

The Transformation of Personal Habits in the Digital Age: A Study of Secondary Level Students

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Abstract

The study focuses on how students in Nawada, Bihar, transform their personal practices to keep up with the increasing integration of digital technology. In this case, we study 100 students from both government and private secondary schools to analyse how the use of digital technology affects their daily routines, studying, sleeping, and time management. The results show that there is a correlation between the use of digital devices and personal habits; however, the impact varies according to students' socio-economic status. Using structured questionnaires according to the quantitative research methodology, the study aims to help educators, parents, and policymakers develop a response to the challenges of integrating digital technology in the lives of adolescents.

Keywords: *Digital Technology, Personal Habits, Secondary Students, Time Management, Sleep Patterns, Study Habits*

Introduction

The 21st century has seen a dramatic rise in the use of digital technology, causing a fundamental change in how people of all ages behave and interact socially. Research indicates that young people, particularly secondary school students, are among the most digitally immersed populations, averaging 7-9 hours of daily digital media use (Rideout & Robb, 2019). The rapid growth of the internet and smartphones has facilitated a digital revolution in India, even reaching rural and semi-urban areas like Nawada in Bihar. The smartphone revolution, combined with the availability of cheap data and enhanced digital infrastructure, has made access to technology far more widespread than most imagined a decade ago. The impacts of this increased and widespread access to technology are felt most, both positively and negatively, within the realm of education.

The foundation of child development and school achievement consists of personal habits, including daily schedules, study habits, sleep routines, time management, and self-control. These routines and habits, which were formerly structured on family, school, and peers, are being increasingly moulded by technology. The incorporation of smartphones, social media, online games, and e-learning tools into students' daily lives presents both opportunities and

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problems that deserve careful study. The period of adolescence, when brain changes are most rapid and new habits and behaviours are forming, is the most crucial time. The routines and habits formed during this time will determine cognitive development, skills, and overall health.

The COVID-19 pandemic accelerated students' digital adoption as online learning became a necessity. The rapid shift in the educational process did not give students, parents, and educators enough time to develop strategies to support this shift in a healthy way. When schools in Bihar, as well as across India, moved to a hybrid and digital model, students' screen time skyrocketed, but levels of digital wellness and self-regulation remained low. The educational environment after COVID-19 requires an assessment of how much these digital habits have changed student behaviour and routines.

Nawada is a fascinating context to explore as a district in Bihar. The district qualifies as a semi-urban area undergoing rapid digitisation, allowing us to explore how students with varying digital footprints and developmental pathways perform in relation to their socio-economic profiles. The district is situated in neither a fully urban area with all possible amenities and resources, nor in a completely rural area with little to no access. This enables us to understand and characterise many more Indian districts with similar profiles. The district, with a mix of government and privately owned schools, reflects the socio-economic complexity of the region as a literacy rate of about 69% is prevalent. This understanding provides a basis for the potential positive and negative implications of digital resources on students' mental and academic health. This context is equally significant for the formulation of digital resource impact policy in other comparable districts of the country.

Rationale of the Study

The alterations in people's routines in the digital world are not a matter of choice, as they involve deep-rooted behaviours among adolescents and the way they manage their time by adjusting the order of their actions and implementing the behaviours they choose on their own. Numerous studies have shown the impact of prolonged screen time on sleeping patterns (Cain and Gradisar 2010), level of inactivity (Tremblay et al. 2011), and difficulties with attention (Ophir et al. 2009). Though little attention has been given to studies of these issues in the Indian context, particularly in semi-urban areas, where the use of digital technology is just beginning to rise.

The essence of the technology in this case is a driving force for many reasons. To begin with, India has the highest number of young adolescents. The number is remarkable, reaching 253.6 million adolescents aged 10 to 19 years. The shape of technology is also vital, specifically for adolescents' personal habits, as shaped habits impact the nation's development across a wide range of human capital and the country's future productivity. The rate at which digital adoption is spreading in India is also quite remarkable. The usage of smartphones increased from 12% to 54% between 2014 and 2023, which is also a sign of rapid digital penetration. The rate of development of educational digital content to precede the penetration of smartphone use is quite low, indicating that the educational and protective measures for smartphone use are poorly integrated.

Three sociocultural influences from Bihar also shape this study. Bihari culture, characterised by compact family structures, population density, and traditional educational instructional methodologies, is also undergoing what sociologists refer to as 'cultural lag,' an inconsistency between long-standing sociocultural practices and more recent, disruptive digital technologies. Students and educational practitioners alike are developing and exercising self-regulation within the interstitial space created by traditional educational practices and digital technologies. Below this sociocultural level, the Bihar government, through its “Digital Bihar” initiative, seeks to improve educational technologies deployed in Bihari classrooms. Policy improvements are always best grounded in an adequate understanding of what educational practices and technologies students and educators are exercising.

Finally, the developmental window covered by this study is also very important and corresponds to students aged 14 to 16. Executive functioning, parental autonomy, peer socialisation, and decision-making become crucial to learners. It is vital for these learners to set the course of their academic and professional future. The personal habits developed during this crucial window of self-regulation are likely to carry over into the individual's adult life. It is important to note how digital technologies within this window, and their potential for self-regulation, shape these habits. Beyond academics, this importance is long-term.

Lastly, from a practical perspective, educators' and parents' concerns in Nawada and similar contexts about students' digital behaviour are growing but, unfortunately, are not backed by any evidence-based insights to inform their actions. Teachers notice diminished attention and incomplete homework, and parents find it difficult to set appropriate limits on device use. This study aims to fill the gap by analysing the different aspects of digital technology that shape the lifestyle choices of secondary students located in Nawada. The study will provide evidence-based insights to inform policymakers and parents in similar contexts across India's geographical landscape. The study will provide evidence-based insights to inform policymakers and parents in similar contexts across India's geographical landscape. The study will provide evidence-based insights to inform policymakers and parents in similar contexts across India's geographical landscape. The study will provide evidence-based insights to inform policymakers and parents in similar contexts across India's geographical landscape. The findings will help narrow the gap by providing construct insights.

This research will advance the digital technology and adolescent development discourse using evidence from a significantly underrepresented geographical area, where the majority of Indian study participants are located. Most available studies on this topic focus on Western contexts or major Indian metropolitan areas, leaving significant gaps in research on digital technology in smaller Indian towns and cities. This study thus significantly contributes to enhancing the foundation for a comparative study across diverse Indian contexts.

Research Objectives

The present study was conducted with the following specific objectives:

1. To assess the impact of digital technology usage on the daily routines and time management practices of secondary level students in Nawada, Bihar.

2. To examine the relationship between digital device usage and sleep patterns, study habits, and self-discipline among secondary level students in Nawada, Bihar.

Review of Literature

Internationally recognised literature has explored the connection between digital technologies and adolescent behaviours, but literature in the Indian context remains limited. This section examines the pertinent literature on the digital technologies and behaviours of Indian adolescents that inform this study.

Digital Technologies and Their Relation to Time Management. Junco and Cotten (2012) illustrated that the concurrent use of multiple digital devices while studying severely affects learners' ability to manage their time and work on academic tasks. Students who frequently alternated between studying and checking social media had lower GPAs and spent relatively less time on academic work. Likewise, Rosen et al. (2013) concluded that students who used technology during their study periods took significantly longer to complete their assignments.

Altering Sleep Patterns. There is evidence that the blue light emitted by digital screens inhibits melatonin secretion, contributing to a delayed onset of sleep and lower sleep quality (Chang et al., 2015). Levenson et al. (2016) documented that adolescents who spent time on smartphones before bed had shorter sleep duration and poorer overall sleep quality, which, in turn, were associated with decreased alertness and poorer academic performance during the day. In the Indian context, Kaur et al. (2019) documented that excessive smartphone use among adolescents was associated with irregular sleep schedules and daytime fatigue.

Study Habits and Academic Performance: In educational contexts, digital technology provides a vast array of educational aids and information, but also distracts from academic pursuits. In a study of students who used social media and multitasked while studying, academic performance was lower than among students who did not engage in social media multitasking (Kirschner and Karpinski, 2010). Purposeful digital technology use, however, is educationally beneficial (Chen and Yan, 2016).

Self-Discipline and Self-Regulation: Digital entertainment and social media accessibility challenge adolescents' self-regulation, an area of early development. Digital environments' effects on self-regulation and self-discipline have profound academic implications since self-discipline predicts academic performance more than IQ (Duckworth and Seligman, 2005). Recent work suggests that the development of self-control mechanisms may be impaired in adolescents who use digital devices extensively (Wilmer et al., 2017).

The Indian Situation: There is a small but growing body of literature on the same phenomenon in the Indian Context. Yadav et al. (2018) indicated that the smartphone addiction of Indian adolescents is related to their academic performance and the level of their physical activities. Kumar and Sherkhane (2018) indicated that students in semi-urban Indian schools showed a growing dependence on digital devices for both educational and entertainment activities, often in the absence of parental guidance and limited digital literacy training.

The literature is clear that the digital sphere is influencing adolescents' personal habits in a variety of ways, but more research in specific contexts is needed to inform tailored responses.

This study helps partially address the understanding of these interactions in the context of the socio-cultural specificities of Bihar.

Research Methodology

This study employs a descriptive survey research design using quantitative methodology. The cross-sectional approach allows for examining the current state of personal habits regarding digital technology use among secondary students in Nawada, Bihar.

Population and Sample

The population for this study comprised all secondary level students (Classes 9 and 10) enrolled in schools within Nawada district, Bihar. Using a purposive sampling technique, 100 students were selected from four schools—two government and two private—to ensure representation across different socio-economic backgrounds.

Sample Distribution:

The study sample consisted of 100 students between the ages of 14 and 16 years. In terms of gender, the sample included 52 males and 48 females, reflecting a near-equal distribution. Regarding grade level, 51 students were enrolled in Class 9 while the remaining 49 were in Class 10. The sample was also drawn from two types of institutions, with 54 students attending government schools and 46 students from private schools.

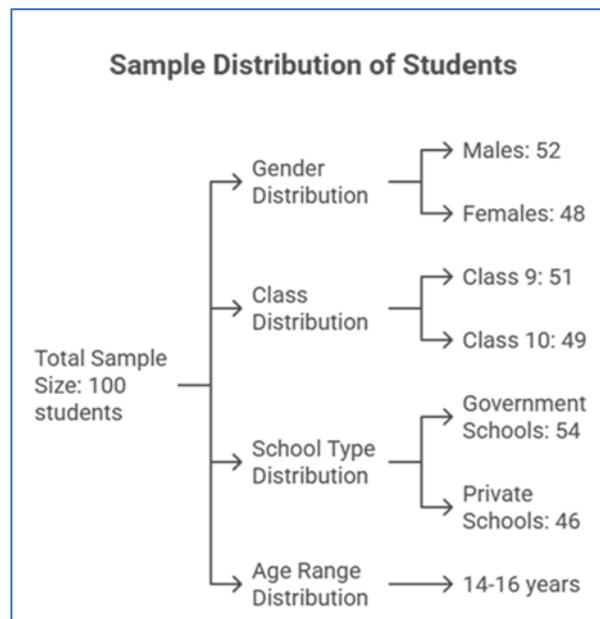


Figure: Sample -Distribution of the Study

Research Instrument

A structured questionnaire was developed as the primary data collection instrument, consisting of three sections:

Section A: Demographic Information - Collected data on age, gender, class, type of school, parental education, and family income.

Section B: Digital Technology Usage Patterns - Assessed daily screen time, types of digital devices used, purposes of usage (educational, entertainment, social media), and duration of different activities.

Section C: Personal Habits Assessment - Evaluated daily routines, sleep patterns (bedtime, wake time, sleep duration), study habits (study duration, concentration levels, homework completion), time management practices, and self-reported self-discipline levels.

The questionnaire used a combination of multiple-choice, Likert-scale, and open-ended questions. The instrument was validated through expert review by three faculty members specialising in educational psychology and digital learning, and pilot-tested with 15 students not included in the final sample.

Data Analysis

The collected data were coded and analysed using SPSS (Statistical Package for the Social Sciences) version 26.0. Descriptive statistics (mean, standard deviation, frequency, and percentage) were calculated to summarise the data. Pearson correlation coefficient was calculated digital technology utilisation and several personal habit indicator variables. Independent t-tests were used to determine and analyse differences between pairs (gender, school type). Statistical significance was set at $p < 0.05$.

Results and Discussion: Digital Technology Usage Patterns

According to the available data, 94% of respondents reported having a smartphone, while 68% reported having access to a personal computer or tablet. The reported average total daily screen time was 5.4 (SD = 2.1) hours, with considerable disparity across school types. For instance, among students in private schools, a total daily screen time of 6.2 hours was reported; in contrast, students in government schools had a total screen time of 4.7 hours.

Table 1: Digital Technology Ownership and Usage Patterns

Parameter	Percentage/Value
Smartphone ownership	94%
Personal computer/tablet access	68%
Average daily screen time	5.4 hours (SD = 2.1)
Students using devices before 7 AM	67%
Students using devices after 11 PM	78%

Distribution of Digital Activities:

- Social Media (WhatsApp, Instagram, Facebook): 38% of screen time
- Entertainment (YouTube, Netflix, gaming): 32% of screen time

- Educational purposes (online classes, research, homework): 18% of screen time
- Communication with family/friends: 12% of screen time

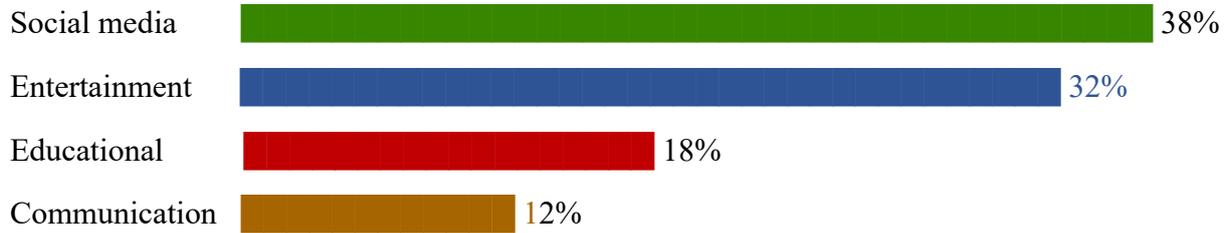


Figure 2: Time Distribution Across Digital Activities

These findings indicate that recreational and social activities dominate digital technology usage, consistent with patterns observed in other studies (Anderson & Jiang, 2018). The relatively limited use for educational purposes raises questions about how digital potential is being harnessed for learning in this context.

Impact on Daily Routines and Time Management (Objective 1)

Meal Times and Family Interaction:

Physical Activity Patterns:

Daily Routine Structure:

Over half (62%) of the students acknowledged that their use of digital devices negatively affected their daily routines, causing them to lose structure. Comparing the survey time to a retrospective 3-4 years prior, the adoption of smartphones, and students' self-reported consistent daily routines of waking, eating, studying, and sleeping, fell dramatically from 71% in the earlier years to 38% during the survey.

Time Management Challenges:

Over 70% of students, a large majority, self-reported having difficulty managing time and being digitally distracted. With phones checked at least 47 times daily, students spend, on average, 3-5 minutes focusing on their phones, then repeat the distraction cycle. Task completion and work quality suffer when students work in such fragmented attention environments.

Meal Times and Family Interaction:

58% of the students reported a drop in family mealtime interaction as they used digital devices and communicated even less face-to-face. This change in family mealtime dynamics in Indian culture is posing a dramatic shift, as family mealtime has historically been seen as a time for communication and bonding.

Physical Activity Patterns:

65% of students reported being less involved in outdoor activities than two years ago, while 49% attributed this decrease to increased screen time. This is consistent with the findings reported by Tremblay et al. (2011) and raises concerns.

Table 2: Impact on Daily Routines and Time Management

Indicator	Percentage/Value
Students with less structured routines	62%
Students following consistent daily schedule (current)	38%
Students following consistent daily schedule (3-4 years ago)	71%
Students reporting time management difficulties	73%
Average phone checks per day	47 times
Students using devices during meals	58%
Decreased outdoor physical activity	65%

Correlation Analysis: Pearson correlation analysis revealed a significant negative correlation ($r = -0.58, p < 0.01$) between daily screen time and structured daily routines. Similarly, a significant negative correlation ($r = -0.52, p < 0.01$) was found between screen time and self-reported time management effectiveness. These relationships suggest that higher digital technology usage is associated with poorer time management and less structured daily habits.

Table 3: Correlation Matrix - Screen Time and Personal Habits

Variables	Screen Time	Structured Routine	Time Management	Sleep Duration	Self-Discipline
Screen Time	1.00	-0.58**	-0.52**	-0.61**	-0.49**
Structured Routine	-0.58**	1.00	0.64**	0.53**	0.58**
Time Management	-0.52**	0.64**	1.00	0.47**	0.62**
Sleep Duration	-0.61**	0.53**	0.47**	1.00	0.44**
Self-Discipline	-0.49**	0.58**	0.62**	0.44**	1.00

Note: ** indicates $p < 0.01$

4.3 Impact on Sleep Patterns, Study Habits, and Self-Discipline (Objective 2)

Sleep Patterns: The data revealed substantial disruptions in sleep patterns associated with digital device usage. The average sleep duration reported was 6.8 hours (SD = 1.3 hours), below the recommended 8-10 hours for adolescents (Hirshkowitz et al., 2015). Notably, 76% of students reported using digital devices within one hour of bedtime, and 43% admitted to waking during the night to check notifications.

Table 4: Sleep Pattern Analysis

Sleep Parameter	Value/Percentage
Average sleep duration	6.8 hours (SD = 1.3)
Recommended sleep duration for adolescents	8-10 hours
Students using devices before bedtime	76%
Students waking to check notifications	43%
Average bedtime (device users)	11:47 PM
Average bedtime (non-device users before bed)	10:23 PM
Students feeling tired during school	68%
Students attributing fatigue to late-night device use	54%

Students who used electronic devices before attempting to sleep reported considerably longer sleep onset times (11:47 PM on average) than those who refrained from screen time for an hour before sleep (10:23 PM). The 84-minute difference has compounding ramifications on daytime function and autocorrelation. In addition, 68% of the student population indicated feeling drowsy during the day, and 54% of the sample felt that the root cause of this extreme fatigue was late-night use of electronic devices.

The amount of time spent on screens and the amount of sleep an individual gets exhibit a significant negative correlation ($r = -0.61, p < 0.01$), demonstrating that an individual who spends a considerable amount of time on a screen will have a considerably lower amount of sleep. This extends the previous work of Levenson et al. (2016) to the semi-urban Indian context.

Study Habits: Regarding the impact of digital technologies on study habits, the results were inconclusive. 82% of respondents used digital devices for educational purposes (e.g., accessing study materials and tutorial videos), and 71% reported that those devices were highly distracting while they were attempting to study.

Table 5: Study Habits and Digital Device Impact

Study Habit Indicator	Value/Percentage
Students using devices for educational purposes	82%
Students distracted by devices during study	71%
Average uninterrupted study duration	18.4 minutes (SD = 8.7)

Average time spent on homework/self-study	2.3 hours
Estimated productive study time	1.4 hours
Students with designated device-free study periods	21%

A report indicated that the average time a student could study without checking a digital device was 18.4 minutes (SD = 8.7), which is lower than the time required for effective deep learning (Newport, 2016). While students reported 2.3 hours of self-study or homework, the average actual productive time was closer to 1.4 hours due to digital interruptions. Among the study participants, 21% reported intentionally separating themselves from their devices during certain study blocks, which was associated with better academic performance and greater learning satisfaction. It suggests that students might have been better able to focus and complete their work thanks to digital devices.

Self-discipline analysis has also revealed some concerning patterns. Students scored an average of 52.3 out of 100 (SD = 14.2) on the self-discipline scale, suggesting they have moderate or low self-discipline. More time spent on screens was strongly negatively correlated with self-discipline scores ($r = -0.49$, $p < 0.01$). Students self-reported a lack of self-control: 67% indicated they intended to use their devices less, credited self-control, but could not accomplish it. Also, 53% of participants indicated their separation from their devices for a prolonged time caused them discomfort and anxiety, suggesting some level of dependency.

Comparative Analysis: Independent t-tests revealed significant differences between students in the public and private sectors. Students in the private sector, despite greater digital access and engagement, had lower time management skills ($t = 2.14$, $p < 0.05$) and poorer study skills ($t = 1.98$, $p < 0.05$), which may be a consequence of more active parental engagement and organised academic assistance. There were no notable gender differences in sleep behaviour or self-discipline ($p > 0.05$).

Discussion

The results of this study show how the use of digital technology is changing the personal practices of secondary school students in Nawada, Bihar. Technology provided an opportunity for flexible change but also offered minimal structure, shallow sustained attention, and sleep disruption. Students were more alert, but not always connected with others. Of concern is sleep disruption, an important component of brain function, emotions, and academics in adolescents. Nighttime device use is an obvious modifiable behaviour that, if changed, would improve overall student well-being. So too are time management and self-discipline equally important. Adolescence is a time when major self-regulatory capacities are formed and will be used throughout the life span (Steinberg, 2014). The digital world is a continuous lure and distraction, always available to adolescents during this key time in their lives. The distraction of the digital world may impede the acquisition of self-regulatory skills.

Despite these limitations, some entirely positive results were reported in the implementation of the research study as well. Participants demonstrated learning, and skill acquisition was evident. Most importantly, participants were able to understand the positive and negative uses

of tech tools and the balance and control required in their use as foundational skills within the study.

Conclusion and Recommendation

This research provided insights into changes in the personal habits of secondary students in Nawada, Bihar, and the considerable impact of digital technology on personal habits, time management, hours of sleep, study habits, self-discipline, and overall well-being. Participants reported that technology can assist with learning and communication, but its increasing use can disrupt personal habits, impacting the overall development of adolescents and their learning.

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