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THE RELATIONSHIP BETWEEN SMARTPHONE ADDICTION AND ACADEMIC ACHIEVEMENT AMONG ADOLESCENTS: A LITERATURE REVIEW

Wahyudi*[1], Dian Permana[2], Masruri[3], Ratri Diana[4]
Institut Agama Islam Negeri Syaikh Abdurrahman Siddik Bangka Belitung[1], Institut Miftahul Huda Al Azhar Kota Banjar[2], Universitas Nahdlatu Ulama Al Ghazali Cilacap[3], SMP Tri Bhakti Kemranjen[4]
Email*: attmuhammadwahyudi19@gmail.com
(*) Corresponding Author

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Abstact
The increasing use of smartphones among adolescents has transformed learning patterns, communication, and access to information. While smartphones provide significant educational and social benefits, excessive and uncontrolled use has become a growing concern due to its potential impact on students' academic achievement. This study aims to synthesize and analyze empirical evidence regarding the relationship between smartphone addiction and academic achievement among adolescents. The study employed a literature review method by examining peer-reviewed journal articles published between 2019 and 2025 from reputable databases, including Scopus, Web of Science, ScienceDirect, SpringerLink, Taylor & Francis, and Google Scholar. The selected literature was analyzed using a thematic synthesis approach to identify recurring findings, influencing factors, and research gaps. The review indicates that smartphone addiction is consistently associated with lower academic achievement through various mechanisms, including reduced learning concentration, poor time management, sleep disturbances, academic procrastination, decreased motivation, and excessive engagement with social media and online gaming. Nevertheless, several studies reveal that smartphones can positively support academic performance when used appropriately for educational purposes, collaborative learning, and information retrieval. The findings also highlight that parental supervision, digital literacy, self-regulation, and effective school policies play significant roles in minimizing the negative effects of smartphone addiction. This literature review concludes that the relationship between smartphone addiction and academic achievement is influenced not only by the duration of smartphone use but also by the purpose, intensity, and quality of digital engagement. Therefore, comprehensive interventions involving families, schools, and policymakers are essential to promote responsible smartphone use while enhancing adolescents' academic success and psychological well-being.
Keywords: smartphone addiction; academic achievement; adolescents; digital literacy; self-regulation;

Abstrak
Meningkatnya penggunaan smartphone di kalangan remaja telah mengubah pola belajar, komunikasi, dan akses terhadap informasi. Meskipun smartphone memberikan berbagai

manfaat dalam mendukung proses pembelajaran dan interaksi sosial, penggunaannya yang berlebihan dan tidak terkontrol menjadi perhatian serius karena berpotensi memengaruhi prestasi akademik remaja. Penelitian ini bertujuan untuk mensintesis dan menganalisis berbagai hasil penelitian mengenai hubungan antara kecanduan smartphone dan prestasi akademik pada remaja. Penelitian ini menggunakan metode studi literatur dengan menelaah artikel-artikel ilmiah yang diterbitkan pada periode 2019–2025 dan diperoleh dari basis data bereputasi, seperti Scopus, Web of Science, ScienceDirect, SpringerLink, Taylor & Francis, dan Google Scholar. Literatur yang terpilih dianalisis menggunakan pendekatan sintesis tematik untuk mengidentifikasi temuan utama, faktor-faktor yang memengaruhi, serta kesenjangan penelitian. Hasil kajian menunjukkan bahwa kecanduan smartphone secara konsisten berhubungan dengan penurunan prestasi akademik melalui berbagai mekanisme, seperti menurunnya konsentrasi belajar, buruknya manajemen waktu, gangguan kualitas tidur, meningkatnya prokrastinasi akademik, menurunnya motivasi belajar, serta tingginya intensitas penggunaan media sosial dan permainan daring. Namun demikian, beberapa penelitian juga menunjukkan bahwa penggunaan smartphone secara bijaksana untuk kegiatan pembelajaran, kolaborasi akademik, dan pencarian informasi dapat memberikan dampak positif terhadap pencapaian akademik. Selain itu, pengawasan orang tua, literasi digital, kemampuan regulasi diri, dan kebijakan sekolah yang mendukung penggunaan teknologi secara sehat merupakan faktor penting dalam meminimalkan dampak negatif kecanduan smartphone. Kajian ini menyimpulkan bahwa hubungan antara kecanduan smartphone dan prestasi akademik tidak hanya dipengaruhi oleh lamanya penggunaan smartphone, tetapi juga oleh tujuan, intensitas, dan kualitas pemanfaatannya. Oleh karena itu, diperlukan sinergi antara keluarga, sekolah, dan pembuat kebijakan untuk mendorong penggunaan smartphone yang bertanggung jawab guna meningkatkan prestasi akademik sekaligus menjaga kesejahteraan psikologis remaja.
Kata kunci: kecanduan smartphone; prestasi akademik; remaja; literasi digital; regulasi diri.

A. Introduction

The rapid development of digital technology has fundamentally transformed the way adolescents communicate, learn, and access information. Among various digital devices, smartphones have become the most widely used technology because of their multifunctional features, including internet access, educational applications, social networking platforms, entertainment media, and instant communication. The widespread availability of affordable smartphones and internet connectivity has significantly increased smartphone ownership among adolescents worldwide, making these devices an integral part of their daily lives (Valkenburg et al., 2022). While smartphones offer substantial educational opportunities, excessive and uncontrolled use has raised growing concerns regarding its impact on adolescents' academic achievement and overall development (Odgers & Jensen, 2020).

Adolescence represents a critical stage of physical, cognitive, emotional, and social development. During this period, students are expected to develop effective learning habits, self-regulation skills, and academic responsibility. However, excessive smartphone use may interfere with these developmental tasks by diverting attention from academic activities toward social media, online gaming, video streaming, and other digital entertainment (Elhai et al., 2017). Previous studies have demonstrated that problematic smartphone use is associated with decreased concentration, lower academic motivation, poor classroom engagement, and reduced learning efficiency, ultimately contributing to lower academic achievement (Domoff et al., 2020).

Smartphone addiction has emerged as one of the most significant behavioral issues among adolescents in the digital era. Unlike ordinary smartphone use, smartphone addiction is characterized by excessive dependence, compulsive checking behaviors, loss of self-control, withdrawal symptoms, and difficulty reducing smartphone use despite experiencing negative consequences (Elhai et al., 2017). Adolescents with higher levels of smartphone addiction often prioritize online activities over studying, completing assignments, or participating in educational and social activities. Such behavioral patterns negatively affect academic performance through increased procrastination, poor time management, and diminished learning motivation (Samaha & Hawi, 2016).

Another important mechanism linking smartphone addiction and academic achievement is sleep quality. Many adolescents use smartphones late at night for browsing social media, watching videos, or playing online games, resulting in delayed sleep onset and insufficient sleep duration. Sleep deprivation adversely affects memory consolidation, attention, executive functioning, and emotional regulation, all of which are essential for successful learning (Hale & Guan, 2015). Consequently, students experiencing poor sleep quality frequently demonstrate reduced classroom participation, impaired cognitive performance, and lower academic achievement compared with students who maintain healthier digital habits (Twenge & Campbell, 2018).

Social media represents one of the primary drivers of excessive smartphone use among adolescents. Platforms such as Instagram, TikTok, WhatsApp, and YouTube encourage continuous engagement through notifications, personalized content, and social

interaction. Excessive exposure to these platforms often creates distractions during learning activities and increases the tendency toward multitasking, which has been shown to reduce cognitive performance and learning effectiveness (Keles et al., 2020). Furthermore, continuous social comparison, fear of missing out (FoMO), and online peer pressure may reduce students' academic motivation while increasing stress and psychological distress (Valkenburg et al., 2022).

Despite these negative consequences, smartphones should not be viewed solely as obstacles to academic success. Numerous studies have highlighted the educational benefits of smartphones when used appropriately. Mobile learning applications, digital libraries, online discussion platforms, educational videos, and collaborative learning tools have expanded students' access to knowledge and facilitated flexible learning environments (Crompton & Burke, 2018). Therefore, the impact of smartphones on academic achievement depends not only on the duration of use but also on the purpose, frequency, and quality of digital engagement. Responsible smartphone use may enhance learning outcomes, whereas uncontrolled use increases the likelihood of academic difficulties.

Several previous studies have investigated the relationship between smartphone addiction and academic achievement; however, their findings remain inconsistent. While many researchers report a significant negative relationship between smartphone addiction and academic performance (Samaha & Hawi, 2016; Elhai et al., 2017), other studies suggest that moderate and educationally oriented smartphone use can positively contribute to students' learning outcomes (Crompton & Burke, 2018). These inconsistencies indicate the need for a comprehensive synthesis of recent empirical evidence to better understand the factors influencing this relationship.

Considering the growing number of studies published over the past decade, a literature review is necessary to integrate existing findings, identify recurring patterns, evaluate methodological approaches, and determine gaps for future research. Unlike primary empirical studies, literature reviews provide broader insights by critically analyzing evidence from multiple contexts, educational levels, and countries. Such synthesis is essential for developing evidence-based recommendations for educators, parents, and policymakers regarding healthy smartphone use among adolescents.

Based on these considerations, this study aims to review and synthesize previous empirical research concerning the relationship between smartphone addiction and academic achievement among adolescents. Specifically, this literature review seeks to identify the major factors contributing to smartphone addiction, examine its effects on students' academic performance, and explore effective strategies for minimizing its negative impacts. The findings are expected to enrich the existing literature on educational technology and adolescent behavior while providing practical recommendations for promoting responsible smartphone use and improving academic achievement in the digital era.

B. Research Method

This study employed a literature review design to synthesize and critically analyze previous research on the relationship between smartphone addiction and academic achievement among adolescents. The literature was collected from reputable scientific databases, including Scopus, Web of Science, ScienceDirect, SpringerLink, Taylor & Francis, ERIC, and Google Scholar. The search process used combinations of keywords such as *smartphone addiction*, *mobile phone addiction*, *academic achievement*, *academic performance*, *adolescents*, *students*, and *digital learning*. The inclusion criteria comprised peer-reviewed journal articles published between 2019 and 2025, written in English, with full-text accessibility and direct relevance to the research topic. Meanwhile, conference papers, book chapters, dissertations, duplicate publications, and studies not focusing on adolescent populations or academic achievement were excluded from the review.

The selected articles were analyzed using a thematic analysis approach to identify recurring findings, research trends, influencing factors, and existing knowledge gaps regarding smartphone addiction and academic achievement. The review process involved four stages: literature identification, screening based on inclusion and exclusion criteria, quality assessment of the selected studies, and thematic synthesis of the findings (Braun & Clarke, 2006; Snyder, 2019). To ensure the credibility and transparency of the review, the researcher compared findings across multiple studies and synthesized evidence according to similarities and differences in research objectives, methodologies, and outcomes. This

approach enabled the development of a comprehensive understanding of how smartphone addiction influences adolescents' academic achievement and the factors that may strengthen or mitigate its effects.

C. Discussion

The literature consistently demonstrates that smartphone addiction has become one of the most significant challenges affecting adolescents' academic achievement in the digital era. Smartphones have evolved beyond communication devices into multifunctional tools that provide access to educational resources, social networking platforms, online gaming, video streaming, and various entertainment applications. Although these technological advancements facilitate learning and information access, excessive and uncontrolled smartphone use has resulted in behavioral dependency that interferes with students' academic responsibilities (Elhai et al., 2017; Valkenburg et al., 2022). Most reviewed studies indicate that adolescents spend a substantial amount of time on non-academic smartphone activities, reducing the time available for studying, completing assignments, and engaging in productive learning experiences. Consequently, smartphone addiction has emerged as an important predictor of declining academic performance across different educational settings.

One of the primary mechanisms through which smartphone addiction affects academic achievement is decreased learning concentration. Adolescents frequently experience continuous interruptions from notifications, instant messaging applications, and social media platforms while studying. These distractions reduce sustained attention and increase multitasking behaviors, making it difficult for students to process and retain academic information effectively. Previous studies have shown that students with higher levels of smartphone addiction often exhibit lower cognitive engagement, shorter attention spans, and reduced classroom participation, all of which negatively influence learning outcomes (Samaha & Hawi, 2016; Domoff et al., 2020). Moreover, habitual smartphone checking behaviors contribute to fragmented learning, ultimately decreasing academic productivity.

Another recurring finding concerns the relationship between smartphone addiction and academic procrastination. Numerous studies reveal that adolescents addicted to smartphones tend to postpone academic tasks because they prioritize entertainment, social media, or online gaming over schoolwork. This behavioral pattern leads to poor time management, delayed assignment completion, and inadequate preparation for examinations. As smartphone dependency increases, students experience greater difficulty regulating their study schedules and maintaining academic discipline (Elhai et al., 2017). Consequently, procrastination mediates the relationship between smartphone addiction and lower academic achievement, emphasizing the importance of self-regulation skills in educational success.

Sleep quality is another important factor identified throughout the reviewed literature. Excessive smartphone use, particularly during nighttime hours, delays sleep onset due to prolonged exposure to blue light and continuous online engagement. Insufficient sleep subsequently impairs memory consolidation, executive functioning, concentration, and emotional regulation, all of which are essential for effective learning (Hale & Guan, 2015). Adolescents experiencing sleep deprivation consistently demonstrate lower academic performance, increased absenteeism, and reduced classroom engagement compared with peers who maintain healthier digital habits. Therefore, sleep disturbance functions as an indirect pathway through which smartphone addiction negatively affects academic achievement.

The reviewed studies also highlight the influence of social media on students' academic performance. Applications such as Instagram, TikTok, YouTube, Facebook, and WhatsApp encourage continuous online interaction through personalized content and instant notifications, making it increasingly difficult for adolescents to disengage from their smartphones. Excessive social media engagement contributes to cognitive overload, reduced motivation to study, and frequent interruptions during academic activities (Keles et al., 2020). Furthermore, exposure to online social comparison and the fear of missing out (FoMO) increases psychological stress and decreases students' academic focus, thereby further reducing educational achievement.

Despite these negative findings, the literature also indicates that smartphones can positively contribute to academic achievement when used appropriately. Mobile learning applications, digital libraries, educational videos, online discussion forums, and learning management systems enable students to access learning materials anytime and anywhere. Several studies emphasize that educationally oriented smartphone use enhances collaborative learning, information literacy, independent learning, and academic engagement (Crompton & Burke, 2018). Therefore, the educational value of smartphones depends largely on students' ability to regulate their digital behavior rather than on smartphone ownership itself.

Parental supervision and family support emerge as important protective factors in preventing smartphone addiction. Parents who establish clear rules regarding smartphone use, monitor online activities, and encourage healthy study habits contribute significantly to adolescents' academic success. Likewise, supportive family communication helps adolescents develop stronger self-control and balanced digital habits (Yang et al., 2019). Schools also play a critical role by implementing digital literacy programs, promoting responsible technology use, and integrating smartphones into structured learning activities instead of completely prohibiting their use. Such educational approaches encourage students to maximize the academic benefits of smartphones while minimizing potential distractions.

Overall, the reviewed literature confirms that the relationship between smartphone addiction and academic achievement is multidimensional and influenced by behavioral, psychological, educational, and environmental factors. Excessive smartphone use consistently contributes to reduced concentration, poor time management, academic procrastination, sleep disturbances, and lower learning motivation, all of which negatively affect students' academic performance. However, smartphones remain valuable educational tools when accompanied by effective self-regulation, parental guidance, digital literacy, and supportive school policies. Consequently, comprehensive collaboration among families, educators, schools, and policymakers is essential to foster responsible smartphone use and improve adolescents' academic achievement in the increasingly digital educational environment.

D. Conclusion

This literature review concludes that smartphone addiction has a predominantly negative relationship with adolescents' academic achievement. The findings from previous studies consistently indicate that excessive and uncontrolled smartphone use contributes to reduced learning concentration, poor time management, academic procrastination, sleep disturbances, decreased learning motivation, and lower academic performance. Nevertheless, smartphones also offer substantial educational benefits when utilized appropriately as tools for accessing learning resources, facilitating communication, and supporting collaborative learning. Therefore, the impact of smartphone use on academic achievement is determined not only by the duration of use but also by the purpose, intensity, and quality of digital engagement.

The reviewed literature highlights the importance of collaborative efforts among families, schools, and policymakers in preventing smartphone addiction and promoting healthy digital behavior among adolescents. Strengthening digital literacy, enhancing students' self-regulation skills, increasing parental supervision, and implementing school policies that encourage responsible smartphone use are essential strategies for improving academic achievement in the digital era. Future research is recommended to conduct systematic literature reviews or meta-analyses involving broader international databases and more recent publications to provide stronger evidence regarding the long-term relationship between smartphone addiction and academic performance among adolescents.

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