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# Physical and Socio-emotional Effects of Excessive Screen Time on Grade 5 and 6 Pupils: Basis for an MI Class Framework

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# Abstract

This study investigates the physical and socio-emotional effects of excessive screen time on Grade 5 and 6 pupils at San Isidro Norte Elementary School, with the aim of developing a Multiple Intelligences (MI) class framework to address these challenges. Employing a mixed-methods approach, the research combined quantitative data from structured surveys administered to 26 pupils-measuring types of screens used, content consumed, duration, and specific physical and socio-emotional symptoms-with qualitative insights from focus group discussions involving students, parents, and teachers. Findings reveal that excessive screen time is associated with a range of adverse outcomes, including sleep disturbances, obesity, behavioural issues, diminished social interaction, and lower academic performance. Socio-emotional effects observed include increased anxiety, depression, and reduced interpersonal skills. The study underscores the displacement of essential activities such as physical play and face-to-face socialization by screen-based activities. Drawing on theories such as Social Cognitive Theory, Piaget's Cognitive Development, Displacement Theory, and Gardner's Multiple Intelligences, the research highlights the need for educational interventions that foster holistic development and healthier screen habits. The resulting MI class framework is designed to promote diverse, experiential, and socially engaged learning, thereby mitigating the negative impacts of excessive screen time and supporting the well-being of Filipino children.

Keywords: Screen time, Socio-emotional, Physical, Multiple Intelligence

### Introduction

Excessive screen time has emerged as a significant public health concern globally, particularly affecting children in their formative years. As digital technology becomes increasingly integrated into daily life, children are exposed to screens from an alarmingly young age. International studies indicate that children today engage with electronic media far more than previous generations, with the average screen time for young children escalating dramatically over the past few decades.<sup>[1]</sup> This phenomenon raises critical questions about the implications of such exposure on children's physical and socio-emotional development. Research consistently highlights the adverse effects of excessive screen time, including obesity; sleep disturbances, anxiety, and depression <sup>[1]</sup>. These issues are compounded by the fact that increased screen usage correlates with diminished social interactions and emotional understanding, leading to behavioural problems and academic challenges. In particular, studies have shown that elementary students who exceed two hours of screen time daily are more likely to experience emotional



and social difficulties <sup>[2]</sup>. Moreover, the impact of screen time is not confined to cognitive delays; it also encompasses significant developmental repercussions across various domains, including language and social skills <sup>[3]</sup>.

Taiwan faces similar challenges as global trends manifest in its youth population. The increasing prevalence of digital devices among school-aged children has raised alarms among educators and health professionals alike. Reports indicate that many Taiwanese children spend excessive hours engaged with screens, which may hinder their academic performance and social interactions. The need for effective intervention programs is evident, as parents and educators grapple with managing screen time while promoting healthier lifestyles.

In the Philippine context, the impact of excessive screen time on children has become a pressing issue, particularly in light of the increased reliance on digital devices during the COVID-19 pandemic. As schools transitioned to online learning, Filipino children found themselves spending more hours in front of screens, leading to concerns about their physical and socio-emotional development. Research indicates that many Filipino children now average approximately 34 hours per week of screen time for entertainment alone, which is notably higher than the global average <sup>[4]</sup>.

Dr. Angel Belle C. Dy's recent study highlights the negative developmental consequences associated with excessive screen use among young Filipino children. The study found that children exposed to more than two hours of screen time daily exhibited lower scores in receptive and expressive language skills, as well as diminished personal and interpersonal skills <sup>[5]</sup> <sup>[6]</sup>. Furthermore, it was noted that unsupervised screen time significantly correlated with poorer developmental outcomes, emphasizing the importance of parental involvement in media consumption <sup>[6]</sup>.

Additionally, a shift in the youth's device of choice appears to be occurring. With more than 75% of families owning some mobile devices, use of smartphones and other Internet-enabled small devices is rising <sup>[7]</sup>. Consequently, adolescents owning a smartphone are likely to have higher screen time compared to adolescents with a conventional mobile phone because they have higher online and calling/sending messages time <sup>[8]</sup>. Thus, the use of mobile devices which allows access to most types of content, and encourages multi-screening,<sup>[9]</sup> is creating a growing concern,<sup>[10,11]</sup> and is drawing research attention.

The gap in current research lies in the specific effects of excessive screen time on Grade 5 and 6 pupils in the different parts of the world especially in the Philippines. While global studies provide a broad understanding of the issue, localized data focusing on this demographic is scarce. By investigating the physical and socio-emotional effects on these pupils in relation to their screen time habits, this study aims to develop a comprehensive intervention strategy that can foster healthier development outcomes.

In local context, the researcher observed that children within their neighbourhood are engrossed with the use of cell phones or any gadgets in online games, that even parents are worried of the excessive time their children spent in gadgets. Children are seldom seen playing outdoor games with other children. Mindful of these concerns, this research seeks to investigate the impact of excess screen time on Grade 5 and 6 students and create an educational intervention model—namely, an MI (Multiple Intelligences) Class Framework—that encourages balanced activity. Infusing Howard Gardner's Theory of Multiple Intelligences into classroom lessons provides a hopeful method to make learning experiences varied and involve learners in meaningful, hands-on, and interactive learning <sup>[12]</sup>.

By integrating activities designed for different intelligences—like linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalist—



teachers can offer students rich alternatives to screen-based learning. An MI-based system seeks to minimize screen dependency by encouraging creativity, physical activity, social engagement, growth through diverse activities. Besides and mental supporting overall learning, this strategy ensures physical and socio-emotional well-being students among while they acquire skills necessary for a successful life without exposing them to the hazards of overscreens. Hence, this study explores the excessive effects of screen time to the physical and socioemotional aspects of the school children.

### Statement of the Problem:

- 1. What are the screen types used, specific content, type of social media used and the duration of usage on different screen types by the respondents?
- 2. What are the physical and socio-emotional effects of excessive screen time?
- 3. What Multiple Intelligence (MI) class framework can be developed to address excessive screen time?

### **Conceptual / Theoretical Framework**

Excessive screen time among Grade 5 and 6 students raises concerns about their physical and socioemotional health. Theories like social cognitive theory highlight how screen interactions can either displace social engagement or promote collaborative learning, depending on content quality. Bandura's social learning theory emphasizes that children imitate behaviors seen on screens, which can influence their attitudes and actions. Piaget's cognitive development theory suggests that excessive screen use may hinder logical thinking, problem-solving, and emotional regulation, potentially increasing risks of anxiety and depression. Research indicates that increased screen time is associated with sleep problems, including delayed bedtimes and shorter sleep duration, leading to fatigue and poor concentration. The displacement theory explains that time spent on screens replaces activities vital for health, such as physical activity, face-to-face social interactions, and outdoor experiences, which can contribute to obesity; mental health issues, and reduced overall well-being. Moreover, multiple intelligences theory (MI) developed by Howard Gardner, an American psychologist, in late 1970s and early 1980s, assert that each individual has different learning areas. Howard Gardner named these nine intelligence areas as "musical-rhythmic", "visual-spatial", "verbal-linguistic", "logical-mathematical", "bodilykinesthetic", "interpersonal", "intrapersonal", "naturalistic", and "existential intelligence.

## **Research Method**

This study utilized a mixed-methods design to comprehensively examine the effects of excessive screen time on Grade 5 and 6 pupils. Quantitative data were collected through a descriptive survey checklist with 10 items-5 focused on physical factors and 5 on socio-emotional factors-to measure students' screen habits and related outcomes. These findings were further substantiated by qualitative methods, including in-depth interviews with key stakeholders such as educators and health professionals, which provided rich narratives and contextual insights to inform the development of targeted intervention programs. Data were gathered through structured survey checklists, which included items focused on the types of screens used, content consumed, duration of use, and specific physical and socio-emotional symptoms experienced. The quantitative data allowed for the identification of patterns, and frequencies



between screen time and observed effects. This design aims to systematically describe the prevalence and ranking of various symptoms experienced by individuals, as quantified through frequency counts.

The study was conducted at San Isidro Norte Elementary School in Luna, Apayao, involving 26 pupils (14 from Grade 5 and 12 from Grade 6), along with selected parents and teachers. Data collection involved obtaining permissions, distributing questionnaires with clear instructions, and ensuring complete retrieval for analysis.

The survey items were developed through item pooling from existing studies of Maurya C et.al <sup>[16]</sup>, Falkenberg HK et.al <sup>[17]</sup>, Yoon W et.al <sup>[18]</sup>, Mineshita Y et.al <sup>[19]</sup>, Kopecka-Piech K <sup>[20]</sup>, Anto A et.al <sup>[21]</sup>, Stsiampkouskaya K et.al <sup>[22]</sup>, Abdel-Aziem AA et.al <sup>[23]</sup>, and validated by three experts. Data analysis involved tabulating, analyzing, and interpreting responses using frequency and ranking methods to assess the physical and socio-emotional impacts of excessive screen time, ultimately supporting the development of targeted, culturally relevant interventions.

Types of Screen Used	Frequency	Rank
Smartphone	23	1
Tablet	1	4.5
Computer/Laptop	2	3
Television	15	2
Gaming Console	1	4.5
Duration of Screen Time Use		
less than 1 hour	8	2
1-2 hours	10	1
2-3 hours	7	3
more than 5 hours	1	4
Content of Screen Used		
Online classes	5	3
Educational videos	20	1
Learning apps/games	7	2
Social Media Type used		
Instagram	1	3.5
TikTok	24	1
Facebook	20	2
Others	1	3.5

Table 1: Screen Types used, Duration of Screen Time Use, Content and Social Media Type used

The data in Table reveals that the majority of Grade 5 and 6 pupils at San Isidro Norte Elementary School primarily use smartphones as their main device for screen-based activities, followed by tablets and computers. Smartphones are the dominant device for screen time among younger generations and use smartphones for more than two hours daily, surpassing usage of other devices like televisions and computers. Young adults aged from 18 to 24 have the highest smartphone ownership rates and spend more



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time on smartphones Studies conducted among university students in many countries have found that smartphone ownership among these students is very high. The increased use of screen technology has been suggested as a contributing factor to this trend. A survey by Thailand's National Statistical Office in 2023 found that 99.2 percent of youth aged 18–24 own a mobile phone, 99.9 percent of which are smartphones, and 99 percent use them to access the internet <sup>[24]</sup>.

Moreover, the respondent spent 1 to 2 hours daily on these devices, with a notable portion exceeding this duration, indicating a trend toward excessive screen time. Wolfers LN et al consistently suggest that keeping non-work screen time under 2 hours per day is optimal for well-being. These recommendations are based on findings that excessive screen time is linked to negative outcomes, while moderate use (1–2 hours) is not associated with significant harm <sup>[25]</sup>. The American Academy of Ophthalmology, recommend the 20-20-20 rule: every 20 minutes, take a 20-second break to look at something 20 feet away. This rule can protect the eyes from digital eye strain. When the respondents were asked if they are practicing the 20-20-20 rule, majority of them responded "NO" because they are not aware of the rule.

In terms of content, educational videos dominate their screen use. A study involving 4,013 children in Australia categorized screen time into social, educational, passive, interactive, and other types, finding that educational videos dominate children's screen use and provide the most benefits, including improved persistence and educational outcomes without significant health impacts <sup>[26]</sup>. Among social media platforms, Tiktok and Facebook are the most popular, with a significant number of respondents also using TikTok. As of early 2024, TikTok boasted approximately 49.09 million active users in the Philippines, accounting for about 41% of the country's total population. The platform's user base experienced a remarkable growth of 23.2% between October 2023 and January 2024. This surge is attributed to the country's mobile-first population, a cultural affinity for music and dance, and the desire for community connection, especially during periods of lockdown <sup>[27]</sup>.

PHYSICAL EFFECTS	Frequency	Rank	
1.Sleep disturbances (difficulty falling asleep, poor sleep quality)	19	2	
2. Vision issues (headache, eye strain, blurred vision)	22	1	
3. Neck and back pain (discomfort or pain in neck/back area)	12	3	
4. Weight gain or obesity (noticeable weight changes related to inactivity)	6	4	
5. Posture changes (slouching, poor posture while using devices)	3	5	
SOCIO-EMOTIONAL EFFECTS			
1. Social isolation (feeling disconnected from friends/family)	15	1	
2. Increased anxiety and depression (feelings of worry, sadness)	8	3	
3. Emotional dysregulation (difficulty managing emotions)	12	2	
4. Neglecting chores or responsibilities	6	5	
5. Difficulty concentrating on schoolwork or tasks	7	4	

### Table 2: Physical and Socio-emotional Effects on Excessive Screen Time

The most frequently reported physical effects associated with excessive screen time is vision issues, such as headaches, eye strain, and blurred vision, with a frequency of 22 and ranked as the top physical



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concern. This is closely followed by sleep disturbances, including difficulty falling asleep and poor sleep quality, which had a frequency of 19 and was ranked second. Prolonged screen exposure impacts health, particularly by contributing to headaches. Screen time affects all age groups and is a common trigger, influencing headache intensity, frequency, and onset <sup>[28]</sup>. According to the American Optometric Association, extended use of desktops, laptops, mobile phones, tablets, e-readers, and storage devices can cause a variety of eye and vision-related issues known as "digital eye strain"<sup>[29]</sup>. 20-20-20 rule is well known to layman these days. You probably spend a significant amount of time staring at displays, whether they are on your smartphone, television, and computer at home or at work, or other digital gadgets and it is well known that eye strain can develop from prolonged screen viewing but the 20-20-20 rule has proven to be useful for minimizing the occurrence of these issues <sup>[29]</sup>. Moreover, socioemotional effects associated with excessive screen time are social isolation, with 15 respondents indicating that they often feel disconnected from friends or family, making it the top-ranked concern. Emotional dysregulation, or difficulty managing emotions, is the second most common issue, reported by 12 respondents. Excessive daily screen time has been positively associated with symptoms of hyperactivity/inattention, internalization problems, depression, anxiety, and lower psychological wellbeing <sup>[30]</sup>.



Figure 1: MI Class Framework

Recognizing that prolonged exposure to digital devices can lead to decreased physical activity, impaired social interaction, and diminished emotional well-being; this framework provides a balanced, offline alternative that nurtures the whole child. The framework includes a variety of activities such as Garden Patrol or Nature Hunt to reconnect learners with nature and stimulate naturalistic intelligence; Story Circle to enhance verbal communication and emotional expression; and Rhythm Jam to develop musical and kinesthetic skills while encouraging creative movement. Math in Motion fosters logical thinking



through collaborative puzzle-solving, while Outdoor Games promote physical fitness and teamwork. Peer teaching strengthens interpersonal and linguistic intelligences through collaborative learning using only offline materials. By engaging students in these diverse, hands-on activities, the framework not only reduces screen dependence but also supports physical health, social interaction, emotional resilience, and cognitive growth—key components in countering the negative impacts of excessive screen use.

# **Summary of Findings**

Grade 5 and 6 pupils at San Isidro Norte Elementary School engage with a variety of screen devices, including cell phones, tablets, computers, and televisions, with a strong preference for mobile devices. Filipino children, on average, spend about 34 hours per week on screens for entertainment, which surpasses global averages. Their screen use is predominantly for gaming, social media, and video streaming, often without supervision. The most reported physical effects of this excessive screen time are vision-related problems such as headaches, eye strain, and blurred vision, along with sleep disturbances including difficulty falling asleep and poor sleep quality. Other physical concerns include sedentary behavior, fatigue, and musculoskeletal discomfort. In terms of socio-emotional effects, social isolation emerges as the primary concern, with many pupils feeling disconnected from friends and family. Emotional dysregulation-manifested as irritability, anxiety, and mood swings-is the second most prevalent issue. The study is grounded in several theoretical frameworks: Social Cognitive Theory emphasizes how observed behaviors influence actions; Piaget's Cognitive Development Theory highlights stages of learning; Displacement Theory explains how screen time replaces essential developmental activities; and Gardner's Multiple Intelligences Theory underscores the need to nurture diverse intelligences. Collectively, these theories suggest that excessive screen time displaces critical activities such as physical exercise, social interaction, and adequate sleep, all vital for holistic child development.

### Conclusion

Excessive screen time among Grade 5 and 6 pupils leads to significant physical and socio-emotional issues. The most prominent physical issues are vision-related problems and sleep disturbances, while the leading socio-emotional effects are social isolation and emotional dysregulation. These challenges are compounded by the displacement of healthy activities and reduced opportunities for social and cognitive development. The findings highlight the urgent need to structure a Multiple Intelligence class framework as intervention in both home and school environments to promote balanced screen use and foster healthier developmental outcomes.

### Recommendations

Based on the conclusions, the following are recommended:

- 1. Teachers should integrate diverse and engaging activities aligned with various intelligences to provide appealing alternatives to screen-based learning.
- 2. Teachers and parents should establish and enforce clear and consistent guidelines for screen time limits within the MI framework, tailored to both school and home contexts.



3. The school nurses should educate the pupils on the potential negative impacts of excessive screen time and the benefits of a balanced lifestyle that incorporates physical activity, social interaction, and diverse cognitive stimulation.

**Regularly assessing the impact of the MI framework** on pupils' physical well-being (e.g., vision, sleep patterns) and socio-emotional development (e.g., social skills, emotional regulation) to allow for necessary adjustments and refinements.

Incorporating varied, interactive activities that match different intelligences (e.g., musical, kinesthetic, interpersonal, intrapersonal, etc.) to offer attractive alternatives to screen entertainment and learning.

- Having definite and consistent screen time guidelines within the MI framework, in accordance with both school and home environments, and actively engaging parents/guardians in their enforcement.
- Preparing students, parents, and teachers on the possible adverse effects of too much screen time and the advantages of a well-balanced lifestyle including exercise, socializationand varied mental stimulation.

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