

ANALYSIS OF THE IMPACT OF SMARTPHONE USE ON STUDENTS' LEARNING ACTIVITIES DURING THE COVID-19 PANDEMIC

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ABSTRACT

The COVID-19 pandemic has transformed the learning process from face-to-face instruction to distance learning, making smartphones one of the primary learning media used by students. This study aims to analyze the use of smartphones in supporting students' learning activities during the COVID-19 pandemic and to identify their positive impacts, limitations, and implementation challenges. The research employed a qualitative phenomenological approach to explore students' learning experiences in using smartphones during distance learning. Data were analyzed descriptively by examining participants' experiences, behaviors, and perceptions regarding smartphone use in educational activities. The findings indicate that smartphones play an important role in facilitating access to learning resources, communication between teachers and students, and the implementation of online learning. However, smartphone use also presents several challenges, including decreased learning concentration, excessive use for non-academic purposes, internet connectivity constraints, and unequal access to digital devices. Therefore, the effective use of smartphones requires appropriate technology-based learning strategies and active supervision from teachers and parents to optimize learning outcomes. The study concludes that smartphones can serve as effective learning media when supported by proper instructional design and responsible digital learning practices.

Keywords: *Smartphone, Distance Learning, COVID-19 Pandemic, Learning Activities, Educational Technology.*

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A. INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) pandemic has brought significant changes to various aspects of human life, including the education sector. The rapid spread of the virus prompted governments around the world, including Indonesia, to implement a range of policies aimed at reducing transmission. One of the policies that had a direct impact on education was the temporary suspension of face-to-face instruction and the implementation of distance learning. In Indonesia, this policy was reinforced through the Minister of Education and Culture Circular Letter No. 4 of 2020 concerning the Implementation of Education Policies during the COVID-19 Emergency, which required all educational institutions to conduct teaching and learning activities through online learning.

The transition from conventional face-to-face instruction to online learning required extensive utilization of information and communication technologies as the primary medium for teaching and learning. Under these circumstances, smartphones became the most widely used devices because they are easily accessible, portable, and capable of supporting various educational applications, including WhatsApp, Google Classroom, Google Meet, Zoom, and other digital learning platforms. The availability of smartphones enabled teachers and students to continue the learning process despite being in different locations, thereby ensuring the continuity of education throughout the pandemic.

The use of smartphones in education offers numerous benefits for students. Smartphones facilitate access to learning materials, enable students to search for references from diverse information sources, complete assignments online, and communicate

effectively with teachers and classmates. In addition, smartphones support the implementation of mobile learning, allowing learning activities to take place flexibly without limitations of time and place. These conditions indicate that smartphones function not only as communication devices but also as effective learning media that enhance access to educational resources and information.

On the other hand, smartphone use in education also presents several challenges. Excessive smartphone usage may reduce students' learning concentration due to distractions from social media, online games, and various entertainment applications. Furthermore, limited internet connectivity, disparities in families' economic capacity to provide digital devices and internet data packages, and low levels of digital literacy may adversely affect the effectiveness of online learning. Therefore, smartphone utilization should be accompanied by appropriate instructional strategies to ensure that its use remains purposeful and supports the achievement of learning objectives.

Previous studies have reported that smartphones make positive contributions to online learning by improving access to educational resources, facilitating communication between teachers and students, and increasing the flexibility of learning activities. However, other studies have also revealed that excessive smartphone use may produce negative consequences, including decreased learning focus, dependence on digital devices, and reduced social interaction among students. These findings suggest that the effectiveness of smartphones as learning media is strongly influenced by patterns of use, instructional strategies implemented by teachers, and parental guidance.

Based on the existing literature, a research gap remains regarding how smartphone use influences students' learning activities during the COVID-19 pandemic while considering its benefits, challenges, and effective utilization strategies within the learning process. Most previous studies have focused primarily on the effectiveness of online learning or the use of specific digital applications, whereas comprehensive analyses of the influence of smartphone use on students' learning activities remain relatively limited.

The novelty of this study lies in its examination of smartphones not merely as instructional media but also as factors influencing students' learning activities during the COVID-19 pandemic. Specifically, this study identifies both the positive and negative impacts of smartphone use, as well as smartphone-based instructional strategies that can enhance the effectiveness of the learning process.

Based on the foregoing discussion, this study aims to analyze the influence of smartphone use on students' learning activities during the COVID-19 pandemic and to identify its benefits, challenges, and effective utilization strategies in supporting distance learning. The findings are expected to contribute to the development of more effective and adaptive technology-based instructional strategies for responding to changes in educational systems.

B. RESEARCH METHOD

This study employed a qualitative approach with a phenomenological research design. The phenomenological approach was selected because it aims to understand the experiences and meanings perceived by the research participants regarding the use of

smartphones in learning activities during the COVID-19 pandemic. Through this approach, the researchers sought to explore in depth students' experiences, perceptions, and behaviors in utilizing smartphones as learning media during the implementation of distance learning.

The study was conducted in Sumber Jaya Village, Ogan Komering Ulu (OKU) Timur Regency, Indonesia. This research site was selected because, during the COVID-19 pandemic, all learning activities were conducted online, making smartphones one of the primary tools supporting students' learning activities.

The research participants consisted of students, teachers, and parents who were selected using a purposive sampling technique. This technique was employed because the participants were chosen based on specific criteria, namely having direct experience with online learning and smartphone use during the COVID-19 pandemic. Accordingly, the selected participants were expected to provide relevant and in-depth information aligned with the objectives of the study.

The data sources comprised both primary and secondary data. Primary data were collected directly through in-depth interviews and observations of the research participants, whereas secondary data were obtained from supporting documents, school records, and various literature sources related to smartphone use in learning during the pandemic.

Data collection was carried out through three techniques: interviews, observations, and documentation. In-depth interviews were conducted with students, teachers, and parents to obtain detailed information regarding their experiences in using smartphones as learning media. Observations were undertaken to examine students' learning activities while using smartphones, whereas documentation was employed to complement the research data through relevant documents, photographs, and other supporting materials.

The trustworthiness of the data was established through source triangulation by comparing information obtained from different participants and corroborating it with the findings from observations and documentation. This technique was applied to enhance the credibility and validity of the research findings, thereby ensuring the scientific rigor of the collected data.

Data were analyzed using the interactive model developed by Miles and Huberman, which consists of three stages: data reduction, data display, and conclusion drawing and verification. During the data reduction stage, the researchers selected and categorized information relevant to the research focus. The data were then organized and presented systematically to facilitate interpretation, after which conclusions were drawn and verified based on the patterns, relationships, and meanings identified throughout the research process.

C. RESULTS AND DISCUSSION

The Impact of the COVID-19 Pandemic on the Education Sector

Based on the findings obtained through interviews, observations, and documentation, the COVID-19 pandemic has significantly transformed the education system in Indonesia. The government's policy of replacing face-to-face instruction with distance learning

represented a strategic effort to curb the spread of COVID-19. This transition required all educational institutions to adapt by utilizing information and communication technology as the primary medium for teaching and learning.

The findings indicate that this shift in the learning system affected all stakeholders involved in the educational process in different ways. Teachers were required to develop technology-based instructional strategies to ensure that learning materials could still be delivered effectively. At the same time, students were expected to adapt to a more independent learning model through various online learning platforms. Parents also assumed a greater role in assisting and supervising their children's learning activities while studying from home.

The study further revealed that online learning facilitated the continuity of education throughout the pandemic. The use of various digital learning applications enabled teachers and students to interact without meeting in person. Nevertheless, the effectiveness of online learning remained dependent on several factors, including teachers' readiness to utilize technology, the availability of digital devices, internet connectivity, and students' ability to manage their own learning independently.

Observational findings identified limited internet access and uneven network quality, particularly in rural areas, as one of the primary challenges experienced by students. These conditions prevented some students from participating in synchronous learning sessions, accessing learning materials, and submitting assignments on time. Furthermore, limited internet data quotas imposed an additional burden on many families, thereby reducing students' participation in online learning.

The findings also revealed that the transition to online learning increased students' perceived academic workload. Most participants reported that teachers tended to assign more tasks as substitutes for classroom learning activities. Consequently, many students experienced boredom, learning fatigue, and declining learning motivation when online instruction was not supported by interactive teaching methods.

From the teachers' perspective, online learning introduced new challenges in the assessment process. Teachers were required not only to master various digital platforms but also to design engaging learning experiences, monitor students' learning activities, and provide effective feedback. These findings suggest that the success of online learning depends not only on technological availability but also on teachers' pedagogical competence in managing digital learning environments.

Overall, the findings demonstrate that the COVID-19 pandemic accelerated the digital transformation of education. This transformation altered not only learning media but also the interaction patterns among teachers, students, and parents. Therefore, the successful implementation of online learning requires collaboration among all stakeholders through improved technological infrastructure, enhanced digital literacy, and the development of more innovative and student-centered instructional strategies.

These findings are consistent with previous studies indicating that the COVID-19 pandemic accelerated the adoption of digital technologies in education while simultaneously exposing challenges related to human resource readiness, technological infrastructure, and unequal

access to education. Accordingly, the pandemic has become an important catalyst for developing more adaptive, inclusive, and sustainable digital learning systems.

The Impact of Smartphone Use on Students' Learning Activities

The interview and observation findings revealed that smartphone use during distance learning significantly influenced students' learning activities. As a consequence of the educational changes brought about by the COVID-19 pandemic, smartphones became the primary devices used by students to participate in online classes, access learning materials, communicate with teachers, and complete academic assignments. These findings indicate that smartphones have evolved beyond their traditional role as communication devices to become essential learning media supporting educational continuity.

The findings demonstrate several positive impacts of smartphone use on students' learning activities. First, smartphones facilitated communication among students, teachers, and parents, thereby improving coordination throughout the learning process. Through various communication applications, students were able to obtain information regarding class schedules, learning materials, and assignments quickly without physically attending school.

Second, smartphones expanded students' access to learning resources. Information that was previously available only through printed textbooks could now be accessed through digital platforms, including scholarly articles, instructional videos, and interactive learning media. This accessibility enabled students to broaden their knowledge and promoted greater autonomy in learning.

Third, smartphone use contributed to the development of students' digital literacy skills. During online learning, students were required to operate various educational applications, locate relevant information, and utilize technology effectively in completing academic tasks. These findings indicate that smartphone use contributes to developing digital competencies, which are considered essential twenty-first-century skills.

Despite these advantages, the findings also identified several negative effects of smartphone use. One of the most frequently reported problems was decreased learning concentration caused by students using smartphones for non-academic purposes, such as online gaming, social media, and digital entertainment. Consequently, many students experienced difficulties managing their study time, leading to reduced learning motivation and self-discipline.

Furthermore, the easy availability of online information encouraged some students to complete assignments simply by copying and pasting information from the internet without conducting meaningful analysis or developing conceptual understanding. Such practices may hinder the development of critical thinking, creativity, and independent learning skills.

Observations also indicated that excessive smartphone use reduced face-to-face social interaction among students. Much of their leisure time was spent using digital devices rather than interacting with family members or the surrounding community. If such conditions persist without appropriate supervision, they may negatively affect students' communication skills and social development.

Overall, these findings suggest that the effects of smartphone use on learning activities

are neither entirely positive nor entirely negative but depend largely on how the technology is utilized. Smartphones provide optimal educational benefits when supported by appropriate instructional strategies, effective supervision from teachers and parents, and students' ability to manage technology responsibly. Conversely, uncontrolled smartphone use may create various obstacles that hinder the learning process.

These findings are consistent with previous studies reporting that smartphones play an important role in supporting online learning by improving access to information and communication. However, previous research has also demonstrated that excessive smartphone use increases the risk of learning distraction, digital dependency, and reduced social interaction among students. Therefore, effective smartphone-based learning requires collaboration among schools, teachers, parents, and students to maximize technological benefits while promoting character development, critical thinking, and social interaction.

Challenges of Smartphone Use in the Learning Process

Based on interviews, observations, and documentation, this study found that smartphone use during the COVID-19 pandemic not only provided educational benefits but also presented several challenges affecting learning effectiveness. These challenges can be categorized into four major dimensions: learning, economic, health, and students' social development.

From the instructional perspective, most participants indicated that smartphone-based learning could not fully replace the effectiveness of face-to-face instruction. Limited direct interaction between teachers and students reduced the quality of instructional delivery, making it difficult for some students to understand the learning materials. This problem was further exacerbated by unstable internet connectivity, which frequently disrupted online learning activities. Consequently, students' learning motivation declined, and many completed assignments merely to fulfill academic requirements rather than to develop meaningful understanding.

The findings also revealed that smartphone use increased students' dependence on the internet as their primary source of information. The ease of accessing online resources often resulted in irresponsible learning practices, such as copying answers directly from the internet without independent analysis or comprehension. Such behaviors may inhibit the development of critical thinking, creativity, and autonomous learning.

From an economic perspective, online learning increased household expenditures, particularly for internet data packages. Several participants reported that limited financial resources prevented students from participating optimally in online learning because of inadequate internet access and limited availability of digital devices. These findings indicate that the success of smartphone-based learning depends not only on students' readiness but also on their families' economic capacity to support digital learning.

Regarding health, prolonged smartphone use resulted in various physical complaints, particularly eye strain, reduced learning comfort, and physical fatigue caused by extended screen exposure. High levels of smartphone use also increased the risk of digital dependency, making it difficult for students to balance learning activities with recreational use.

The findings further revealed negative consequences for students' social and character development. Easy access to social media, online games, and other digital content reduced students' direct social interactions with their surrounding environment. Moreover, inadequate supervision increased students' exposure to age-inappropriate content, potentially affecting their moral development, character formation, and social behavior.

These findings indicate that the weaknesses associated with smartphone use are attributable not merely to the technology itself but rather to inappropriate patterns of utilization. Therefore, effective smartphone-based learning requires continuous supervision from teachers and parents, strengthened digital literacy among students, and instructional strategies designed to minimize distractions throughout the learning process.

These findings support the study by Setianingsih (2019), which concluded that smartphones have a dual role by supporting learning while simultaneously generating negative consequences when used excessively. Similarly, Wulandari et al. (2019) reported that prolonged smartphone use negatively affects students' eye health. Furthermore, Abidin et al. (2020) identified economic limitations as one of the major barriers to distance learning, whereas Utami (2019) and Hasanah et al. (2020) reported that excessive smartphone use may reduce academic achievement and increase aggressive behavior among adolescents. Accordingly, smartphone use in education should be accompanied by appropriate school policies, parental supervision, and strengthened digital literacy to maximize technological benefits while protecting students' academic achievement, health, and character development.

Smartphone-Based Learning Strategies

Based on interviews, observations, and documentation, this study found that the effectiveness of smartphone-based learning depends not only on the availability of digital devices but also on teachers' instructional strategies, students' readiness, parental support, and adequate educational infrastructure. The findings suggest that smartphone-based learning strategies should be designed comprehensively to maximize technological benefits while minimizing their potential negative impacts.

The first strategy involves optimizing smartphones as learning media. The findings indicate that smartphones can be effectively utilized to access various digital learning resources, including electronic books (e-books), PDF learning modules, instructional videos, and interactive educational applications. The availability of diverse learning resources allows students to study more flexibly according to their individual needs and abilities while promoting greater learning autonomy and digital literacy.

The second strategy focuses on improving the digital competence of all stakeholders involved in the learning process. The findings demonstrate that the success of smartphone-based learning is strongly influenced by teachers' ability to manage digital instruction, students' responsible use of technology, and parents' active involvement in supervising learning activities at home. Teachers are therefore expected to possess strong digital pedagogical competencies to select appropriate instructional media, teaching methods, and learning applications that correspond to students' characteristics. Meanwhile, parents play a crucial role as facilitators and supervisors to ensure that smartphones are primarily used

for educational purposes.

The third strategy concerns the provision of adequate infrastructure. The findings revealed that limited internet access and insufficient technological facilities remain major barriers to smartphone-based learning. Therefore, schools should provide stable internet connectivity, Wi-Fi access, and adequate information technology services to support effective online learning. These efforts should also be supported by government policies aimed at expanding internet accessibility, particularly in underserved regions.

The fourth strategy involves implementing structured learning management through learning contracts. The findings indicate that smartphone use becomes more effective when supported by mutually agreed rules established among teachers, students, and parents. Such agreements include schedules for smartphone use, regulations governing online learning, assignment submission procedures, and mechanisms for parental and teacher supervision. Clear expectations and shared commitments contribute to improving students' discipline while reducing inappropriate smartphone use during learning.

The fifth strategy emphasizes the adoption of innovative and adaptive instructional models. The findings suggest that smartphone-based learning becomes more effective when integrated with student-centered approaches such as project-based learning, online discussions, instructional videos, and blended learning whenever conditions permit. Combining online and face-to-face instruction provides students with more meaningful learning experiences while addressing many of the limitations associated with fully online learning.

These findings support Anugrahana (2020), who argued that teachers need to strengthen their digital competencies to conduct effective online instruction. Similar conclusions were reported by Ramdani et al. (2020) and Silistri et al. (2020), who found that Android-based learning media significantly improved instructional quality during the pandemic. Furthermore, Riyana (2020) emphasized that teachers' understanding of the characteristics of digital learning is essential to ensure that technology effectively supports the achievement of learning objectives.

Based on the overall findings, this study proposes that effective smartphone-based learning strategies are built upon four fundamental components: human resource readiness, technological infrastructure, effective learning management, and pedagogical innovation. These four components are interrelated and constitute essential prerequisites for optimizing smartphone use as educational media. Therefore, smartphone-based learning should be oriented not merely toward the use of technology itself but toward the development of a collaborative, adaptive, and sustainable digital learning ecosystem.

D. CONCLUSION

Based on the explanation above, it can be concluded that COVID-19 has had a significant impact, particularly in the field of education. Since the implementation of distance learning, smartphones have had many positive effects on students participating in distance learning; however, in addition to these positive effects, smartphones also have negative effects on students, such as: causing students to take assignments given by teachers lightly and potentially leading to smartphone addiction. Therefore, every

educator must have a strategy for teaching using smartphones.

E. REFERENCES

- Aswar, A., Syarif, S., Sulkipli, S., & Amirullah, M. (2021). Analisis Arah Kebijakan Sekolah Terhadap Penggunaan Gawai Android dalam Aktivitas Belajar Peserta Didik di Masa Pandemi Covid-19. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, 7(1), 247-260.
- Hamim, Muhamad. 2019. Pengaruh Penggunaan Smartphone dalam Aktivitas Belajar Terhadap Prestasi Belajar Siswa Kelas VIII Di SMP Negeri 7 Kota Kediri Tahun Pelajaran 2016/2017. (<http://etheses.iainkediri.ac.id/133/>, diakses 14 April 2022).
- Hasbiansyah, O. (2008). Pendekatan fenomenologis: Pengantar praktik penelitian di Ilmu Sosial dan Komunikasi. *Mediator: Jurnal Komunikasi*, 9 (1), 163-180.
- Marlina, Deli. 2021. Dua sisi gadget pada masa pandemi. (<https://www.stit-alkifayahriau.ac.id/dua-sisi-gadget-pada-masa-pandemi/>, diakses 14 April 2022).
- Nuryana, Agus Nana. 2020. Dampak pandemic covid-19 terhadap dunia pendidikan. (<https://jabar.kemenag.go.id/portal/read/dampak-pandemi-covid-19-terhadap-dunia-pendidikan>, diakses 14 April 2022)