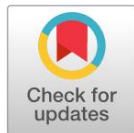


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The Influence Of Smartphones On The Dynamics Of Social Interaction Among Elementary School Students: A Case Study At Sdk Ruteng I

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ABSTRACT

Background. This study is motivated by the rampant use of smartphones, which triggers a shift in children's interpersonal relationship patterns.

Purpose. It aims to analyze the intensity of smartphone utilization and its impact on the social interaction dynamics of students at SDK Ruteng I.

Method. Utilizing a descriptive qualitative approach, data were gathered through observation and in-depth interviews with fifth-grade students. Data validity was verified through source, method, and time triangulation, while data analysis applied the Miles and Huberman interactive model involving data reduction, data display, and conclusion drawing.

Results. The findings reveal two primary discoveries: first, students exhibit a high level of smartphone dependency, with daily screen time exceeding two hours; second, smartphones deliver an ambivalent impact, facilitating communication and learning access while simultaneously triggering online game addiction, sleep disturbances, and the loosening of real-world social interactions.

Conclusion. As a conclusion, this study highlights that the solution to this phenomenon requires a crucial synergy between parental preventive control through screen time limitation and teachers' persuasive education regarding digital literacy at school.

KEYWORDS

Digital Literacy, Elementary School Children, Role of Parents, Smartphones, Social Interaction

INTRODUCTION

Smartphones represent a tangible manifestation of the rapid development and advancement of today's information technology. The accessibility and convenience offered by this technology have integrated it into all levels of society, making modern human life almost inseparable from a dependency on digital devices. In the educational realm, the sophistication of this technology contributes positively by facilitating students to independently explore digital learning materials to enhance academic achievements. On the other hand, however, this technology also has the potential to bring significant adverse impacts

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The intensification of smartphone usage at the elementary school level is inextricably linked to the implications of the post-Covid-19 pandemic, during which online learning policies positioned digital devices as the primary instructional medium. Nevertheless, this transition has triggered long-term consequences in the form of childhood game addiction. Farida (Farida, 2021) conceptualize those parental corrective actions, such as confiscating the device, frequently trigger destructive emotional resistance in children. Furthermore, reliance on internet search engines for completing school assignments tends to degrade reading interest in conventional literature (books). This phenomenon of shifting functions from books to digital platforms results in weakened writing skills and a lower depth of material comprehension among students. Consequently, this pattern of digital dependence has become a resistant habituation that remains difficult to eliminate, even though the post-pandemic recovery is fully underway.

Based on preliminary observations of fifth-grade students (classes A, B, and C), the researcher selected class V C as the research subject using a purposive sampling technique. This selection was based on indicators of high smartphone usage intensity, where students utilize devices daily with a duration exceeding two hours per session. Class V C comprises a total of 27 students, with a breakdown of 11 students owning personal smartphones and 16 students using devices belonging to their parents. This configuration establishes class V C as the class with the highest rate of personal smartphone ownership compared to the other classes.

Although device utilization was initially aimed at completing academic assignments, such activities are not conducted continuously daily. Device access is predominantly oriented toward recreational activities, such as playing online games and accessing YouTube and TikTok platforms. Additionally, smartphones function as a medium for long-distance interpersonal communication through the exchange of digital messages with friends and family. However, this excessive intensity of device usage triggers several problematic behavioral implications. These phenomena encompass a child's preference for indoor activities (sedentary behavior), time management dysfunction, social alienation in the form of a tendency to interact virtually rather than face-to-face, neglect of communication with parents, and academic procrastination due to device addiction.

The acceleration of information technology is fundamentally designed to optimize the efficiency and productivity of human activities. In line with the thought of Marpaung (Marpaung, 2018), technology is an essential instrument that facilitates various dimensions of human life. In the current era of globalization, human dependency on smartphones has constructed a massive paradigm shift, particularly in social interaction patterns. This transformation gives rise to a new interaction landscape where communication between individuals can be established in a mediated manner without requiring physical contact or direct face-to-face encounters.

Social interaction is defined as a dynamic relationship established between individuals, individuals and groups, as well as between groups, wherein a reciprocal stimulation exists that mutually influences the behavior of both parties (Afifah, 2019). From a more specific perspective, Homans (as cited in (Marsal & Hidayati, 2017)) conceptualizes social interaction through the framework of social exchange theory. According to him, interaction is an event in which an activity initiated by one individual toward another triggers a response in the form of either a reward or a punishment. Homans' concept reinforces that every individual action within the interaction space functions as a social stimulus that deterministically conditions and shapes the behavioral patterns of their interaction partner.

RESEARCH METHODOLOGY

This study utilizes a qualitative approach with a descriptive design. The research locus is set at SDK Ruteng 1, Mbaumuku Village, Langke Rembong Sub-district, Manggarai Regency, during the 2025/2026 Academic Year. The qualitative approach was selected due to its orientation that emphasizes holistic description to comprehensively outline the quality of relationships, activities, situations, and social dynamics within a natural context (Adlini et al., 2022). The descriptive qualitative method is deemed relevant to dissect the complexity of the smartphone utilization phenomenon along with its implications for students' social interactions, which sociologically are dynamic and multi-interpretative.

Data collection in this study was conducted through observation and in-depth interview techniques. To ensure the credibility and validity of the data, the researcher applied a checking technique through triangulation, which encompasses source triangulation, technique triangulation, and time triangulation. Furthermore, the gathered data were analyzed using an interactive model consisting of three main stages: data reduction, data display, and conclusion drawing and verification.

RESULT AND DISCUSSION

Based on data analysis of Grade V C students at SDK Ruteng 1, it was revealed that all research subjects have integrated smartphone usage into their daily activities. These device-accessing activities are routinely carried out every day after school hours or when students are within the home environment. Within a single daily cycle, the duration of smartphone use among students is classified as excessive, reaching more than two hours per session continuously without any breaks (screen time).

The utilization of smartphones by Grade V C students can be classified into three primary orientations: First, Academic Orientation: Smartphones serve as supporting instruments for digital learning. Students utilize this technology to independently explore instructional materials and complete structured assignments given by teachers. Second, Recreational (Entertainment) Orientation: Students use smartphones to access digital entertainment, particularly playing online games such as Free Fire, Mobile Legends, and eFootball, as well as consuming audio-visual content through YouTube and TikTok platforms. Third, Social Communication Orientation: Smartphones act as a medium for screen-mediated interaction through the utilization of social networking applications such as WhatsApp and Facebook to communicate with peers and family.

The use of smartphones among elementary school students for a duration exceeding two hours per session continuously without breaks is categorized as a high-intensity digital activity. According to Julmiran and Ain (Julmiran & Ain, 2024), this excessive usage pattern is highly susceptible to triggering digital dependency or addiction in children. This dependency is generally driven by device utilization for entertainment fulfillment, such as accessing social media and playing online games, which can significantly affect their health and developmental phases. In line with this, Anggraeni (Anggraeni, 2019)(2019:65) emphasizes that the safe threshold for smartphone use among elementary school-aged children is a maximum of two hours per day.

Students who engage in digital activities beyond this recommended threshold face serious health risks. The negative implications of this habituation include a drastic reduction in physical activity (sedentary behavior), which potentially hinders children's gross motor development. Furthermore, prolonged exposure to digital devices brings pathological consequences to children's physiological aspects, particularly the potential for visual health impairments (such as asthenopia or eye strain) as well as impediments to neurological and cognitive brain development. The

Implications of Device Usage on the Social Interaction Dynamics of Grade V C Students at SDK Ruteng 1

Smartphones represent one of the primary manifestations of the acceleration of contemporary information technology. This massive technological development has revolutionised the human life landscape, both in cognitive aspects (mindset) and adaptive behavioral patterns. The presence of these devices provides significant efficiency in supporting daily activities, notably through the simplification of long-distance interpersonal communication access, which can now be established instantly without the constraints of space and time. In the educational realm, smartphone utilization has been integrated at the elementary school level with an initial orientation as an independent instructional medium. Ideally, the use of this technology aims to facilitate students in independently exploring learning materials, expanding cognitive insights, and supporting the effectiveness of the classroom learning process. Nevertheless, within its developmental dynamics, the orientation of smartphone utilization by elementary school students has experienced a functional shift. Digital access is currently dominated by non-academic activities, such as utilizing social media and engaging in online games. It is this shifting phenomenon that deterministically reconstructs students' social interaction patterns, wherein the resulting implications can be classified into two primary dimensions: positive (constructive) impacts and negative (destructive) impacts. The Constructive Dimension (Positive Impact) of Device Usage on the Social Interaction Dynamics of Grade V C Students at SDK Ruteng 1

Based on the results of data analysis on Grade V C students at SDK Ruteng 1, the researcher found that the significance of the positive impact of smartphone utilization lies in the convenience and efficiency of communication channels. Digital media such as WhatsApp, Facebook, and communication features within online games (in-game chat) have transformed students' interaction patterns to become more flexible. This accessibility is optimized by students to fulfill various social and academic needs, including: (1) maintaining connectivity with peers separated by geographical distance; (2) preserving trans-regional (out-of-town) family communication; (3) coordinating group recreational activities; and (4) building group cohesion and strategy while playing online games.

Academically, the utilization of these devices is oriented as a virtual discussion space to address learning materials and the completion of school assignments with peers. Nevertheless, continuous and uncontrolled usage patterns tend to distort students' focus, causing the essence of technology utilization as an academic supporting instrument to be frequently neglected due to digital entertainment addiction.

The findings regarding communication efficiency align with a study by (Antony Putra et al., 2021), which asserts that within an instructional context, devices facilitate students to engage in reciprocal interactions unconstrained by space and time boundaries, particularly using social media platforms to discuss academic substance. In line with this, Retalia, et.al (Retalia et al., 2022) states that smartphone technology instantly reduces intergenerational and interpersonal communication distances, wherein message transmission can be delivered to the recipient in real-time without requiring lengthy time latency.

The researcher found that the utilization of smartphones provides a significant contribution to facilitating independent learning activities within the domestic (home) environment. All research subjects confirmed that the primary orientation of device usage is as a supporting instrument for searching instructional materials and completing school assignments. The spatial flexibility offered by this technology allows students to access various learning sources without geographical boundaries, which in turn expands their knowledge horizons and cognitive insights.

Applicably, students integrate various digital platforms within their devices to support specific academic needs, which can be classified as follows: Search Engines and Audio-Visual Platforms: The use of Google and YouTube is optimized to explore abstract teaching materials and search for additional references to complete school assignments.

Computational Applications: The use of digital calculator applications is utilized as an auxiliary instrument to accelerate calculation verification in mathematics assignments. Linguistic Applications: The use of digital dictionary applications (English and Indonesian) is functioned as a translation medium to comprehend foreign vocabulary or complex terms that are difficult to understand.

The findings regarding the expansion of learning access align with a study by (Retalia et al., 2022), which asserts that the integration of internet networks within smartphones makes it easier for educational actors to search for information and digital learning resources that support cognitive processes. The existence of this digital ecosystem enables students to acquire teaching materials acceleratively, discover references for assignment completion, and explore other creative content directly and independently. The Destructive Dimension (Negative Impact) of Device Usage on the Social Interaction Dynamics of Grade V C Students at SDK Ruteng 1

Based on the results of data analysis, the researcher found that the most dominant negative implication of smartphone utilization is the excessive intensity of playing online games. All research subjects confirmed that apart from fulfilling academic needs, devices are routinely accessed as a medium for digital entertainment. The recreational stimulations most favored by students include popular online games such as Free Fire, Mobile Legends, eFootball, and Super Sus.

This unregulated online game consumption pattern triggers psychological dependency, wherein students exhibit symptoms of addiction and a constant desire to continue playing. This excessive digital habituation brings problematic derivative impacts on two main aspects of child development:

Degradation of Real-World Social Interaction: The high duration of screen time for gaming triggers time management distortion (losing track of time). Consequently, the quantity of students' direct interaction (face-to-face interaction) with their social environment is drastically reduced, replaced by a preference for indoor activities with minimal mobility (sedentary behavior), thereby threatening the children's physical health.

Behavioral and Verbal Communication Deviation: Online gaming activities were identified as affecting students' communication ethics. Constant exposure to aggressive diction while gaming forms negative oral habituations, wherein students become accustomed to adopting harsh language and profanities in daily interactions with peers and the surrounding environment.

The findings regarding the adverse impacts of this gaming addiction align with a study by (Faza, et.al, 2022), which asserts that the continuous use of devices for gaming needs will trigger acute dependency that reduces the sensitivity of children's direct social interaction with their surrounding ecosystem, while simultaneously disrupting the stability of their growth and development. Furthermore, (Hanafi et al., 2023) reinforce the evidence that the intensity of playing online games is positively correlated with a shift in children's linguistic style to become more aggressive due to the process of verbal imitation from the gaming environment. In addition, preoccupation with online games is proven to degrade students' learning motivation through the manifestation of academic procrastination or task-delaying behavior.

Based on the results of data analysis, the researcher found that another significant negative implication of excessive smartphone utilization is the occurrence of sleep disturbances. Children's

preoccupation with post-school digital activities—such as playing online games and consuming YouTube and TikTok content - triggers time management distortion (losing track of time). This phenomenon has a direct impact on the consistent loss of students' afternoon rest time. More crucially, this device-accessing habituation continues late into the night, which deterministically reduces the quantity and quality of students' nocturnal sleep (sleep deprivation).

This sleep-deprived condition brings detrimental pathological consequences to the physical and cognitive development phases of children. Given that elementary school students are in the golden age of growth, fulfilling ideal sleep requirements is absolute due to the following biological reasons:

First, Physical Growth Aspect: The deep sleep phase is a crucial period for the body to produce growth hormones that optimally regulate children's somatic and physical development. Second, Cognitive Development Aspect: Good sleep quality functions as an essential brain restorative instrument to improve students' attention, concentration, and focus, as well as to support the long-term memory consolidation process (neuroplasticity) regarding new information. Conversely, sleep deficits caused by devices significantly degrade students' academic capacity at school.

It is concluded that the excessive utilization of smartphones manifests in sleep pattern disturbances among students, which significantly hinders their physical growth phases and cognitive development. Continuous device addiction poses a high risk of structurally impeding children's growth and development processes. Given that elementary school students are in the golden age of growth, sufficient rest duration is an absolute prerequisite that cannot be disregarded. The derivative impacts of sleep deprivation resulting from this device dependency not only affect physiological aspects but also disrupt students' psychological stability. Psychically, a lack of sleep triggers increased anxiety, vulnerability to stress, and the degradation of learning concentration at school. In line with the argument of (Anggraeni, 2019), elementary school-aged children who experience sleep disturbances due to excessive smartphone exposure will face adverse consequences on their physical and mental health. The most observed clinical symptom is the onset of chronic physical fatigue, which accumulatively lowers immunity and disrupts the children's overall health stability.

One of the negative impacts of unsupervised smartphone utilization is the emergence of a tendency toward destructive behavioral imitation. This imitation phenomenon is deterministically triggered by the high intensity of students accessing YouTube and TikTok platforms, as well as their interactions within online games. The absence of strict filters or age restrictions on these social media algorithms leaves students vulnerable to exposure to diverse audio-visual content that does not align with their psychological development stages. Consequently, an internalization of skewed values occurs, wherein students adopt and manifest what they witness into their daily behavior.

First, Focus Distortion and Indiscipline in the Classroom: The researcher identified a tendency among students to replicate viral digital trends, one of which is a functional movement such as the "daboy" dance. This replication phenomenon is frequently practiced in inappropriate spaces and times. For instance, during independent learning sessions (when teachers are attending a meeting), students instead disregard their academic tasks and choose to engage in replicating this content communally. This behavior not only triggers collective procrastination but also distorts the conduciveness of the learning environment for other students.

Second, Aggressive Linguistic Adoption (Verbal Deviation): Apart from social media, the online gaming ecosystem acts as a secondary socialization agent that influences students' language ethics. Constant exposure to aggressive verbal communication and the use of profanities by other

players within the games stimulates the oral imitation process. Due to intense auditory habituation, students experience a normalization of verbal behavior, thereby becoming accustomed to using such impolite diction when interacting with peers or teachers in the real world.

Based on the results of data analysis, it is concluded that the uncontrolled intensity of smartphone utilization exerts an adverse impact in the form of stimulating destructive behavioral imitation among students. This verbal deviation phenomenon aligns with a study by (Prasetyo et al., 2023), which asserts that interactions within online games can deterministically transform children's sociolinguistic behavioral patterns. Given that the online gaming ecosystem is accessed by multiple generations without strict parental filters, students are constantly exposed to aggressive diction and harsh connotations. It is this intensive auditory habituation that triggers the process of oral normalization, wherein students adopt and directly practice such impolite vocabulary within their interaction spaces with peers. In addition to the linguistic aspect, this tendency toward imitation extends into children's motor behavior domains. In line with a study by (Rahmad, 2022), the consumption of audio-visual content through YouTube and TikTok platforms stimulates students to communally replicate physical movements or viral choreographic trends within the school environment. This manifestation of imitation practiced without contextualization of space and time - such as engaging in group dancing activities during lesson hours - significantly distorts students' cognitive focus and disrupts the conduciveness of instructional activities in the classroom, which in turn disregards the primary orientation of students' presence in educational institutions to acquire knowledge.

A fundamental negative implication of uncontrolled smartphone utilization is the straining of the intensity and quality of children's real-world social interactions. Devices possess a high level of stimulatory appeal, thereby deterministically diverting students' attention from their social environment. The preference of students who choose to spend time playing online games and consuming YouTube and TikTok content triggers a phenomenon of social neglect toward individuals around them.

First, Neglect of Intergenerational Communication (Family): Preoccupation with device screens causes students to frequently disregard instructions or communication efforts initiated by parents at home. This divided cognitive focus leads to a loss of reciprocal sensitivity in familial relationships. Second, Peer Communication Dysfunction (Phubbing): The researcher identified that students tend not to respond to the presence of peers or individuals around them who attempt to establish interpersonal interactions. Even if communication occurs, the quality of the dialogue becomes incoherent due to focus distortion, wherein the orientation of the students' minds remains fixed on the digital ecosystem of their devices. This phubbing (phone-snubbing) phenomenon gradually degrades the emotional depth and social skills of children in communal life.

The results of data analysis confirm that smartphone dependency contributes significantly to the emergence of social isolation symptoms among students. Within the domestic realm, there is an adaptive behavioral ambivalence where students utilize devices as an escape mechanism; they tend to isolate themselves indoors when experiencing social saturation toward outdoor interactions with peers. This negative implication is visibly confirmed to extend into the school environment. Based on data triangulation through interviews with the homeroom teacher of Grade V C, the excessive intensity of device usage is positively correlated with a decline in the quality of students' social interactions at school, which manifests in the following three psychological-behavioral symptoms: First, Social Withdrawal Tendency: Students demonstrate a high preference for staying alone inside the classroom during recess rather than blending with their peer ecosystem. Second, Apathy and Alienation: The emergence of an attitude of indifference toward the dynamics of the school

environment. Third, Degradation of Self-Efficacy: A decrease in children's self-confidence levels during direct social interactions.

The findings regarding this social dysfunction align with a study by (Muttabiah et al., 2021), which states that device penetration distorts communal spaces. When within a group, individuals tend to experience a decline in social attention due to being more stimulated by screen activities rather than building interactive dialogues. This symptom extends to a loss of spatial awareness, where students remain focused on their devices even while walking, thereby disregarding safety and surrounding environmental conditions.

Based on the results of data analysis on Grade V C students at SDK Ruteng 1, the researcher found that another crucial negative implication of smartphone utilization is the rampant accessibility to social media platforms such as YouTube, TikTok, and Facebook. The high intensity of social media usage among elementary school-aged children deterministically intervenes in the stability of their emotional and cognitive development. The psychological characteristics of minors who lack self-regulation skills leave them vulnerable to disorientation in filtering digital information flows. This condition is further exacerbated by the penetration of social media algorithms that allow various age-inappropriate content to bypass filters, thereby risking the reduction of their moral values.

Specifically, the destructive impacts of this unfiltered social media exposure manifest in two primary domains of student development: First, Exploitation of Aggressive Behavior and Verbal Imitation: The existence of digital content containing covert violence and adult material (sensual/pornographic) acts as a negative stimulus for children's psychology. This visual exposure triggers the emergence of aggressive behavior and stimulates deviant verbal imitation, such as the habituation of using harsh and impolite vocabulary in daily interactions. Second, Digital Addiction and Academic Performance Decadence: Addictive social media activities reduce students' internal motivation to engage in instructional activities. The fixation of attention on device screens triggers academic procrastination, wherein students become reluctant to learn, which in its accumulative function directly impacts the decline of students' academic performance and learning outcomes at school.

It is concluded that the unstructured utilization of social media exerts a significant destructive impact on the developmental dynamics of elementary school-aged children. The limitations of children's self-control skills cause social media usage to transform into a developmental backlash. The inability to filter these digital activities triggers behavioral deviations, a reduction in study time allocation, cognitive concentration distortion, and a high vulnerability to various modes of cyber fraud or digital scams.

In line with this, (Faristiana, et.al. 2023) elaborate that social media penetration triggers a profound shift in the attitudes and social behaviors of elementary school students. The manifestation of this digital addiction forms a pattern of acute procrastination behavior that makes students tend to be passive and experience a stagnation of their self-potential. Furthermore, excessive screen habituation linearly reduces the quantity of direct, face-to-face interaction between children and their sociological environment. This polarization is exacerbated by exposure to non-educational content that does not align with the child's developmental age stage, which in its accumulative function degrades their character and social ethics. Comprehensively, the details regarding the negative implications of social media utilization on the research subjects are outlined as follows:

The intensive utilization of smartphones to access social media significantly correlates with shifts in students' psychological behavior, one of which is through the emergence of Fear of Missing Out (FoMO) symptoms. Referring to the conceptualization of (Ayuningtyas, et.al., 2020),

FoMO is defined as a form of situational anxiety in which individuals experience profound worry, restlessness, and discomfort if they miss out on the latest information or are not involved in collective activities being undertaken by their immediate environment. This phenomenon triggers a compulsive urge in children to always be the first to update digital information to maintain their social existence.

Among the research subjects in Grade VC at SDK Ruteng 1, the clinical manifestations of this FoMO syndrome bermanifest in two daily social dynamics: First, Material Possession-Based Social Exclusion: When a trend of owning the latest toys or gadgets occurs at school, students who do not possess them experience emotional distress in the form of feeling sad and inferior. This condition limits their space for participation in group play activities. Second, Communication Alignment and Peer Marginalization: In verbal interactions, students who are not exposed to the latest YouTube, TikTok content, or online gaming trends will feel isolated and left behind from the conversation narratives of their peers.

Based on this reality, the researcher concludes that excessive gadget use—specifically exceeding the threshold of two hours per day—deterministically shapes FoMO characteristics in children. The limited understanding of new digital trends not only triggers negative affective impacts in the form of sadness and self-isolation but also degrades the quality of students' actual social interactions due to the presence of an information barrier in their communal life.

The excessive duration of smartphone utilization, specifically exceeding the threshold of two hours per day, significantly contributes to the internalization of flexing behavior. Referring to the conceptualization of (Fitra Raharja et al., 2023), flexing is defined as the act of demonstratably showing off luxury or material possessions. The massive accessibility of social media becomes a primary catalyst that drives individuals to compete with one another in flaunting attributes of social status, wealth, and consumerist lifestyles within the digital space.

This study confirms that this behavioral syndrome has permeated the psychosocial ecosystem of elementary school students to attract peer attention. The manifestations of flexing behavior within the school environment bermanifest in the following forms of material and social displays: Commodification of School Supplies: Students demonstrate a tendency to display ownership of branded items, such as the latest edition toys or school equipment of high economic value, Display of Digital Social Status: Students flaunt the quantity of followers or digital popularity they possess on social media platforms, and Selective Vacation Nostalgia: There is a tendency to repetitively recount recreational experiences to luxury destinations in order to construct a superior self-image.

Psychologically, the researcher concludes that this habituation of flexing carries negative implications for the classroom's interpersonal climate. This non-contextual act of showing off triggers emotional distortions in other students in the form of social jealousy, negative sentiments (dislike), and envy. Meanwhile, for the perpetrators, this behavior degrades social empathy and shapes a materialistic mentality from an early age, which obscures the essence of equality within the educational environment.

The excessive duration of smartphone utilization, specifically exceeding the threshold of two hours per day, opens a wide opportunity for the occurrence of narkolema (narkoba lewat mata/digital pornography) exposure among students. Referring to the conceptualization of (Yunita et al., 2021), narkolema is defined as pornographic material consumed through the visual sense, which possesses an addictive effect and a nervous system destructive capacity equivalent to narcotics abuse. The destructive nature of digital pornography unnaturally stimulates dopamine release, thereby triggering a compulsive urge in children to continuously consume such content after the initial exposure.

This study confirms that the absence of parental oversight (unsupervised digital access) toward social media activities serves as the primary gateway for elementary school students to be exposed to this transgressive adult content. Given that elementary school students are in a crucial growth phase with immature emotional regulation, the infiltration of narkolema bermanifests in the following multi-domain degradations: First, Neuro-Cognitive Dysfunction: Exposure to digital pornography at an early age risk damaging the structural development of the brain, particularly within the Prefrontal Cortex (PFC), which functions to regulate executive functions, decision-making, and moral control. This damage clinically distorts students' concentration, attention, and academic focus at school.

Second, Emotional Distress and Sexual Disorientation: The limitations of children's cognitive understanding regarding healthy biological sexuality cause them to experience confusion, moral disorientation, and high situational anxiety. Third, Dopaminergic Cycle Dependency: Children become trapped in a digital addiction cycle that reduces their interest in instructional and productive real-world activities.

The urgency of mitigating the destructive impacts of smartphones on Grade V C students at SDK Ruteng 1 places parental supervision as a crucial filtration instrument. The active involvement of parents in guiding their children regarding time management and content selectivity serves as the primary foundation to guarantee safe and wise technology utilization. This domestic regulation demands a two-way communication channel (open communication channel) so that children feel comfortable articulating their digital experiences, which is balanced with periodic monitoring of digital browsing history and accessed applications. In addition, behavioural modelling in the form of parental exemplary roles in using devices, along with the consistency of rule enforcement, constitutes an important determinant in the success of family digital literacy.

Based on the results of data analysis and research triangulation, the researcher found that all parents of Grade V C students had implemented supervision instruments. The practiced supervision patterns manifest in the following preventive actions: The majority of parents enforce a ban on device usage during family meal moments to maintain the intimacy of family interactions, selective Application Filter: Prohibiting access to specific digital platforms deemed to have high addiction exposure or negative content, such as the TikTok application and the Free Fire game, and restricting the nightly operational hours of devices, which on average is agreed upon up to a maximum of 21:00 WITA, followed by periodic physical examinations of the devices at night.

Although this macro social control instrument at the family level has been attempted, the researcher identified an effectiveness gap due to the weak consistency of domestic enforcement. Consequently, resistance or rule violations by students emerge within the domestic realm. This discrepancy between regulation and actual behavior indicates that the implemented supervision pattern remains permissive and has not yet reached the ideal level of assertiveness. Therefore, parents are recommended to elevate the style of supervision from mere passive restriction to active supervision that is assertive, consistent, and grounded in the evaluation of the child's daily behavior.

The enforcement of assertive regulations by parents is an absolute prerequisite for minimizing the destructive impacts of devices on students' physical growth and mental development. In line with the assertion of (Triani et al., 2023), parental intermediation in monitoring digital activities demands a firm and consistent attitude, as well as the elimination of indulgent parenting that spoils children with unrestricted device access. The absence of such firmness risks multiplying negative socio-psychological excesses in elementary school-aged children.

Beyond the domestic realm, the escalation of device impact mitigation demands the active involvement of teachers within the elementary school environment as digital literacy agents. The

strategic role of teachers in managing device utilization among students manifests in the following three instructional dimensions:

First, Assertive Digital Education. Teachers are obligated to wisely integrate device utilization materials into the learning process to build students' critical awareness from an early age. Second, Multilateral School-Family Partnership. Establishing intensive communication and collaboration channels with parents to align device control patterns between the classroom and home environments. Third, Digital Role Modeling. Teachers must project themselves as exemplary figures in operating technology productively, functionally, and responsibly in front of students.

The synergy between parents and teachers constitutes a determinant axis in minimizing the penetration of negative device impacts on children. A harmonious integration of control between the family domestic ecosystem and the school academic ecosystem will linearly create a protective, adaptive, and conducive growth space for the holistic development of elementary school students.

Furthermore, the development of internal self-regulation mechanisms within Grade V C students acts as an essential secondary defense against digital overreliance. While external controls imposed by parents and educators establish necessary boundaries, long-term digital well-being relies on a child's ability to internalize these rules and exert self-control in the absence of direct monitoring. Peer dynamics within the school environment heavily influence this process, as collective social norms regarding smartphone usage can either reinforce responsible habits or validate evasive behavior. Consequently, fostering constructive peer accountability alongside individual reflective practices enables students to transform enforced domestic restrictions into self-directed digital mindfulness.

At the institutional level, SDK Ruteng 1 can solidify these protective frameworks by implementing structured policy interventions that seamlessly bridge classroom instruction and home routines. Establishing clear, school-wide protocols regarding device possession during operational hours creates a predictable environment that reinforces parental efforts at home. Moreover, embedding interactive digital literacy modules into the elementary curriculum offers students practical opportunities to critically evaluate online content, understand algorithm-driven addictiveness, and cultivate healthy screen-time habits. These institutional measures ensure that digital mitigation strategies transition from isolated domestic rules into a cohesive socio-educational standard.

The sustained application of this dual home-school framework yields profound benefits for the holistic development and academic engagement of primary school learners. Students subjected to consistent, assertive digital boundaries demonstrate marked improvements in cognitive focus, emotional regulation, and face-to-face social interaction skills. By curbing late-night screen exposure and mitigating access to hyper-stimulating digital platforms, children experience improved sleep hygiene and reduced anxiety, which directly translates into enhanced classroom participation and learning outcomes. Thus, effective digital mitigation serves not merely as a prohibitive measure, but as a proactive catalyst for physical, socio-emotional, and intellectual growth.

Ultimately, mitigating the pervasive influence of smartphone misuse on elementary students is an evolving process that requires continuous adaptation, dialogue, and empirical evaluation. As digital platforms become increasingly sophisticated and accessible, the protective mechanisms surrounding young learners must remain dynamic rather than static. By maintaining a united front characterized by assertive domestic supervision, active pedagogical guidance, and structured institutional support, stakeholders can effectively shield Grade V C students at SDK Ruteng 1 from

digital harms. This holistic ecosystem ensures that technology functions as an empowering tool for academic enrichment rather than a disruptive force in child development.

CONCLUSION

The recent advancement of information technology manifests massively through the penetration of smartphones, which have now intervened in almost all lines of society's socio-cultural life, including the educational ecosystem of elementary school-aged children. On the other hand, social interaction is inherently a fundamental pillar in child development that involves adaptive reciprocal relationships, wherein each participating individual influences one another and plays an active role within the communal space.

When device technology intersects with children's social dynamics, a reconfiguration of behavioral patterns occurs, deterministically altering the students' psychosocial landscape, both in the form of capability expansion (positive impacts) and behavioral deviations or interpersonal relationship distortions (negative impacts). Based on the results of data analysis, method triangulation, and discussions conducted regarding the influence of smartphone usage on the social interactions of Grade V C students at SDK Ruteng 1, Langke Rembong District, the following conclusions are drawn:

First, Intensity and Pattern of Device Habituation. Many Grade V C students at SDK Ruteng 1 demonstrate a high level of device dependency with a continuous, daily-basis utilization pattern. The operational duration of devices among students is dominated by excessive use that surpasses children's psychological thresholds, specifically by consistently exceeding two hours per day.

Second, Dualism of Device Implications on Students' Social Interactions. The utilization of devices by students empirically triggers dichotomous implications that touch upon two primary dimensions:

Positive Impact (Facilitative Dimension). Devices act as an accelerative instrument in expanding the reach of long-distance interpersonal communication, while simultaneously functioning as an instructional support medium that facilitates students in accessing digital learning materials and sources.

Negative Impact (Destructive-Deviant Dimension). Unregulated usage triggers a series of socio-psychological dysfunctions, including: Excessive online gaming addiction, Circadian rhythm disruption (distortion of sleep quality and patterns), Imitation of deviant behaviors and impolite verbal habituation, Detachment in the quality of real-world social interactions with family and peers (phubbing and social isolation); and Clandestine accessibility to social media platforms that contain non-educational or adult content.

Third, The Control Axis of the Domestic Ecosystem (Parental Intermediation). The instruments of supervision, time-rationing, and content filtering by parents constitute the most crucial determinants in mitigating children's cyber risks. Although all parents have attempted domestic regulations, the effectiveness of such control is still hindered by the weak consistency of rule enforcement. Assertive device boundary enforcement coupled with collaboration with teachers at school is absolutely required so that technology utilization can shift toward a functional-productive direction to maintain the stability of children's holistic growth and development.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used ChatGPT to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s)

carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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