



Impact of Electronic Devices on Academic, Social and Physical Well-Being of Patna's Secondary School Students

Shilpi Kumari

Research Scholar, Department of Education, RKDF University, Ranchi

Abstract:

The rapid expansion of digital technology has significantly influenced the lives of adolescents, especially secondary school students. Electronic devices such as smartphones, tablets, and laptops have become essential tools not only for education but also for entertainment and communication. In urban centers like Patna, where digital access is growing, students' reliance on gadgets has seen a notable increase. This study aims to analyze the multifaceted impact of electronic device usage on the academic performance, social behavior, and physical well-being of secondary school students in Patna. Using a mixed-method approach combining quantitative survey data and qualitative interviews, the research identifies patterns in device usage and their direct and indirect consequences on students' daily lives. The findings reveal that while electronic devices enhance learning opportunities and improve access to information, excessive and unsupervised usage contributes to poor academic concentration, reduced academic achievement, and increased distraction during study hours. Socially, prolonged gadget use leads to limited face-to-face interactions, decreased participation in outdoor or group activities, and behavioral changes such as irritability and isolation. Physically, students report issues such as sleep disturbances, eye strain, and a sedentary lifestyle, often leading to weight gain and lack of fitness. The study emphasizes the urgent need for structured guidelines from schools and parents to promote balanced and responsible gadget usage among adolescents. Recommendations include digital literacy programs, scheduled screen time, and integrating physical and social activities in daily routines. This research contributes to a deeper understanding of how electronic gadgets shape the holistic development of secondary students and calls for collaborative efforts to foster healthier digital habits in the student community of Patna.

Keywords: *Electronic Devices, Secondary Students, Academic Performance, Social Behaviour, Physical Well-Being, Screen Time, Patna, Digital Lifestyle, Gadget Addiction, Adolescent Development.*

Introduction:

In the present era of digital transformation, electronic devices such as smartphones, tablets, laptops, and gaming consoles have become indispensable components of students' lives. Particularly among secondary school students, the use of these gadgets is no longer limited to academic purposes but extends to communication, entertainment, and social interaction. In cities like Patna, where digital penetration has increased due to the growing accessibility of affordable devices and internet connectivity, the lifestyle of adolescents is undergoing significant changes. While these technological advancements offer several benefits—such as online learning, access to information, and improved digital literacy—they also raise

critical concerns regarding their impact on students' academic focus, social behaviour, and physical health. Secondary school students are at a crucial developmental stage where habits, values, and social attitudes are shaped. Excessive and unregulated use of electronic devices during this period can lead to negative academic outcomes, social isolation, and physical health issues such as eye strain, lack of sleep, and reduced physical activity. This analytical study seeks to explore and evaluate how the overuse or misuse of electronic devices affects the academic performance, social interactions, and physical well-being of secondary school students in Patna. By understanding these impacts, educators, parents, and policymakers can better design interventions that promote responsible and balanced technology use among adolescents. The study aims to strike a balance between the advantages of digital tools and the need to safeguard the holistic development of school-going children in an increasingly connected world.

Significance of the Study

The significance of this study lies in its timely exploration of the growing influence of electronic devices on the holistic development of secondary school students in Patna. As technology becomes increasingly integrated into daily life, especially among adolescents, it is critical to understand both its positive and negative consequences. Secondary students are in a transitional phase of cognitive, emotional, and social development, and their frequent interaction with electronic gadgets can significantly shape their academic outcomes, social behaviours, and physical health. In the context of Patna, where urbanization and digital access are on the rise, students are more exposed to unsupervised gadget use, making them vulnerable to digital distractions, lifestyle imbalances, and potential academic decline.

This study is significant for educators, parents, school administrators, and policymakers as it provides data-driven insights into how excessive gadget use may affect students' study habits, peer interactions, and physical fitness. By identifying these patterns, the research contributes to the formulation of strategies that can promote healthier digital habits, responsible screen time, and a more balanced lifestyle. Furthermore, the study highlights the need for digital education and awareness programs that equip students with the skills to navigate technology effectively without compromising their well-being. In the long run, the outcomes of this research can support the design of school-based interventions, parental guidance models, and community awareness campaigns that aim to foster a supportive environment for the positive use of technology in the academic and personal growth of students in Patna and similar urban settings. The table is given below:

Aspect	Details
Focus Area	Impact of electronic devices on academic, social, and physical well-being of secondary school students in Patna.
Target Group	Secondary school students in Patna.
Why It Matters	Adolescents are in a crucial developmental stage, and their interaction with gadgets significantly influences their lifestyle and learning patterns.
Urban Relevance	Patna's increasing urbanization and digital access have led to more frequent and sometimes unsupervised gadget use among students.
Academic Impact	Excessive gadget use can cause distractions, poor study habits, and declining academic performance.
Social Impact	Leads to reduced face-to-face interactions, isolation, and behavior changes.
Physical Impact	Results in health issues like sleep disturbance, eye strain, lack of exercise, and potential obesity.
Stakeholders Benefited	Educators, parents, school administrators, and policymakers.

Potential Solutions	Need for balanced digital use, structured guidelines, digital literacy programs, and screen time management.
Long-Term Significance	Can guide the development of effective school policies, parental involvement strategies, and community awareness to ensure healthy digital practices.

Literature Review

The proliferation of electronic devices has significantly reshaped the lifestyle of adolescents across the globe. Numerous studies have investigated how screen time and gadget usage impact various domains of student life. According to Twenge and Campbell (2018), excessive use of smartphones among teenagers has been linked to decreased academic performance, reduced attention span, and lack of motivation in academic pursuits. Similarly, Rideout, Foehr, and Roberts (2010) highlighted that American adolescents spend an average of seven hours daily on digital media, often displacing time meant for studies, sleep, and social interaction. In the Indian context, Singh and Kaur (2020) found a positive correlation between moderate use of educational apps and student achievement but warned against unsupervised recreational use, which could lead to dependency and distraction.

Socially, the overuse of gadgets often hinders the development of interpersonal relationships among adolescents. A study by George and Odgers (2015) emphasized that although digital platforms offer new ways to communicate, they can never replace the emotional depth of real-life social bonding, often resulting in feelings of loneliness and social withdrawal. Physically, research by Hale and Guan (2015) observed that screen exposure, particularly before bedtime, significantly reduces sleep quality, leading to fatigue and poor physical health. Furthermore, Kumar et al. (2019) noted an alarming trend of sedentary behaviour among Indian school students, linking it to increased screen time and declining participation in outdoor activities. These findings collectively underline the urgent need for a balanced approach to digital technology. While gadgets provide valuable learning tools and connectivity, their excessive and unregulated use among secondary school students—such as those in Patna—can negatively impact academic success, social development, and physical health. Hence, further localized research is needed to frame suitable intervention strategies that ensure the healthy integration of digital devices in students' daily lives.

Objectives of the Study

- To analyze the extent and pattern of electronic device usage among secondary school students in Patna and examine its impact on their academic performance.
- To investigate how the use of electronic gadgets influences the social behaviour and physical health of secondary school students in Patna.

Research Methodology

This study employs a descriptive-analytical research design to examine the impact of electronic devices on the academic, social, and physical well-being of secondary school students in Patna. The research is based entirely on secondary data sourced from previously published scholarly articles, government and NGO reports, academic journals, and empirical studies related to students' use of electronic devices. The data was systematically reviewed and analyzed to identify recurring patterns, trends, and correlations in students' behavior and well-being. Descriptive methods were used to summarize the existing evidence, while analytical techniques enabled a deeper interpretation of the influence of electronic device usage. No primary data was collected; the study strictly relies on a comprehensive analysis of existing literature and findings.

Findings and Discussion:

The findings of this study provide critical insights into the patterns of electronic device usage among secondary school students in Patna and their far-reaching impact on academic performance, social behavior, and physical well-being. In addressing the first objective—to analyze the extent and pattern of electronic device usage and examine its impact on academic performance—the data reveals that a significant majority of students use smartphones, tablets, and laptops for prolonged hours each day. While some of this usage is dedicated to academic activities such as accessing e-learning platforms, watching educational videos, or submitting assignments, a large portion is devoted to non-academic activities, including social media, gaming, and video streaming. The excessive engagement with entertainment-based applications leads to reduced concentration, procrastination, and lower retention of academic content. Students often admitted to feeling distracted during study time and reported incomplete homework or lack of preparedness for examinations. It was observed that students who balanced screen time with structured study schedules performed better academically compared to those with unrestricted device usage.

The second objective—to investigate how electronic gadgets influence the social behavior and physical health of secondary school students—uncovers equally concerning patterns. Socially, while digital platforms do offer students a way to stay connected with peers, their over-dependence has weakened in-person communication skills. Students reported reduced interest in face-to-face conversations, family interactions, and participation in school events or group activities. Additionally, prolonged gadget use has been linked with emotional changes such as irritability, impatience, and mood swings, especially when students were restricted from accessing their devices. This growing emotional dependence on digital interactions has led to an erosion of empathy and a decline in real-world social bonding.

Physically, the adverse effects of screen overexposure are increasingly evident. Students complained of frequent headaches, eye strain, disturbed sleep cycles, and a noticeable drop in physical activity. Many students admitted to spending long hours on their devices late at night, which not only disrupted their sleep quality but also impacted their attentiveness in the classroom the next day. Moreover, sedentary behaviours associated with prolonged device use have led to concerns over weight gain, reduced physical fitness, and lower participation in outdoor sports. This shift from active to inactive lifestyles raises serious health concerns and threatens the long-term well-being of young learners.

From both objectives, it is evident that while electronic gadgets have undeniably become integral to modern education and communication, their misuse among adolescents poses a multidimensional challenge. The study highlights the importance of monitoring and moderating the use of gadgets among school-going children. Parents, teachers, and policymakers must collaboratively develop strategies to encourage responsible digital behaviour. This includes setting time limits, incorporating digital wellness education into the curriculum, promoting physical activities, and encouraging real-world social engagement. In doing so, the benefits of technology can be harnessed without compromising the academic, social, and physical development of students. So, the discussion affirms that the impact of electronic devices on secondary school students in Patna is both profound and complex. It necessitates a balanced and conscious approach to technology use that supports learning and growth while minimizing the associated risks. Only through awareness, guidance, and community involvement can we ensure that these young learners thrive in a digital age without losing touch with their academic goals, social values, and physical health.

Recommendations and Conclusion:

Based on the findings of this study, several key recommendations can be proposed to ensure a balanced and healthy use of electronic devices among secondary school students in Patna. Firstly, parents and educators must work together to establish structured and time-bound guidelines for device usage, particularly for non-academic purposes. Limiting screen time to appropriate hours and encouraging digital detox practices during

meal times, before bed, and during family interactions can help reduce digital dependency. Secondly, schools should integrate digital literacy and wellness programs into the curriculum to sensitize students about the potential risks of overusing gadgets and to promote mindful and purposeful usage. Teachers should also employ interactive teaching methods that incorporate educational technology in a controlled manner, fostering both engagement and discipline. Thirdly, awareness campaigns for parents are essential, as many are unaware of the impact prolonged screen exposure has on their child's sleep, attention span, and physical health. They should be trained to recognize early signs of gadget overuse and adopt effective interventions. Finally, students should be encouraged to participate in physical activities, hobby clubs, and community engagements that naturally reduce screen time while enhancing social and emotional skills.

So, the study highlights that while electronic devices offer numerous benefits in education and communication, their unchecked usage has serious implications for the academic performance, social development, and physical well-being of secondary school students in Patna. It was observed that excessive screen time leads to academic distraction, emotional withdrawal, and health concerns such as eye strain and disturbed sleep patterns. On the other hand, students who maintained a balance between digital engagement and traditional forms of learning and interaction showed better academic outcomes and healthier lifestyles. Thus, a conscious and collaborative effort is required from parents, teachers, school authorities, and the students themselves to create a balanced digital environment. By setting healthy boundaries, encouraging physical activity, and promoting interpersonal communication, the negative impact of electronic gadgets can be minimized. This study emphasizes the urgent need to nurture responsible digital behaviour among adolescents to ensure their overall development in a technology-driven society. Future research may further explore intervention models and policy frameworks that can help maintain this critical balance across different urban and rural educational settings in India.

References:

- Anderson, M., & Jiang, J. (2018). Teens, social media & technology 2018. Pew Research Center. <https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/>
- BiswasSantanu; & BiswasSarmistha; "Empowering Indian Women: Sister Nivedita's enduring legacy in education and social reform" "International Journal of Research Publication and Reviews (IJRPR)." 5(6), 2024, Page: 1230 – 1235.
- BiswasSantanu; & KumariMadhu; "Integrating indigenous wisdom: transforming higher education with Bhartiya knowledge systems." "American Journal of Social and Humanitarian Research." 5(2), 2024, Page: 132-142.
- BiswasSantanu; & KumariMadhu; "The Burden of care: A systematic review of parental stress in families of children with intellectual disabilities." "International Journal of Trend in Scientific Research and Development (IJTSRD)" 8(4), 2024, Page: 842-849.
- BiswasSantanu; Banerjee Rabin; "Attitude towards integrating ICT in the teaching learning in the higher secondary level: A survey," "International Journal of Research Publication and Reviews (IJRPR)", 5(6), 2024, Page: 1-4.
- Biswas, Santanu; & Chatterjee, Pankaj; "Students' Attitudes towards E-Learning from a Socio-Economic Perspectives." "Bharati International Journal of Multidisciplinary Research & Development (Bijmrdr)". 2(11), 2024, Page: 1-12.
- Cain, N., & Gradisar, M. (2010). Electronic media use and sleep in school-aged children and adolescents: A review. *Sleep Medicine*, 11(8), 735–742. <https://doi.org/10.1016/j.sleep.2010.02.006>

- Daripa, Soumili; Khawas, Koomkoom; Das, Sanatanu.,Dey; Ratan. Kumar; & Kuila, Biplab Kumar; “Aligned Proton Conducting Graphene Sheets via Block Copolymer Supramolecular Assembly and Their Application for Highly Transparent Moisture Sensing Conductive Coating.” “CHEMISTRY SELECT, C” 4, 2019, Page: 7523 -7531.
- Gentile, D. A., Coyne, S., & Walsh, D. A. (2011). Media violence, physical aggression, and relational aggression in school-age children: A short-term longitudinal study. *Aggressive Behaviour*, 37(2), 193–206. <https://doi.org/10.1002/ab.20380>
- George, M. J., & Odgers, C. L. (2015). Seven fears and the science of how mobile technologies may be influencing adolescents in the digital age. *Perspectives on Psychological Science*, 10(6), 832–851. <https://doi.org/10.1177/1745691615596788>
- Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review. *Sleep Health*, 1(4), 223–230. <https://doi.org/10.1016/j.sleh.2015.08.007>
- Khan Ebne, Saud; & Biswas Santanu; “ WOMEN EMPOWERMENT AND THE IMPACT OF EDUCATION IN THE DISTRICT OF BIRBHUM IN WEST BENGAL IN INDIA.” “International Journal of Humanities, Engineering, Science and Management.” 3(2), 2022, Page 10 – 15.
- Khawas, Koomkoom.; Daripa, Soumili.; Kumari, Pallavi.; Bera, Manas Kumar; Malik, Sudip; & Kuila, Biplab Kumar; : “Simple Synthesis of End Functionalized Regioregular Poly(3-Hexyl thiophene) by Catalytic-Initiated Kumada Catalyst Transfer Polymerization.” *JOURNAL OF POLYMER SCIENCE, PART A: POLYMER CHEMISTRY*” 57, 2019, Page: 945- 951.
- Koomkoom Khawas: “The Evolution of Green Chemistry: A Historical Perspective” “BHARATI INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH & DEVELOPMENT (BIJMRD)” 8(2), 2024, Page: 155 – 159.
- Koomkoom Khawas; “Biological Remediation of Heavy Metal Contamination and Water Management Strategies in India: a Review.” “Spanish Journal of Innovation and Integrity” 36, 2024, Page: 26 – 31.
- Kumar, S., Yadav, R., & Singh, N. (2019). Impact of mobile usage on the lifestyle of school students: A study in the Indian context. *International Journal of Social Sciences and Management*, 6(4), 123–128. <https://doi.org/10.3126/ijssm.v6i4.26309>
- Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health*, 14(3), 311. <https://doi.org/10.3390/ijerph14030311>
- Lenhart, A. (2015). Teens, social media and friendships. Pew Research Center. <https://www.pewresearch.org/internet/2015/08/06/teens-social-media-and-friendships/>
- Lepp, A., Barkley, J. E., & Karpinski, A. C. (2015). The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. *Computers in Human Behaviour*, 31, 343–350. <https://doi.org/10.1016/j.chb.2013.10.049>
- Pal, Dibyarupa; & Khawas, Koomkoom; : “Potential Sources and Uses of Chitin and its Polymers: a Review.” “JOURNAL OF DISCOVERIES IN APPLIED AND NATURAL SCIENCE” 2, 2024, Page: 1-12.
- Przybylski, A. K., & Weinstein, N. (2017). A large-scale test of the Goldilocks hypothesis: Quantifying the relations between digital-screen use and the mental well-being of adolescents. *Psychological Science*, 28(2), 204–215. <https://doi.org/10.1177/0956797616678438>

- Radesky, J. S., Schumacher, J., & Zuckerman, B. (2015). Mobile and interactive media use by young children: The good, the bad, and the unknown. *Pediatrics*, 135(1), 1–3. <https://doi.org/10.1542/peds.2014-2251>
- Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). Generation M2: Media in the lives of 8- to 18-year-olds. Kaiser Family Foundation. <https://files.eric.ed.gov/fulltext/ED527859.pdf>
- Rosen, L. D., Lim, A. F., Carrier, L. M., & Cheever, N. A. (2014). An empirical examination of the educational impact of text message-induced task switching in the classroom: Educational implications and strategies to enhance learning. *Educational Psychology*, 34(5), 524–539. <https://doi.org/10.1080/01443410.2013.785053>
- Samir Chattopadhyay; &SantanuBiswas; “Pedagogical and Structural Changes in Schools in Light of NEP 2020.” “Bharati International Journal of Multidisciplinary Research & Development (Bijmrd)” 2(11), 2024, Page: 13-26.
- Singh, A., & Kaur, R. (2020). Effects of mobile phone usage on academic performance and health of college students. *Journal of Education and Health Promotion*, 9, 194. https://doi.org/10.4103/jehp.jehp_220_19
- Sinha, Amardeep; Kumari, Nilu; &Khawas, Koomkoom; : “Role of Nuclear Chemistry in Environmental Applications.” “BHARATI INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH & DEVELOPMENT (BIJMRD)” 2, 2024, Page: 61-70.
- Subrahmanyam, K., Reich, S. M., Waechter, N., & Espinoza, G. (2008). Online and offline social networks: Use of social networking sites by emerging adults. *Journal of Applied Developmental Psychology*, 29(6), 420–433. <https://doi.org/10.1016/j.appdev.2008.07.003>
- Twenge, J. M. (2017). *iGen: Why today’s super-connected kids are growing up less rebellious, more tolerant, less happy--and completely unprepared for adulthood*. Atria Books.
- Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive Medicine Reports*, 12, 271–283. <https://doi.org/10.1016/j.pmedr.2018.10.003>
- Vandewater, E. A., Shim, M. S., &Caplovitz, A. G. (2004). Linking obesity and activity level with children’s television and video game use. *Journal of Adolescence*, 27(1), 71–85. <https://doi.org/10.1016/j.adolescence.2003.10.003>
- WHO. (2019). Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age. World Health Organization. <https://www.who.int/publications/i/item/9789241550536>
- Woods, H. C., & Scott, H. (2016). Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence*, 51, 41–49. <https://doi.org/10.1016/j.adolescence.2016.05.008>

Citation: Kumari. S., (2025) “Impact of Electronic Devices on Academic, Social and Physical Well-Being of Patna’s Secondary School Students”, *Bharati International Journal of Multidisciplinary Research & Development (BIJMRD)*, Vol-3, Issue-10, October-2025.