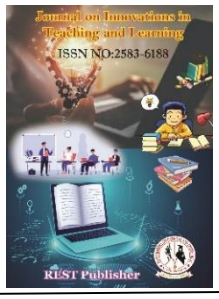
Journal on Innovations in Teaching and Learning

Vol: 4(1), March 2025

REST Publisher; ISSN: 2583 6188

Website: http://restpublisher.com/journals/jitl/

DOI: https://doi.org/10.46632/jitl/4/1/10



The Impact of Excessive Technology use in Children on Long-term Attention and Focus

Vivek Gupta, *Priya Laxmi Rakesh, Harshith Kataria, Mudith Jain, Shrishti Pujari

Jain (Deemed-to-Be-University), Bengaluru, Karnataka, India.

*Corresponding Author Email: Priya_laxmi2022@cms.ac.in

Abstract: *In today's tech-driven world, screens have become an unavoidable part of daily life, especially for children who are spending more time on them than ever before. While technology offers incredible opportunities for learning, creativity, and entertainment, it also raises important concerns about its impact on children's long-term attention and focus. This study explores how excessive screen time, particularly exposure to fast-paced digital content, influences children's cognitive development, learning habits, and real-world interactions. Drawing from a mix of research studies, case analyses, and data, we uncover the potential risks of overusing technology. These include shorter attention spans, difficulty concentrating on tasks, and challenges in engaging with non-digital activities. At the same time, the study highlights that technology, when used appropriately, can also be a valuable tool for enhancing learning and fostering engagement. The key takeaway is the importance of balance. This paper emphasizes the need for parents, teachers, and policymakers to work together in creating healthy screen habits. By encouraging activities that build focus, patience, and creativity; while promoting mindful technology use, we can help children grow into well-rounded individuals who thrive both online and offline. Ultimately, this research aims to inspire actionable strategies that support children's holistic development, ensuring they benefit from technology without losing the ability to engage meaningfully with the world around them.*

Key words: *Excessive Technology use, Children, Attention Span, Cognitive Development, Screen Time, Digital Media, Behavioural Impact, Learning Habits, Parental Mediation, ADHD Symptoms*

1. INTRODUCTION

Imagine a world where kids are glued to screens from dawn till dusk. It's a reality for many today, with smartphones, tablets, and computers constantly vying for their attention. Technology offers amazing learning opportunities and creative outlets, but it also raises important questions about its impact on young minds. As screens become a bigger part of kids' lives, we worry about the long-term effects on their ability to focus and pay attention. The constant stream of exciting videos, games, and social media can make it hard for kids to concentrate on one thing for a long time. This can affect their schoolwork, their relationships, and even their creativity. Research shows that our brains are like sponges, especially when we're young. The things we do and see can shape how our brains develop. So, what happens when kids are constantly bombarded with fast-paced content? Could it change how they learn, play, and see the world? This paper explores the complicated relationship between too much screen time and a child's ability to focus. By examining studies and theories, we hope to better understand how technology affects young minds. Our goal is to help parents, teachers, and policymakers create a balanced approach to technology use. We want kids to be comfortable with technology but also able to engage in deep, meaningful learning and real-world experiences.

2. REVIEW OF LITERATURE (ROL)

The growing dependency on digital technology by children has generated a lot of controversy concerning its influence on cognitive, social, emotional, and physical development. Although technology has numerous educational and entertainment advantages, overuse of screens has been associated with numerous developmental issues such as attention problems, sleep disturbances, emotional dysregulation, and physical complications like obesity and musculoskeletal issues (Domingues-Montanari, 2017; Zirek, 2018). Studies indicate that excessive screen time, especially in early childhood, can lead to structural changes in the brain, resulting in impulsivity and shorter attention spans, with some research linking excessive screen time to symptoms of ADHD-like behaviour (Hinkley et al.; Neophytou & Manwell). These impacts, though, are not consistent for every person and depend on variables like the nature of content, duration of use, and whether there is parental supervision (Vedechkina & Borgonov; Santos, 2021).

Research discusses both positive and negative impacts of gaming, especially in cognitive development and in behavioural outcomes. Certain research indicates that action video games have the potential to enhance visual-spatial skills, hand-eye coordination, and problem-solving, thus being a possible cognitive training tool (Adachi & Willoughby, 2016). But when gaming is done excessively, addiction-like tendencies, social isolation, and inability to concentrate in class and non-gaming environments arise (Ebrahem, 2024). Prevalence of gaming addiction differs in various cultures, with certain regions having greater levels of problematic gaming compared to others. The differences indicate that environmental factors, including parental mediation, social norms, and education systems, are influential in the extent to which gaming affects children overall. Use of smartphones has also received extensive interest from researchers as a result of its prevalent use among children and adolescents. Research has also proved time and time again that excessive smartphone use has an adverse impact on the quality of sleep, especially when smartphones are used prior to sleep.

Blue light emitted by screens interferes with melatonin production, contributing to shorter sleep periods, more fatigue, and poorer cognitive functioning the next day (Cheers & Boydell; Werner-Seidler & Torok). Poor sleep patterns are also associated with mental health issues such as higher levels of anxiety, depression, and emotional regulation difficulties. Moreover, problematic smartphone use has been associated with weaker social connections, as children who spend excessive time on digital devices may struggle with face-to-face interactions, leading to lower-quality relationships with parents and peers (Carlo & Maiya). Beyond cognitive and social concerns, physical health issues have also been linked to increased screen exposure. Extended usage of computers and mobile phones has been linked with musculoskeletal issues, such as pain in the neck and wrists, hand weakness, and decreased grip strength (Osailan; Abdrabo; Abdel-Aziem; Basso & Leonel; Naqvi & Arora). Moreover, sedentary lifestyle promoted by screen use is responsible for obesity and other long-term health issues, like cardiovascular diseases.

Research emphasizes that children who have too much time spent on screens tend to have less physical activity, which also widens these health issues (Zirek, 2018). Interactive video game technology (IVGT), though potentially bringing some physical benefits in the form of movement games that promote exercise, has research showing that they do not create the same level of mood and health improvement as traditional outdoor activity (Russell & Newton). In spite of the adverse effects of overuse of technology, certain research highlights its positive aspects when utilized in a systematic and conscious way. Learning apps, virtual reality (VR), and interactive learning tools have been seen to increase participation, enhance memory recall, and aid cognitive growth among children (Hwang et al., 2019; Kucirkova et al., 2014). Parental mediation also has an important role in influencing children's relationship with technology. Research indicates that active parental participation—such as limiting screen time, regulating content, and encouraging other activities like outdoor play and social engagement—can buffer against the negative effects of excessive use while instilling healthy digital routines (Hunter; Rosen et al., 2016).

Summing up, technology indeed confers undisputable learning and entertainment benefits, but excessive and unfettered consumption threatens the intellectual, social, and physical well-being of children. The consequences of screen exposure are not uniformly negative but rather are contingent upon the type of content, how long it lasts, the personal traits of children, and family participation. Maintaining a balance between digital participation and activities in the physical world is key to ensuring long-term well-being. In the future, more longitudinal studies must be conducted to enhance understanding of long-term effects of technology use and create strategies for how children can gain benefits without incurring maximum harms.

3. OBJECTIVES OF THE STUDY

To analyse current levels of technology usage among youngsters and its relationship to attention and focus difficulties. To assess how different forms of digital material (e.g., games, movies, educational applications) affect children's attention spans. To discover indicators of attention and concentration deficiencies in children due to excessive screen use. To examine the impact of fast-paced digital media on children's learning habits and cognitive development. To better understand how children's usage of technology affects their ability to focus on non-digital real-world tasks (such as reading and academics).

4. RESEARCH METHODOLOGY

1. Research design: This study aims to analyse the various impacts of excessive technology use in children on long-term attention and focus. It seeks to provide an in-depth understanding of how technology influences a child's focus on doing a task or their behaviour to the surroundings.
2. Data Collection Methods: Primary Research Method: Analysing and studying the survey to understand the impact of excessive technology use in children on a long-term attention and focus.
3. Engagement metric: Quantitatively analyses-To determine the consequences of excessive technology usage on children, quantitatively analyse behavioural variables such as time spent.

5. DATA ANALYSIS AND INTERPRETATION

1. The children's age group 5-10 years (38.1%), 11- 18 years (23.8%), below 5 years (14.4%).

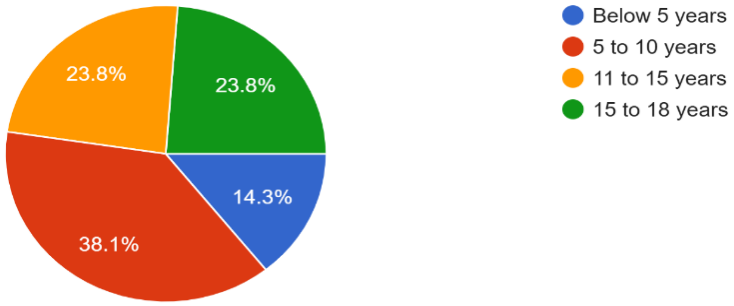


FIGURE 1.

2. The number of hours spent by the children on the digital device is 1- 2 hours (42.9%), 3 or more hours (23.8%) and less than 1 hours (9.5%).

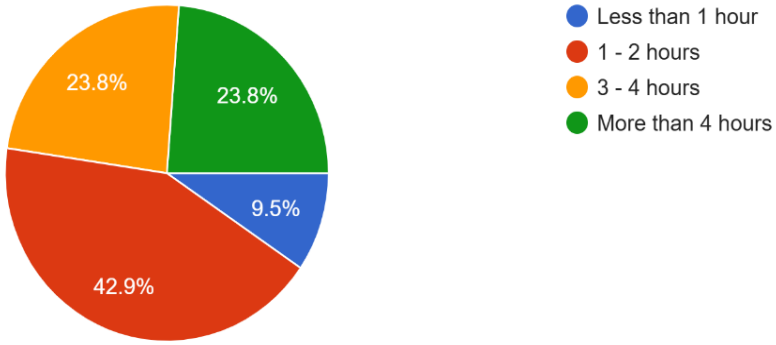


FIGURE 2.

3. The type of digital content children engage themselves most frequently is YouTube/streaming services (71.4%) and the least is others (14.3%).

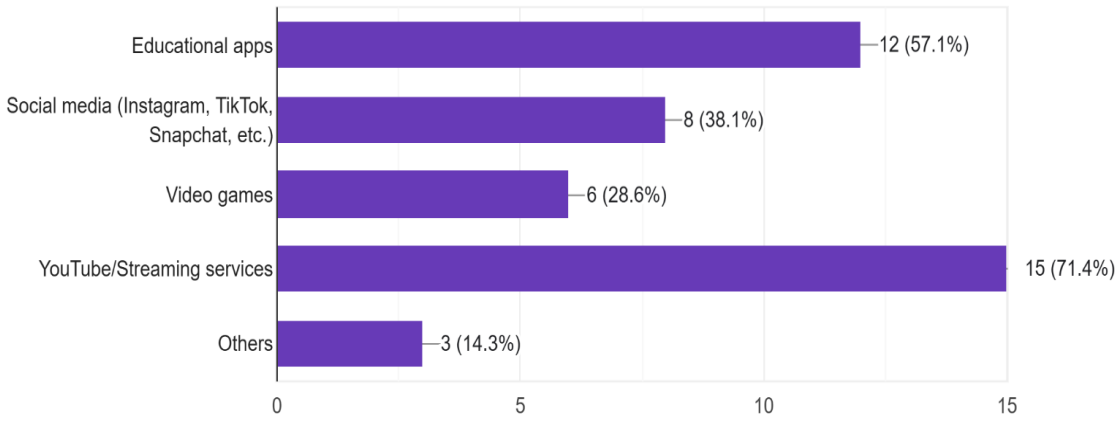


FIGURE 3.

4. The most screen time used by children is in the evening (38.1%), sthen afternoon (33.3%), night (23.8%), last is morning.

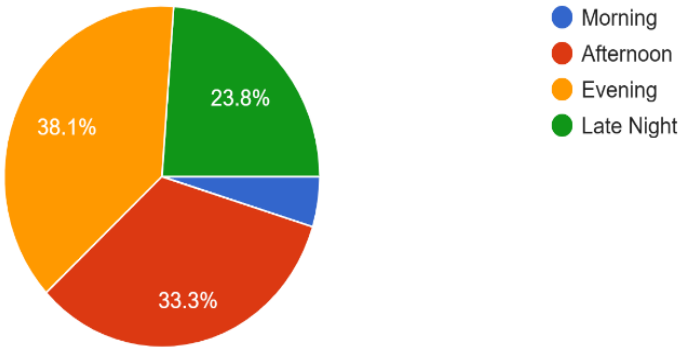


FIGURE 4.

5. The use of multiple devices at the same time by the children is sometimes (33.3%).

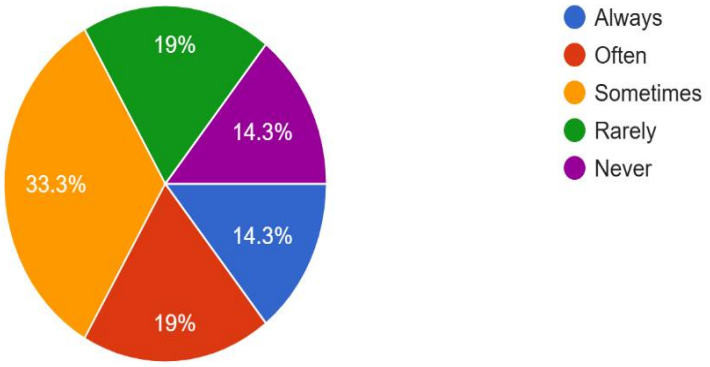


FIGURE 5.

6. The increase in screen time over the past year is yes (81%), maybe (14.3%).

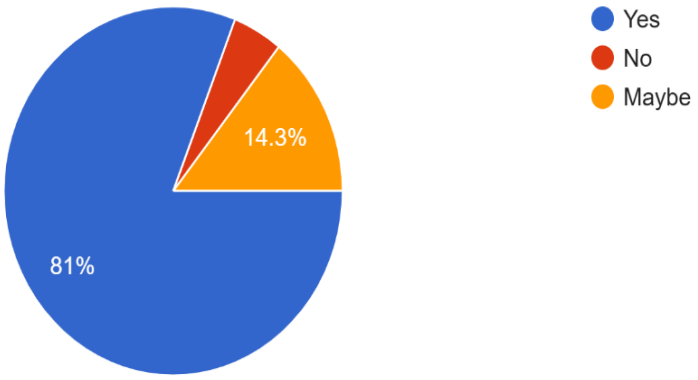


FIGURE 6.

7. The restlessness and distraction of a child while completing school home workor an offline activity is sometimes (47.6%), child's focus is well(33.3%) and yes (19%).

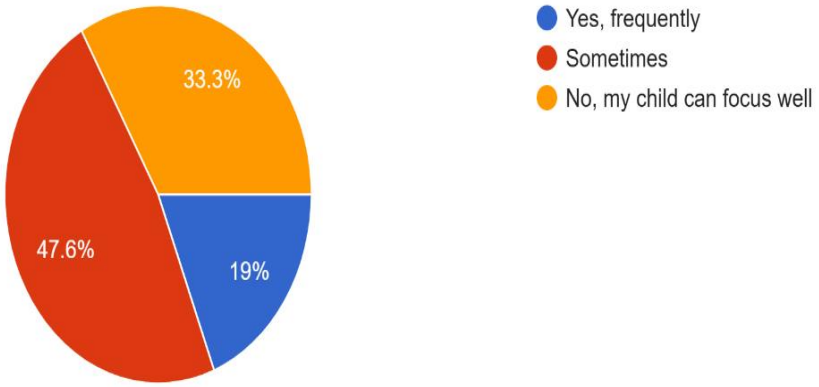


FIGURE 7.

8. The decrease in the attention span of children over time no (42.9%), yes (38.1%), maybe (19%).

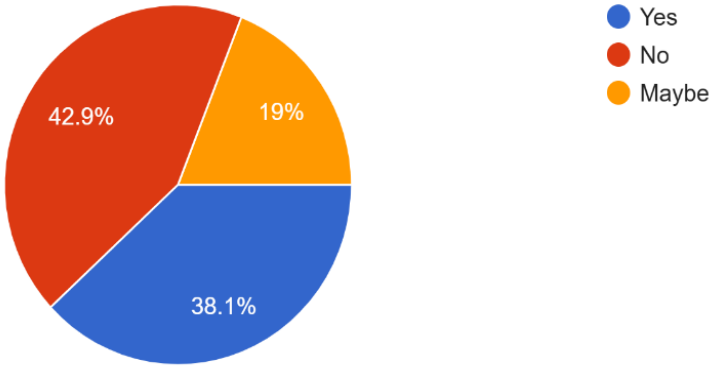


FIGURE 8.

9. A focus of a child in an activity such as reading or playing without distraction is 15-30 minutes (33.3%), More than 30 minutes (33.3%), 5-10 minutes (28.6%).

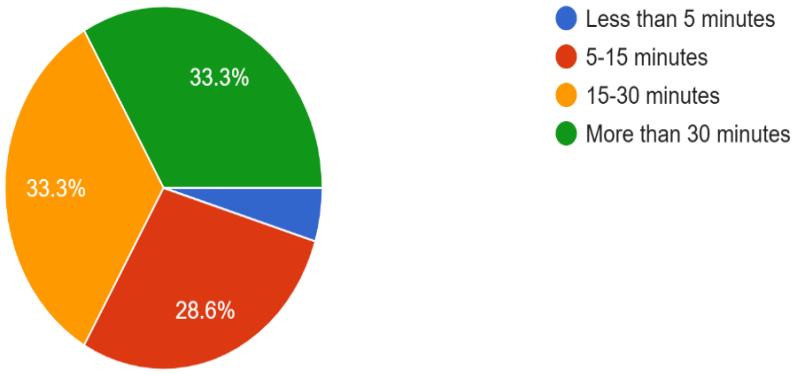


FIGURE 9.

10. The use of screen time before bedtime is occasionally (61.9%), every night (38.6%), a few times a week (9.5%).

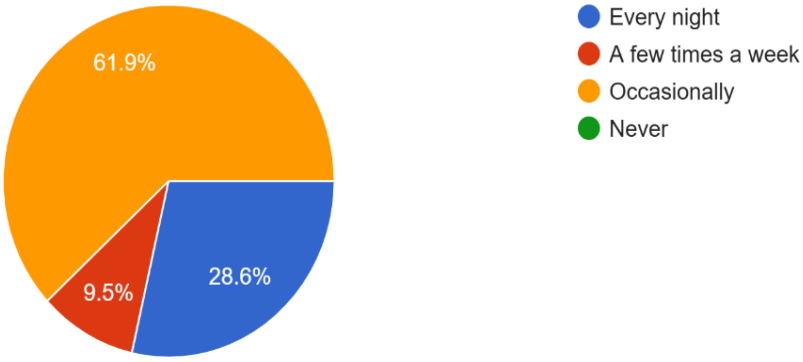


FIGURE 10.

11. The screen time limit for the child is yes (57.1%), no (33.3%), maybe (9.5%).

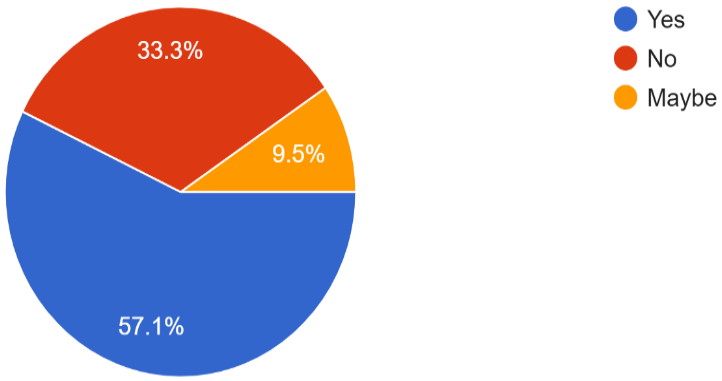


FIGURE 11.

12. The physical symptoms of children due to excessive screen time is Headaches (38.1%), eye strain (33.3%), trouble sleeping (28.6%) and neck/back pain (19%).

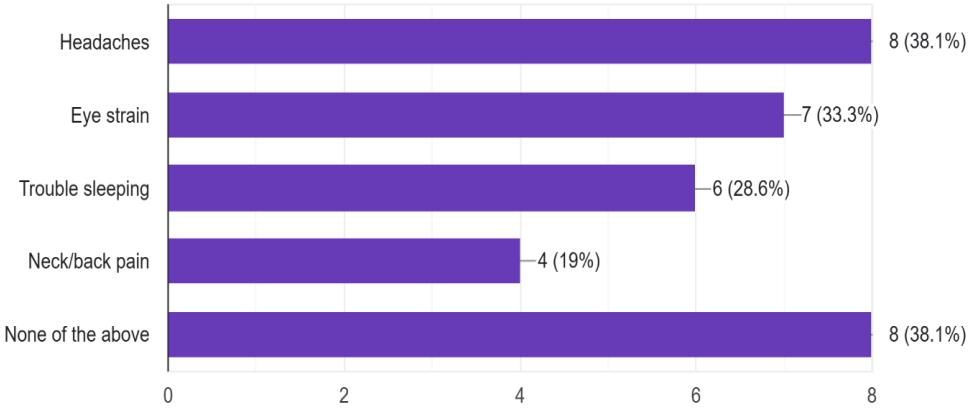


FIGURE 12.

13. A focus of a child in an activity like reading or playing without distraction is daily (66.7%) and a few times a week (33.3%).

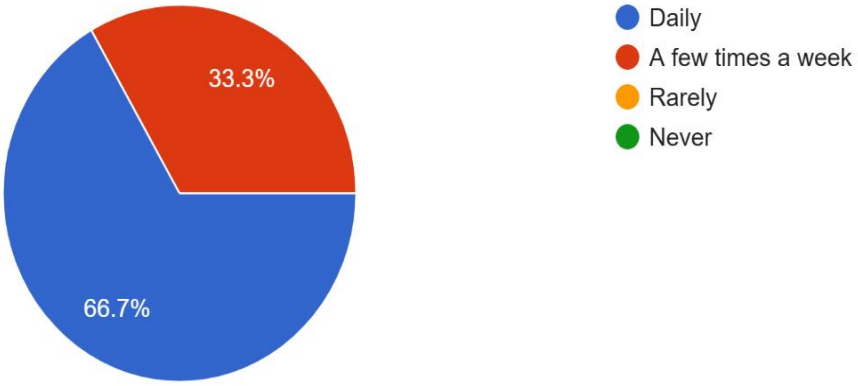


FIGURE 13.

6. FINDINGS AND DISCUSSIONS

Findings:
Increased Screen Time: Numerous children spend more than the specified daily screen time, decreasing reading, outdoor games, and imaginative play (AAP, 2016). Cognitive and Attention Problems: Hyperactive content encourages short attention lengths, immediate rewards, and inability to concentrate on thought-provoking activities (Domingues-Montanari, 2017; Ebrahem, 2024). Behavioural Impact: Excessive screen usage is associated with impulsivity, restlessness, distraction, and poorer academic performance (Zirek, 2018). Media-Specific Effects: Educational apps tend to overstimulate, video games habituate users to continuous stimulation, and social media promotes distraction-oriented behaviour (Ebrahem, 2024). 5. Consequences in Daily Life: Screen overuse impacts sleep quality, lessens interest in activities outside screens, and impairs cognitive functioning, making improved screen management necessary (Zirek, 2018).

Discussions:
Altering Attentional Patterns: Repeated exposure to high-speed digital material reconfigures children's brain circuits, valuing rapid responses over prolonged concentration, which could affect critical thinking and everyday problem-solving.

Balancing Screen Time and Content Quality: While educational tools well-designed will improve learning, increasing convergence between entertainment and education—particularly with gamification—can result in overstimulation and less engagement with traditional learning.
Health and Social Development Risks: Overuse of screens leads to physical health problems (e.g., obesity, musculoskeletal discomfort), social isolation, and emotional problems, which in turn affect children's cognitive and academic functioning.
Socioeconomic and Cultural Differences: Kids from more affluent families tend to have greater exposure to educational material and parental influence, while poorer families might make do with less supervised entertainment, which impacts social and cognitive development.
Holistic Interventions are needed: In addition to restricting screen time, organized use of technology, parents' involvement, media literacy education, and balanced activities offline are necessary for healthy digital habits among children.

7. LIMITATIONS AND FUTURE SCOPE

Limitations:
Varied Individual Impact: The impact of technology on attention and cognition varies depending on variables such as age, setting, and prior cognitive characteristics, which makes it challenging to generalize.
Short-Term vs. Long-Term Effects: Most studies examine short-term effects, whereas long-term effects of extended screen time are unclear. Multiple Causes of
Attention Difficulty: There could be several reasons for attention problems that are independent of screen exposure, such as lack of sleep, brightness of the screen, and less physical activity.
Accelerating Technological Developments: The rapid technological development of digital hardware and content creates difficulties in carrying out studies that continue to be applicable in the long run.Difficulty in Isolating Variables: As numerous lifestyle and environmental variables contribute to changes in attention, it is challenging to isolate cognitive changes to technology use alone.

8. CONCLUSION AND RECOMMENDATION

Conclusion:
This study indicates that technology is an excellent learning and entertainment tool, but excessive screen time can be detrimental to children's concentration, learning, and health. Excessive time spent on high-speed games, videos, and social media can make it more difficult for children to focus, finish tasks, and remain interested in activities in the real world. It can also result in issues such as sleep deprivation, restlessness, and having less time for outdoor activities and socializing. But all screen time is not bad. Educational apps and learning software are useful when used in moderation. It is a matter of finding a proper balance. Parents and teachers must impose limits on screen time, promote activities such as reading and outdoor play, and assist children in using technology in a wise and aware manner. Future studies can teach us more about how technology influences the brain in the long term, so we can ensure children get the good from technology without degrading their capacity to concentrate and learn.

Recommendation:
1. Limit Screen Time: Daily limits on screen time should be imposed by parents and teachers to promote a healthy lifestyle.
2. Promote Offline Activities: Reading, playing outdoors, and social interaction must be encouraged to enhance attention and minimize digital addiction.
3. Ensure Quality Content: Educate children with educational and useful digital content rather than hyper-speed entertainment.
4. Designate Screen-Free Zones: Designate screen-free times, particularly before sleep and during meals, to enhance sleep and concentration.
5. Enhance Awareness and Parental Involvement: Educate children on proper use of technology and engage parents to oversee and participate in their child's online activities.

Future Scope: Long-term neurodevelopmental studies using advanced imaging techniques. Cross-disciplinary collaborations to develop holistic interventions. Culturally sensitive guidelines for technology use, tailored to different socio-economic contexts. Ethical considerations in designing digital content aimed at children, ensuring it promotes healthy cognitive development.

REFERENCES

1. https://www.tandfonline.com/doi/abs/10.1080/00140139.2018.1562107
2. https://www.sciencedirect.com/science/article/abs/pii/S0885200621001526
3. https://www.sciencedirect.com/science/article/abs/pii/S0273229720300034
4. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0244276
5. https://www.sciencedirect.com/science/article/pii/S0272735821000647
6. https://pmc.ncbi.nlm.nih.gov/articles/PMC8294013/
7. https://www.mdpi.com/1660-4601/19/12/7386
8. https://link.springer.com/article/10.1186/s12889-018-6321-9
9. https://acamh.onlinelibrary.wiley.com/doi/full/10.1111/camh.12346
10. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0237725
11. https://doi.org/10.1016/j.tele.2023.101994
12. https://link.springer.com/article/10.1007/s12646-015-0346-2
13. https://link.springer.com/article/10.1186/s43163-023-00396-1
14. https://www.researchgate.net/profile/Dr-Rana/publication/344861227_JOURNAL_OF_CRITICAL_REVIEWS_Addiction_in_Disguise_An_analytical_study_of_Screen_Exposure_among_School_age_children_in_India/links/5f942c6e92851c14bce1b926/JOURNAL-OF-CRITICAL-REVIEWS-Addiction-in-Disguise-An-analytical-study-of-Screen-Exposure-among-School-age-children-in-India.pdf
15. https://koreascience.kr/article/JAKO201915540967760.page
16. https://journals.sagepub.com/doi/full/10.1177/09731342231178632
17. https://library.iated.org/view/MANGAFA2015TEA
18. https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0039-1692966
19. https://journals.sagepub.com/doi/abs/10.1177/1362361315593536
20. https://www.cell.com/neuron/fulltext/S0896-6273(10)00678-1?script=true&mobileUi=0
21. https://journals.sagepub.com/doi/full/10.1177/09731342241229845