, but I don't know anyone who tried it	Yes, and I know someone who tried it
6 th	F	54.4%	30.4%	15.20%
6 th	M	50.6%	25.8%	23.60%
7 th	F	38.9%	47.2%	13.90%
7 th	M	47.4%	39.7%	12.80%
8 th	F	47.8%	43.5%	8.70%
8 th	M	38.4%	42.5%	19.20%

Fig 7 Playing Games That Encourage Loot Box

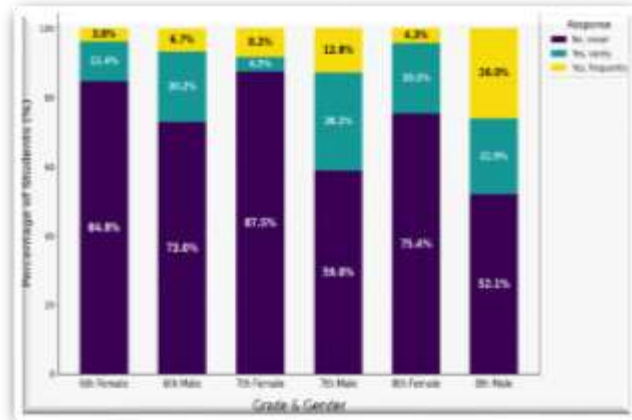
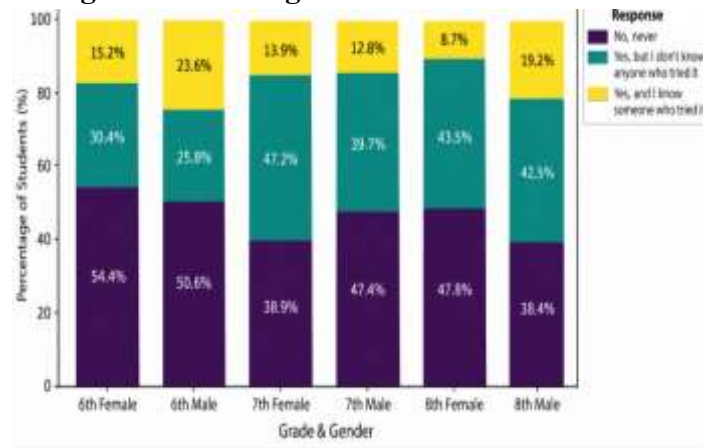


Fig 8 Playing games Witness Dangerous Challenges

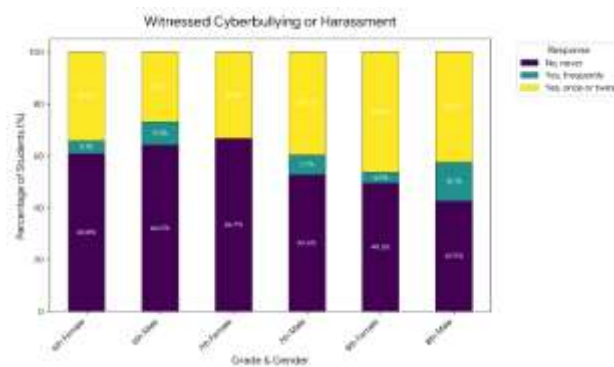


Looking at Figure The gender differences are highly related to age and the digital platforms that each gender tends to visit.

Harassment is Common: Multiplayer gaming lobbies are largely occupied by male students and they are much more likely to be frequently cyberbullied. 15.1% of 8th-grade males say they are frequently exposed, compared to only 4.3% of 8th-grade females.

Table and Fig 9 Showing students witnessing cyber bullying and harassment

Grade	Sex	No, never	Yes, once or twice	Yes, frequently
6 th	F	60.8%	34.2%	5.1%
6 th	M	64.0%	27.0%	9.0%
7 th	F	66.7%	33.3%	0.0%
7 th	M	52.6%	39.7%	7.7%
8 th	F	49.3%	46.4%	4.3%
8 th	M	42.5%	42.5%	15.1%



Increased exposure: The percentage of students who have “never” seen cyberbullying steadily declines as they progress in grade. 50.7% of females and 57.6% of males report having witnessed cyberbullying or harassment at least once by 8th grade.

Objective 4: Psychological impact of digital habits on students' focus, sleep, and emotional regulation.

Table #10 Stay up later due to your device

Grade	Sex	Never	1-2 nights a week	3-4 nights a week	Almost every night
6 th	F	64.6%	29.1%	3.8%	2.5%
6 th	M	57.3%	28.1%	2.2%	12.4%
7 th	F	61.1%	29.2%	2.8%	6.9%
7 th	M	56.4%	34.6%	5.1%	3.8%
8 th	F	46.4%	40.6%	7.2%	5.8%
8 th	M	60.3%	23.3%	6.8%	9.6%

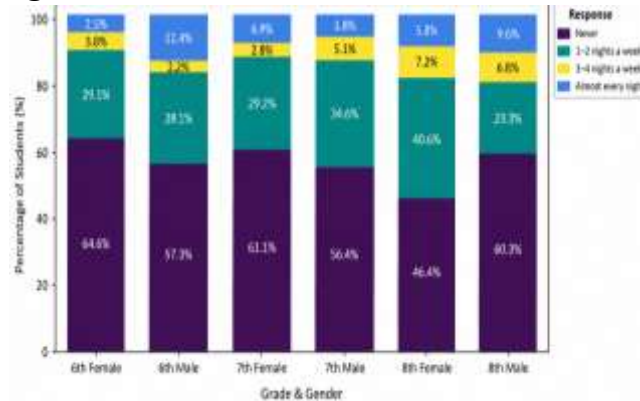
Table# 11 Exhausted and losing Focus due to Device

Grade	Sex	Never	Rarely	Frequently
6th	F	58.2%	36.7%	5.1%
6th	M	69.7%	28.1%	2.2%
7th	F	75.0%	23.6%	1.4%
7th	M	73.1%	20.5%	6.4%
8th	F	47.8%	49.3%	2.9%
8th	M	57.5%	39.7%	2.7%

Figure 10 Sleep Disturbance Due to Phone



Figure 11 Emotional Toll without Phone



Theme 4: Sleep Disturbance & Psychological Effects : Evidently, technology usage has a negative influence on the ways of sleep, with specific disruptions based on gender.

Sleep Disturbance: It is very common to be awake far longer than planned, with 40.6% of students in 8th grade females falling into that category once per week. It was observed that in 6th grade, 12.4% of boys admit to being awake most nights of the week (as opposed to just 2.5% of girls). This pattern remains, with 9.6% of boys indicating that they spend almost every night of the week being awake late anymore.

DISCUSSION OF RESULTS

Even though its researchers assert that being exposed to screens and digital content can help develop new skills, in accordance with the uses and gratifications theory (Katz et al., 1973), it has been shown that

students act as deliberate and rational agents when consuming media. Boys attain social acceptance and immersion through short-form content and MPGs, while Girls attain social acceptance and experience affective distraction via such content.

Theme 2: Cyber Safety and Privacy – This was assessed using the Defense-in-Depth (D-i-D) model (von Solms & van Niekerk, 2013) and the Routine Activity Theory (RAT) (Yar, 2005); the students demonstrated only partial safeguards. Indeed, although most of the students kept their passwords under baseline control, the adoption of multi-layered security (for example, 2FA) was remarkably limited among sixth graders. As students progress from sixth to eighth grade, they develop good cyber hygiene and thus act as 'Capable Guardians' (according to RAT), making their digital assets much less attractive to potential attackers.

Theme 3: Online Toxicity and Risk Exposure: Just as with the RT and digital risk research models (Bellantuono et al., 2021), unmoderated online environments still allowed offender motivation to come together with the vulnerability of young people. The greater exposure of Grade 8 students to witnessed cyberbullying and the presence of toxic behaviour among boys as well as the occurrence of predatory viral social trends showed that there are flaws in both the algorithms and the parental supervision of high-interactivity areas.

Theme 4: Sleep disturbances and psychological well-being: This conclusion is based on the displacement hypothesis and the ego depletion theory (MDPI, 2025; Seligman, 2011), since using devices at night takes the place of the normal sleep process that is necessary for repair. If adolescents continuously use such devices, they will exhaust their cognitive resources and this can result in technostress, bedtime procrastination, and emotional lability.

Limitations and Further Suggestions

This research, limited to one school and a cross-sectional analysis makes it difficult to draw causal inference and may only be generalized for the demographic population of the sample. Self-report survey data may also be subjected to recall and social desirability bias.

In future studies, it is recommended to use multi-wave longitudinal measurements to closely monitor cyber hygiene practices and risk exposure during the transition to high school. Finally, studies aimed at improving adolescent algorithmic resistance and countering gender-specific digital literacy curricula should be conducted through intervention studies to address platform-based effects.

CONCLUSION

The study revealed that middle schoolers are highly engaged with technology. As they age, students become more exposed to screen use, cyber safety practices like two-factor authentication and are also more vulnerable to harassment, predatory gaming dynamics (gambling between peers) and sleep disruption. A clear pattern emerges in the vastly different digital behaviors of male and female social media users, highlighting the importance of nuanced digital safety policies. To ensure security, layers of technical protection, platform-specific threat models, and self-rule mechanisms to support healthy teenage self regulation and mental well-being.

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