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THE IMPACT OF MOBILE PHONES ON ELEMENTARY STUDENTS

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ABSTRACT

The development of science and technology at this time is increasingly rapid and creates technological products that provide many benefits and make it easier for humans to know science, education and entertainment. All of that can be obtained by using access through the internet, one of which is most interested in online games is children. Because these online games are synonymous with playing. This online game is a new style that has many enthusiasts, both young and old, and currently we find many in crowded areas of stalls that use the internet network as well as in the village or in the city. And they facilitate the internet to attract customers. In the past, children only knew traditional games, usually played by other friends directly, such as playing marbles and hide and seek. While the game itself is their own thought. Along with the flow of globalization with the demands of the need for rapid information exchange, the role of communication technology has become very important. So that users are uncontrollable in terms of using a technology

Keywords: *Maximum of 5 keywords separated by commas [Font Times New Roman 11 single-space]*

Introduction

Human life has gone from simplicity to modernity which has increased rapidly in human life. Currently, the world of information is inseparable from technology. The use of technology by society as if a new life perfects real happiness in humans. Communication that used to take a long time to deliver, now the arrival of technology has become very complicated and very practical and does not take long with the emergence of technology that all humans use. Now technology has developed rapidly and is increasingly sophisticated along with the development of the times, so that there is an addition of technological functions that further pamper human life. One example of today's advanced facilities is gadgets. At the beginning of its appearance, gadgets were only owned by certain groups who really needed them for the smooth running of their work. Now gadgets are no longer just a means of communication, but also a tool to create and entertain with voice, writing, pictures and videos. Now humans are competing to have gadgets because gadgets are not hanya merupakan alat berkomunikasi,

namun juga bagi masyarakat pada umumnya gadget sekaligus sebagai lifestyle (gaya hidup), tren, dan prestise (dalam Kogoya, 2015). Humans are social creatures that are inseparable from interaction and information to facilitate relationships between other humans. The development of the human era has created systems and tools to make it easier for humans to communicate quickly. Starting from Instagram Facebook and WhatsApp etc., communication tools have become more sophisticated and easier for humans to communicate and get various information quickly as well as entertainment such as: music, videos, games and others (in Simamora, 2016). The development of technology and information has experienced very rapid progress, marked by advances in the field of information and technology. The Indonesian nation is one of the nations that is involved in the advancement of information media and technology. The increasing use of gadgets or tools that can be easily connected to the internet, is increasing over time. Currently, approximately 45 million use the internet, of which nine million use mobile phones to access the internet.

A mobile phone is a communication tool that is audio-visual in nature. It plays a very important role in daily life a sophisticated mobile phone uses very sophisticated features to make children's learning better. If children use mobile phones well for learning, it doesn't matter because they will add information and insights. But if the child uses the wrong cellphone, it will be fatal because the child will be preoccupied with playing games or other things and causing the child to not focus on learning. In fact, elementary school children should be given routine habits in learning activities so that the process of growth and development becomes better. The development and growth of good elementary school students will make it easy for them to understand the learning materials provided. According to Jean Piaget (Slavin, 2011), elementary school students are at the stage of concrete operational thinking so they need to explain the material by providing concrete examples. This concrete example is expected to be able to make children construct previous knowledge and what they have gained from their five senses.

Literature Review

The proliferation of smartphones among children has sparked considerable debate regarding their effects on young users, particularly those in elementary school (ages 6-12). As digital devices become increasingly accessible, research has explored both the potential benefits and risks associated with smartphone usage in this demographic (Wargocki et al., 2020). This literature review synthesizes existing studies on the academic, psychological, social, and health impacts of smartphones on elementary school children, drawing from systematic reviews, empirical studies, and qualitative analyses. Key themes include learning effectiveness, mental health outcomes, and children's own perceptions of device use.

Impact on Academic Performance

A significant body of literature indicates a complex relationship between smartphone use and academic outcomes among elementary school students. A systematic review of smartphone use and academic success across various educational levels found a predominantly negative association, particularly when measured by actual grade point averages (GPAs), though the strength varies based on methodology and usage metrics (Liu et al., 2022). However, some studies suggest positive effects under certain conditions. For instance, a case study of 499 Taiwanese elementary school students (grades 5-6) revealed that higher smartphone use was linked to improved perceived academic performance, with smartphone behavior (e.g., using devices for information searches, interpersonal communication, and leisure) acting as a mediator (Liu et al., 2022). The high-use group outperformed the low-use group in learning activities, applications, and attitudes, highlighting potential inequalities in learning opportunities due to varying access levels, especially during shifts to online learning amid the COVID-19 pandemic (Liu et al., 2022).

Conversely, excessive screen time, including smartphone use, has been associated with poorer academic performance. Research on media use indicates that children exceeding 7 hours of daily screen time exhibit inferior global cognition compared to those adhering to guidelines of 2 hours or less for recreational use (Walsh et al., 2018). Instant messaging after bedtime, common with smartphones, disrupts sleep and correlates with lower academic achievement (Hale & Guan, 2015). These findings underscore the need for balanced usage to mitigate distractions while harnessing educational benefits.

Impact on Mental Health

The mental health implications of smartphone and mobile device use among children and adolescents are a growing concern, with limited but suggestive evidence pointing to adverse effects. A systematic review of 25 observational studies found associations between greater mobile phone/wireless device (MP/WD) use and poorer mental health, including internalizing symptoms like anxiety and depression, and externalizing symptoms such as hyperactivity and conduct problems (Arefin et al., 2022). For elementary-age children (e.g., ages 3.81-6.88), regular device use was linked to higher externalizing behaviors, though evidence is sparse and mostly cross-sectional with high risk of bias (Arefin et al., 2022). Bedtime use exacerbates these issues, with frequent nighttime smartphone engagement associated with increased depression, anxiety, and reduced health-related quality of life, partially mediated by sleep disturbances (Marciano et al., 2022).

Social media aspects of smartphones amplify risks, with over 2 hours daily linked to heightened depression risk, driven by content that fosters feelings of inadequacy or social pressure (Twenge & Campbell, 2018). Additionally, 40% of teens report anxiety without their phones, with higher rates among girls, suggesting smartphones contribute to dependency and emotional distress even in younger users (Orben & Przybylski, 2019). However, moderate use may offer benefits, such as enhanced wellbeing through social connections, supporting a "Goldilocks Hypothesis" where optimal moderate engagement is ideal (Orben & Przybylski, 2019).

Social and Perceived Impacts

From children's perspectives, smartphones offer tangible benefits but also implicit risks. A study involving elementary school children identified four main advantages: maintaining social connections (e.g., chatting with friends via apps like WhatsApp), emergency contact with parents, accessing information for homework, and alleviating boredom through entertainment like games and videos (Gottschalk, 2019). Ownership influenced perceptions, with device owners (often older elementary students in grades 5-6) emphasizing academic and communicative uses, while non-owners (younger grades 1-4) focused on entertainment (Gottschalk, 2019). This suggests age and access shape how children view smartphones, with potential for positive social integration but also over-reliance on digital interactions.

Socially, smartphones can foster isolation or cyberbullying, though direct evidence for elementary children is limited. Broader media use literature warns of reduced face-to-face interactions and increased loneliness without devices (Twenge & Campbell, 2018). Parental control and self-regulation emerge as key moderators, influencing whether usage leans toward productive or leisure-oriented activities (Liu et al., 2022).

Gaps and Implications

While the literature highlights both risks and benefits, gaps persist, particularly in longitudinal studies focused exclusively on elementary school children, as most research encompasses broader age groups or adolescents (Arefin et al., 2022; Liu et al., 2022). Heterogeneity in measurement (e.g., self-reported vs. objective usage) and high bias in many studies limit causal inferences (Arefin et al., 2022). Recommendations include limiting screen time to under 2 hours daily for recreational use, prohibiting bedroom devices, and promoting media literacy through parental and educational involvement (Walsh et al., 2018). Future research should explore cultural contexts, such as in Indonesia, to address local smartphone penetration and its unique impacts on elementary education. In summary, smartphones present a double-edged sword for elementary school children: enhancing learning and connectivity when moderated, but risking academic distraction, mental health issues, and social dependency when unchecked. This review informs the current study by providing a foundation to investigate specific impacts in the Indonesian context

Methods

3.1 Research Design

This study employs a qualitative research design to explore the multifaceted impacts of smartphones on elementary school children, focusing on their academic, psychological, social, and health dimensions. Qualitative methods are particularly suitable for this investigation as they allow for an in-depth understanding of participants' experiences, perceptions, and behaviors in natural settings, without the constraints of numerical quantification (Creswell, 2018). Specifically, a phenomenological approach is adopted to capture the lived experiences of children, parents, and educators regarding smartphone usage, enabling the researcher to uncover nuanced insights into how these devices influence daily life and development (Creswell, 2018). The design emphasizes flexibility, with iterative data collection and analysis to refine emerging themes, ensuring a comprehensive portrayal of the phenomenon under study.

3.2 Participants

The participants in this study consist of a purposive sample of 20 elementary school children aged 8-12 years from urban schools in Indonesia, along with 10 parents and 5 teachers to provide triangulated perspectives. Purposive sampling is utilized to select individuals who have direct experience with smartphone usage among children, ensuring relevance and depth in the data (Creswell, 2018). Children are recruited from grades 3-6, representing a mix of genders and socioeconomic backgrounds to capture diverse experiences. Parents and teachers are included based on their roles in supervising or observing children's device interactions. Inclusion criteria require that children have access to smartphones for at least six months, while exclusion criteria omit those with pre-existing developmental disorders to focus on general impacts. All participants are informed of the study's voluntary nature, with recruitment conducted through school administrations to maintain ethical standards.

3.3 Data Collection

Data collection involves semi-structured interviews, participant observations, and document analysis to gather rich, descriptive data. Semi-structured interviews, lasting 30-45 minutes each, are conducted individually with children, parents, and teachers to explore personal narratives on smartphone benefits and drawbacks, guided by open-ended questions such as "How does smartphone use affect your daily learning?" (Creswell, 2018). Observations occur in classroom and home settings over two weeks, noting behaviors like device engagement during study time or social interactions, to provide contextual insights. Additionally, documents such as children's screen time logs or parental reports are analyzed for supplementary evidence. All interviews are audio-recorded with consent and transcribed verbatim, ensuring data integrity. Field notes are maintained to capture non-verbal cues and environmental factors, enhancing the qualitative depth (Hale & Guan, 2015). Data saturation is monitored to determine when sufficient information has been collected, typically after 15-20 interviews.

3.4 Data Analysis

Thematic analysis is employed to interpret the collected data, following a systematic process of coding, categorizing, and theme development. Transcripts and field notes are initially open-coded to identify recurring patterns, such as themes of distraction or social connectivity, using software like NVivo for organization (Creswell, 2018). Axial coding then connects these codes into broader categories, while selective coding refines overarching themes like "academic disruptions" or "emotional dependencies." Triangulation across data sources—interviews, observations, and documents—enhances validity, reducing bias (Walsh et al., 2018). Member checking is conducted by sharing preliminary findings with participants for validation, and reflexivity is maintained through a research journal to address potential researcher biases. This iterative analysis ensures themes are grounded in the data, providing trustworthy interpretations of smartphone impacts.

3.5 Ethical Considerations

Ethical protocols are strictly adhered to throughout the study, with approval obtained from the institutional review board. Informed consent is secured from parents or guardians for child participants, and assent is obtained from the children themselves, emphasizing their right to withdraw at any time without repercussions (Twenge & Campbell, 2018). Confidentiality is upheld by anonymizing data with pseudonyms and storing recordings securely. Potential risks, such as emotional discomfort during

discussions of negative impacts, are mitigated through access to counseling referrals. The study prioritizes beneficence by aiming to contribute practical recommendations for safer smartphone use, aligning with ethical guidelines for research involving vulnerable populations like children (Arefin et al., 2022). study. Describe what, how and to whom the instruments were used in the study. Describe any approaches to ensure validity and reliability. Describe how the data were collected and analyzed. Describe statistical tests and the comparisons made

Result and Discussion

A gadget is a small device that has a specific function related to the development of current technology. There are several categories of gadgets, including smartphones, laptops, tablets, computer cameras, and so on. However, people often and enjoy using smartphones because of their simple form, which can be carried anywhere, and they can help with long-distance communication. Gadgets have many features and applications that make human life easier. In this highly advanced era, many people out there are competing to create applications that are expected to make work and study easier, especially among students and lecturers who are required to be proficient in utilizing technological advancements that can be accessed by gadgets. Development of Gadgets Technological development has increased very rapidly; in the 21st century, technology is needed by humans for education, household, social purposes, and to obtain information. Before the 21st century, technology had already developed in previous centuries; even in prehistoric times, technology had developed, but at that time, what developed was only tools for self-defense like swords. In ancient times, the technology that developed was in the field of transportation, namely the existence of sea ships. In the Middle Ages, the developments included inventions in the fields of medicine, military, mathematics, and astronomy, marked by the printing press and ship navigation. In the era of the industrial revolution, telephones began to appear, because with these advancements, certainly everyone, even all groups, does not want to be left behind and wants to continue following the times. Especially in the fields of communication and information, there are many communication tools that have been widely circulated, such as gadgets that contain interesting and entertaining features.

In the past, people used public telephones (wartel) to contact relatives or friends who were far away or even to plan meetings, but they had to leave the house first to communicate over long distances because public telephones were placed in certain locations. There were also telephone booths used by school children to inform their parents to pick them up. Then, telephone booths began to be abandoned because home telephones existed, so at that time, people did not need to leave the house just to communicate and plan meetings. However, because home telephones were still wired and felt impractical, they could not be used while doing work in other places or parts of the house, then wireless home telephones or cordless home telephones appeared. Because of human nature that is always dissatisfied, it was further developed with the emergence of handheld telephones that are relatively small in size and can be carried anywhere and can be used to send text messages. This handheld telephone is the one that, until now, has not found a replacement; only the type and quality continue to be updated with more and more advanced features. At the beginning, handheld telephones were used for long-distance communication tools. And of course, to lighten and make it easier for someone to work anywhere and anytime using that handheld telephone. Handheld telephones were initially only famous with two colors, namely black and white; the features inside were only for calling and sending text messages. Then, it developed again with the addition of a little entertainment in the form of simple games whose images were still considered not good but could be said to be better than having no entertainment at all because it would be so boring if only used for calling and sending text messages.

Then, not long after, handheld telephones appeared with a variety of colors that made the appearance more attractive, then touchscreen handheld telephones, then in the 20th century, handheld telephones were equipped with internet features and many more, so telephone users can do many things with current handheld telephones besides calling and sending text messages; now they can be used as a means of learning, can also be used as a means to get the latest information, entertainment, even business. Because of all the conveniences obtained from using current handheld telephones, people feel

pampered so they don't need to struggle just to get information from other people who are separated by distance. So it's no wonder that many use them, among the young generation and even young children. Gadget users at this time are starting to be uncontrolled; it can be seen how gadget users spend more time with gadgets than chatting with other family members. There are certainly various positive and negative impacts. Actually, the positive and negative influences on gadgets depend on how a person uses the gadget for what. Parents play a very important role in the current technological advancement. Gadgets also become communication tools and educational tools for children. However, sometimes many children misuse the use of gadgets, for example, for playing games, and opening sites that are not good for children their age to see; this is what makes children lazy and feel more excited to play gadgets to eliminate boredom and curiosity. However, if the use of gadgets is continuously allowed, then the family function can shift, where the closeness of parents with the child will decrease, where usually parents become caregivers for the child, who should be closer, who should communicate and provide support is no longer felt maximally by the child and replaced by gadgets; this can create a more individual attitude pattern in the child, and children will also forget about their environment, even the child's emotions will fade because they cannot express their emotions due to addiction to playing gadgets. It is very regrettable that many parents are not aware of that, even considering it normal and letting it be. Because parents think that children will also follow the times, therefore gadget addiction is considered trivial.

Causes of Children Being Addicted to Gadgets After observing and interviewing parents who have underage children, even toddlers, it turns out that many have started to become addicted. For elementary school children, the initial addiction to gadgets occurred after the spread of COVID-19 and the appeal to stay at home; at that time, all children rarely played with friends, and schools were held online, which required children to use gadgets and indirectly could accustom them to gadgets. When there is an assignment given by the teacher, the child does not immediately do it but opens other social media, where parents do not know that the child is opening something else besides the given assignment. When the assignment is finished and not allowed to play outside, the child will certainly feel bored, so they use their gadget to play games. Because they are too engrossed in playing games and forget the time, eventually they become addicted to games; if the gadget they use while playing games is confiscated by parents, they will throw a tantrum and cry until the gadget or phone is returned. In addition, when there is an assignment or exam, children rarely want to read books but directly search for answers on the internet because it feels faster and immediately finds the answer. So the ability to write and understand learning is very lacking, because the role of books is replaced by Google. Especially during online learning like now, when exams, teachers prefer to make questions using Google Forms because it is very easy to make and recap grades after students work on the questions. Then for toddlers, the initial addiction when parents want to introduce many things like introducing animal names and sounds. Because not all parents have free time to take their children to see animals in the zoo; if not using technology, the child's knowledge cannot develop maximally. In addition, parents also show videos of children reciting the Quran so that their child can follow the video. For toddlers, it is easier to arrange time when they play and when to use the phone, because the toddler cannot operate the phone proficiently. If left too long, they will become introverted individuals. In addition, there are also causes of children being addicted to gadgets, among others:

1. Parents' busyness and often seeing parents using gadgets become the cause of the child being addicted to gadgets, because when the child sees parents busy playing gadgets whether for work or others, so they don't have friends to play with, the child will feel bored and saturated. What small children do when bored and saturated is definitely cry, which causes parents to be disturbed in their activities; that's when parents give gadgets so that the child does not feel saturated.
2. Children cannot yet control themselves; there must still be control from parents. And if the child cries wanting a gadget, it is better for parents to divert with something else so that the child is not too dependent on gadgets.
3. The features in gadgets are increasingly interesting over time, which makes parents want to show them to their children. There is nothing wrong with parents teaching their children gadgets because in this era it is very needed, but it must still be supervised so as not to become addicted.

Negative Impacts of Using Gadgets With the rapid and widespread development and advancement of technology at this time. On average, the population in Indonesia already has gadgets in the form of smartphones, from children to adults. There is nothing wrong if parents provide gadget facilities to their children. Because not all parents can supervise their children perfectly at home, especially those whose both parents have jobs outside the home. The purpose of parents providing phone facilities to children is to maintain communication, monitor children's activities from afar, and so that the child does not fall behind the times. But when parents are a little negligent in supervising and monitoring their activities, then the child will take the wrong step in using gadgets, for example, using gadgets for useless things that result in decreasing the child's brain performance and making the child lazy to study. These are the negative impacts that occur in phone usage:

1. Wasted time: When children are engrossed in playing phones, sometimes many children forget their duties, for example, prayer time is delayed or even forgotten; many also forget to eat because they are engrossed with their phones.
2. Weak brain development: With children engrossed in playing phones all day, it will hinder the child's thinking power to create.
3. Decline in religious norms and education: Caused by many inappropriate applications and weak parental supervision.
4. Disturbing health: Because using phones too long will disturb health, especially eye health, and decrease interest in reading because children are more interested in games.
5. Emergence of individualism: In this era, everything can be done with phones, for example, playing; children are more interested in gadgets. They are more engrossed in playing online; even playing ball can be done using gadgets by installing available applications.
6. Dependency: Children become dependent on gadgets; without gadgets, they will feel lacking and anxious because they are used to doing anything using gadgets.
7. Emergence of laziness: With the existence of gadgets, many children like to be lazy, forget to study, and sometimes there are children who are indifferent and do not help their parents' work at home, for example, cleaning the house, because they are more engrossed in playing gadgets.

Conclusion

In conclusion, gadgets, particularly smartphones, have revolutionized communication, education, and daily life through their rapid technological evolution from basic tools in prehistoric times to sophisticated, multifunctional devices in the 21st century. While they offer undeniable conveniences—such as easy access to information, remote learning, and entertainment—they also pose significant risks, especially for children and toddlers. Factors like parental busyness, the allure of engaging features, and external events like the COVID-19 pandemic have fueled gadget addiction, leading to negative impacts including wasted time, impaired brain development, declining religious and educational norms, health issues (e.g., eye strain and reduced reading interest), individualism, dependency, and laziness. Ultimately, the effects of gadgets depend on responsible usage; parents play a crucial role in monitoring and guiding their children to balance benefits with safeguards, ensuring technology enhances rather than hinders holistic development and family bonds. By fostering awareness and control, society can mitigate these drawbacks and harness gadgets as positive tools for the younger generation

References

Arefin, A. S., Habib, M. S., Habib, M., & Arefin, P. (2022). Impact of mobile phones and wireless devices use on children and adolescents' mental health: A systematic review. European Child & Adolescent Psychiatry*, *31*(7), 1621–1654. https://doi.org/10.1007/s00787-022-02012-8

Gottschalk, F. (2019). *Impacts of technology use on children: Exploring literature on the brain, cognition and well-being* (OECD Education Working Papers No. 195). OECD Publishing. https://doi.org/10.1787/8296464e-en

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review. *Sleep Medicine Reviews*, *21*, 50–58. https://doi.org/10.1016/j.smrv.2014.07.007

Liu, J., Li, L., Li, S., Jia, P., Yang, N., Sun, Y., Ma, Y. (2022). The impact of smartphone use on learning effectiveness: A case study of primary school students. *Education and Information Technologies*. https://doi.org/10.1007/s10639-022-11474-9

Marciano, L., Ostroumova, M., Schulz, P. J., & Camerini, A. L. (2022). Digital media use and adolescents' mental health during the Covid-19 pandemic: A systematic review and meta-analysis. *Frontiers in Public Health*, *9*, 641831. https://doi.org/10.3389/fpubh.2021.641831

Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour*, *3*(2), 173–182. https://doi.org/10.1038/s41562-018-0506-1

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

Walsh, J. J., Barnes, J. D., Cameron, J. D., Goldfield, G. S., Chaput, J. P., Gunnell, K. E., Ledoux, A.-A., & Tremblay, M. S. (2018). Associations between 24 hour movement behaviours and global cognition in US children: A cross-sectional observational study. *The Lancet Child & Adolescent Health*, *2*(11), 783–791. https://doi.org/10.1016/S2352-4642(18)30278-5

Wargocki, P., Porras-Salazar, J. A., & Contreras-Espinosa, S. (2020). The effect of smartphones on child development. *Concordia University Blog*. https://www.cune.edu/news/examining-effect-smartphones-child-development

Arefin, A. S., Habib, M. S., Habib, M., & Arefin, P. (2022). Impact of mobile phones and wireless devices use on children and adolescents' mental health: A systematic review. European Child & Adolescent Psychiatry, 31(7), 1621–1654. https://doi.org/10.1007/s00787-022-02012-8

Creswell, J. W. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Sage Publications.

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review. Sleep Medicine Reviews, 21, 50–58. https://doi.org/10.1016/j.smrv.2014.07.007

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

Walsh, J. J., Barnes, J. D., Cameron, J. D., Goldfield, G. S., Chaput, J. P., Gunnell, K. E., Ledoux, A.-A., & Tremblay, M. S. (2018). Associations between 24 hour movement behaviours

and global cognition in US children: A cross-sectional observational study. The Lancet Child & Adolescent Health, 2(11), 783–791. https://doi.org/10.1016/S2352-4642(18)30278-5