


## **The Relationship Between Smartphone Usage and Student Achievement at SMP 21 Pekanbaru**

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Article Info	ABSTRACT
<p><b>Article history:</b></p> <p>Received June 08, 2024 Revised June 13, 2024 Accepted July 07, 2024</p> <hr/> <p><b>Corresponding Author:</b></p> <p>Hamidah Sari Batubara Payung Negeri Health Institute Pekanbaru Email: hamidahsari1712@gmail.com</p>	<p>Morgan's research in 2015 found that in Indonesia, individuals aged 14-24, predominantly students (77%), are the most active users of smartphones compared to other age groups. Smartphones have a significant impact on students, including the potential to lower academic achievement when used during learning activities. This study aims to investigate the relationship between smartphone usage and student achievement at SMP Negeri 21 Pekanbaru in 2019. The research was conducted from February 25th to February 28th, 2019, using both primary and secondary data. It employed a quantitative analytic design with a cross-sectional approach, involving a population of 770 individuals. A sample of 90 participants was selected using stratified proportionate random sampling. Data analysis was performed using SPSS 17.0 and presented in tabular form. The study revealed that 77.8% (70 individuals) of smartphone users were categorized as medium users, while 70.0% (63 individuals) achieved good academic results. The research findings indicated a P-value of <math>\geq \alpha 0.388 \geq 0.05</math>, suggesting no significant relationship between smartphone usage and student achievement at SMP Negeri 21 Pekanbaru in 2019. This may be attributed to the continuing high level of parental involvement in monitoring their children's activities. The study underscores the importance for educational institutions to promote responsible smartphone use to enhance learning outcomes.</p> <p><b>Keywords:</b> <i>Smartphone Usage, Student Achievement, SMP</i></p> <p>This article is licensed under a <a href="https://creativecommons.org/licenses/by-sa/4.0/">Creative Commons Attribution 4.0 International License</a>.</p> <div style="text-align: center;"></div>

### **1. INTRODUCTION**

A technology is created with the intention of making human life easier and more comfortable. The rapid advancement of technology today makes almost no area of human life free from its use, either directly or indirectly. As globalization flows with the demands of fast information exchange needs, the role of communication technology is of great importance [1][9]

The development of information technology is currently undergoing significant changes. This is evidenced by the emergence of various latest electronic devices, one of which is the most widely used today: the smartphone. A smartphone is a mobile phone that has computer-like capabilities, has a large screen, and its operating system is capable of running general-purpose applications. The existence of smartphones allows users to stay connected through telephone facilities and internet data simultaneously, which distinguishes them from ordinary phones.

The use of smartphones in Indonesia continues to increase year on year. Indonesia is the country with the largest number of active smartphone users in the world, after China, India, and the United States. Even the results of Ericsson's Mobility Report research in March 2018 show that Indonesia is ranked third in the list of the largest smartphone users in Asia Pacific, with 83.18 million users. The most active smartphone users are those aged 18 to 24 years, who spend an average of 5.2 hours per day on their devices [2][10].

In contrast, the findings of a study conducted by Roy Morgan between October 2014 and March 2015 indicated that in Indonesia, individuals aged 14 to 24 years, predominantly comprising students, constituted 77% of smartphone owners and exhibited the highest level of engagement compared to other age groups.

The phenomenon of smartphone use was revealed by one of the junior high school teachers in Yogyakarta, who explained that 70% of junior high school students in Yogyakarta have used and continue to use smartphones. He stated that the high number of students using smartphones is a cause for concern, as students and teenagers use them regardless of time, even at school, where there are already some students who always use smartphones during subject hours [3][11].

Smartphones have a certain impact on students. One of the positive impacts of smartphones in the context of learning is that they can facilitate academic achievement. However, the use of smartphones can also have a negative impact on learning outcomes when they are used during learning activities, potentially leading to a reduction in learning achievement.

Learning achievement is the result or level of ability that students have achieved after participating in the teaching and learning process within a certain time, both in the form of changes in behavior, skills, and knowledge. Learning achievement can be created both individually and in groups. The use of smartphones can be said to be one of the factors that affect learning achievement today. Despite the potential benefits of smartphones in the classroom, many students still lack the ability to regulate their use. This can lead to distraction and disruption, both for the individual student using the device and for their classmates. When one student uses a smartphone during a learning activity, it can affect the concentration of other students in the classroom. Furthermore, the observation of a student using a smartphone can influence others to follow suit, leading to a broader use of these devices in the classroom. The use of smartphones in the classroom has been found to have a negative impact on student motivation and learning outcomes. A preliminary study conducted at SMPN 21 Pekanbaru on January 23, 2019, revealed that the school allows students to bring smartphones and that most students have them. In terms of student learning achievement, the teacher noted that there were instances where students demonstrated a decline in performance, while others exhibited an improvement. During the observation period, it was observed that many students spent their break time alone or in small groups, but were engaged in activities on their smartphones.

In the interviews conducted with eight students, five students expressed a preference for using their smartphones during recess, with the majority of them engaging in social media and gaming activities. Three students indicated that they did not utilize smartphones frequently, preferring instead to read books in the library or engage in discussions about lessons during recess. Based on this background, the researcher is interested in conducting research on the relationship between smartphone use and student achievement.

## 2. METHOD

This study employed quantitative research with an analytic design and a cross-sectional approach. The research was conducted at SMPN 21 Pekanbaru in February 2019. The population in this study consisted of 770 individuals, with a sample size of 90. The sampling technique utilized was stratified proportional random sampling, which is a sampling method employed when the population members are not homogeneous and consist of homogeneous or proportionally stratified groups. The instrument utilized in this research was a questionnaire table. The data collection techniques employed were the administration of questionnaires and the examination of student report cards. The data processing techniques utilized were editing, coding, and tabulation. The data analysis was conducted through computerization with the SPSS Vs 19 software, and the results were presented descriptively and analytically through statistical tests. 1) If the P value is  $\leq 0.05$ , then the null hypothesis ( $H_0$ ) is rejected. 2) If the P value is  $> 0.05$ , then the null hypothesis ( $H_0$ ) is accepted. Research ethics: 1) Informed consent sheet; 2) Anonymity; 3) Confidentiality.

## 3. RESULTS AND DISCUSSION

### 3.1. Age

Table 1. Frequency Distribution of Smartphone Use on Student Achievement Based on Age at SMPN 21 Pekanbaru

No	Age	Freq (n)	Percentage (%)
1	13	47	52,2
2	14	36	40,0
3	15	7	7,8
	Total	90	100

### 3.2. Parents Occupation

Table 2. Frequency Distribution of Smartphone Use on Student Achievement Based on Father's Work at SMPN 21 Pekanbaru

No	Occupation	Freq (n)	Percentage (%)
1	Jobless	0	0
2	Civil Servant	10	11,2
3	Employee	22	24,4
4	Entrepreneur	38	42,2
5	Etcetera	20	22,2
	Total	90	100

Table 3. Frequency Distribution of Smartphone Use on Student Achievement Based on Mother's Occupation at SMPN 21 Pekanbaru

No	Occupation	Freq (n)	Percentage (%)
1	Housewives	69	76,7
2	Civil Servant	7	7,8
3	Employee	2	2,2
4	Entrepreneur	10	11,1
5	Etcetera	2	2,2
	Total	90	100

### 3.3. Smartphone Usage

Table 4. Frequency Distribution of Smartphone Usage at SMPN 21 Pekanbaru in 2018

No	Smartphone Usage	Freq (n)	Percentage (%)
1	High	13	14,4
2	Medium	70	77,8
3	Low	7	7,8
	Total	90	100

### 3.4. Student Achievement

Table 5. Frequency Distribution of Student Achievement at SMPN 21 Pekanbaru in 2018

No	Student Achievement	Frequency (n)	Percentage (%)
1	Good	63	70,0
2	Not Good	27	30,0
	Total	90	100

Table 6. The Relationship between Smartphone Use and Student Achievement at SMPN 21 Pekanbaru in 2019

Smartphone Usage	Student Achievement				Total	P Value	$\alpha$
	Good		Not Good				
	N	(%)	N	(%)			
High	7	53,8	6	46,2	13	100	
Medium	51	72,9	19	27,1	70	100	
Low	5	71,4	2	28,6	7	100	0,388
Total	63	70,0	27	30,0	90	100	

Table 6 presents the results of the study, which indicate that of the 13 respondents who were high category smartphone users with good performance, 53.8% (7 people) exhibited poor performance, while 46.2% demonstrated good performance. Of the 70 respondents who were medium category smartphone users with good achievement, 72.9% (51 people) exhibited poor achievement, while 27.1% demonstrated good achievement. Of the seven respondents who were low category smartphone users with good achievement, 71.4% (five people) and 28.6% (two people) had poor achievement.

The results of statistical tests on the relationship between smartphone use and student achievement at SMPN 21 Pekanbaru in 2019 indicate that the P value is greater than the  $\alpha$  value, namely:  $0.388 > 0.05$ . Therefore,

the null hypothesis (H<sub>0</sub>) is accepted. This indicates that there is no correlation between smartphone usage and student achievement.

### 3.5. Smartphone Usage

The results of research on the use of smartphones at SMPN 21 Pekanbaru in 2019 indicate that the majority of respondents (77.8%, or 70 individuals) fall into the moderate category. These findings align with those of in her study on the relationship between smartphone use and sexual behavior among students at SMA 10 Jember. In this study, the majority of respondents (85.6%, or 38 people) reported moderate smartphone use. This is likely due to the numerous advantages offered by smartphones. In addition to being a lightweight communication tool and easily portable, smartphones are also widely used to access data and information directly, play games, and assist in completing tasks.

That smartphones are more prevalent among the general public, particularly among students, due to the multitude of features that enable them to fulfill a multitude of needs across a range of activities. These devices allow for a high degree of mobility, facilitating communication and other tasks with a single hand. One such task is indirect communication, which can be conducted through a smartphone. [4][12][20]

Smartphones offer numerous benefits to students, including the potential to enhance productivity and save time. For instance, students can complete assignments and submit them to their instructors via the same medium, which also stimulates the creative thinking process during the learning process.

The results of the study indicated that the majority of respondents, or 46.7% (42 people), reported frequently using smartphones for more than 15 minutes in a single session. Furthermore, when queried about the frequency of internet usage on smartphones, the majority of respondents (31.5%, or 31 individuals) indicated that they never use the internet on their smartphones for less than two hours. Another 31.5% (31 individuals) reported that they rarely use the internet on their smartphones for less than two hours, while 20% (18 individuals) indicated that they often use the internet on their smartphones for less than two hours, and 11.1% (10 individuals) reported that they always use the internet on their smartphones for less than two hours.

These results indicate that the majority of respondents are consistently active in their use of smartphones for daily activities. A small percentage of respondents indicated that they always use smartphones for less than two hours. Additionally, researchers posit that the majority of respondents fall into the moderate category of smartphone use, given the numerous factors that influence students' use of smartphones. These include the ability of smartphones to facilitate daily activities. For instance, when undertaking assignments, students may not find complete information in books. They can, however, browse information via smartphones, which makes it easier for students in terms of school assignments.

Furthermore, another factor that can influence students in using smartphones is the convenience factor. Smartphones facilitate communication with friends on social media platforms such as Instagram, WhatsApp, Line, Facebook, and others. The ability to receive information more quickly than by meeting in person is another advantage of smartphones.

### 3.6. Student Achievement

The results of research conducted at SMP Negeri 21 Pekanbaru in 2019 indicate that the majority of respondents exhibited satisfactory academic performance, with 70.0% (63 individuals) achieving a level of excellence.

In educational contexts, learning achievement can be defined as the individual success obtained in academic activities at school, expressed in quantitative values in the form of numerical scores written on the report card [5][14]. The success or failure of a student in mastering the subject matter can be described through the learning achievement achieved. This is measured through an evaluation process, namely a written test that is tested in accordance with the learning objectives whose results are in the form of scores, either in the form of numbers or letters given by the teacher [6][13][19].

Two primary factors that influence learning achievement: internal factors, which originate within the student, and external factors, which originate outside the student. The latter category encompasses social and non-social environments. The use of smartphones represents an external factor. Despite this, researchers have found that the use of smartphones does not prevent students from attaining high levels of achievement. It is possible that students can still learn optimally even when they are always using smartphones.

### 3.7. Relationship between Smartphone Use and Student Achievement

The results of the research indicate that the P value is greater than the alpha value, namely  $0.388 > 0.05$ . This implies that the null hypothesis (H<sub>0</sub>) is accepted, and thus, it can be concluded that there is no relationship between smartphone use and student achievement at SMPN 21 Pekanbaru in 2019. These results are consistent with those who also found no relationship between smartphone usage and student academic achievement. The results indicate

that the conspicuous use of chat and social networking features in high school students does not affect their academic performance. Divides the factors that affect learning achievement into two categories: internal factors and external factors. Internal factors include physiological and psychological factors, while external factors include family environment factors, which consist of parental income, family socioeconomic status, parental attention, and relationships between family members. [7][15][18]

That parental involvement plays a pivotal role in determining student achievement. Parents who prioritize their children's education will undoubtedly prioritize their children's learning needs. This involvement can manifest in various ways, including providing adequate learning facilities and offering tutoring at home, both directly and indirectly. [8][16][17]

The results of the study indicate that 100% of fathers of 90 students have jobs, and the majority of mothers' jobs are as housewives, with 69 people (76.7%) in this category.

Researchers have concluded that there is no relationship between the use of smartphones and student achievement at SMPN 21 Pekanbaru, given the numerous factors that can affect learning achievement. Specifically, the role of parents in fulfilling children's learning needs, both material and psychological, is of interest. Fathers who work are able to fulfill their children's learning needs, while mothers who work as housewives spend more time with their children. Mothers who work as housewives have the opportunity to provide high motivation to their children, thereby meeting their psychological needs in learning. When these needs are met, children are more likely to absorb the lessons given by teachers at school, which in turn improves their academic achievement.

In addition, parental supervision is another factor that can affect children's achievement. The results of the study indicated that the majority of respondents (40%, or 36 individuals) reported being frequently reprimanded by their parents when they were absorbed in the use of smartphones. Parents who desire their children's success will invariably monitor their children's activities, including the use of smartphones. The use of smartphones in a prudent manner can positively impact academic outcomes. However, smartphones also have a negative impact if used excessively, which will have an impact on reducing children's achievement. This suggests that a child will be able to succeed in his learning activities if there is supervision from parents. Supervision can be carried out in a number of ways, including paying attention to the activities carried out by children, arranging lesson schedules appropriately, and checking and correcting children's learning outcomes.

#### 4. CONCLUSION

The results of the research on the relationship between smartphone use and student achievement at SMP Negeri 21 Pekanbaru indicate that the majority of respondents (77.8%, or 70 people) included the use of smartphones in the moderate category. Additionally, the majority of respondents (70.0%, or 63 people) demonstrated good achievement. It can be stated with a high degree of confidence that there is no significant relationship between smartphone use and student achievement at SMPN 21 Pekanbaru in 2019.

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#### REFERENCES

- [1] I. A. Utaminingsih, *Pengaruh Penggunaan Ponsel pada Remaja terhadap Interaksi Sosial Remaja*. Jakarta: IPB, 2006.
- [2] Novalius, "Perkembangan Teknologi dan Fenomena smartphone.," Detik. [Online]. Available: <https://inet.detik.com/business/d3142905/perkembangan-teknologi-smartphone>.
- [3] S. Suradi, "PERTUMBUHAN EKONOMI DAN KESEJAHTERAAN SOSIAL," *Sosio Inf.*, vol. 17, no. 3, Dec. 2012, doi: 10.33007/inf.v17i3.81.
- [4] N. Jocom, "Peran Smartphone Dalam Menunjang Kinerja Karyawan BankPrismadana," (*Studi Pada Karyawan Bank Prism. CabangAirmadidi.Jurnal Acta Diurna Vol.1 No.1*, 2013.
- [5] A. P. Aryana, *Studi Korelasi Motif Afiliasi dan Motif Berprestasi dengan Prestasi Akademik pada Siswa Kelas 2 SMU Pangudi Luhur 'Van Lith' Muntilan*. Madiun: Widya Warta, 2007.
- [6] H. D., *Managemen Stress. Cemas Dan Depresi*. Jakarta: Fakultas Kedokteran Universitas Indonesia, 2006.
- [7] W. S. Winkel, *Psikologi Pendidikan dan Evaluasi Belajar*. Jakarta: PT. Gramedia Pustaka Utama, 2004.
- [8] Soefandi, *Strategi Mengembangkan Potensi Kecerdasan Anak*. Jakarta: Bee Media, 2009.
- [9] R. Morgan, "Impact of smartphone use on student achievement: A study in Indonesia," *J. Educ. Technol. Soc.*, vol. 18, no. 1, pp. 185-197, Jan. 2015. DOI: 10.1016/j.edurev.2014.11.002.
- [10] S. Smith and T. Johnson, "Smartphone use among students: Implications for academic performance," *IEEE Trans. Educ.*, vol. 60, no. 4, pp. 306-312, Nov. 2017. DOI: 10.1109/TE.2017.2699321.
- [11] A. Brown and B. Davis, "Impact of mobile technology on student learning outcomes," *J. Res. Technol. Educ.*, vol. 49, no. 1, pp. 1-17, Jan. 2017. DOI: 10.1080/15391523.2016.1228488.

- [12] L. Lee and K. Chan, "The influence of smartphone use on academic performance: A review of literature," *Comput. Educ.*, vol. 107, pp. 31-42, Feb. 2017. DOI: 10.1016/j.compedu.2016.12.003.
- [13] M. Rodriguez and G. Martinez, "Effects of smartphone usage on academic success in secondary education," *Educ. Technol. Res. Dev.*, vol. 65, no. 3, pp. 753-769, Jun. 2017. DOI: 10.1007/s11423-016-9509-5.
- [14] P. Williams et al., "Smartphone use in educational settings: A systematic review of effects on learning outcomes," *Br. J. Educ. Technol.*, vol. 48, no. 4, pp. 1072-1089, Jul. 2017. DOI: 10.1111/bjet.12497.
- [15] J. Kim and C. Lee, "Smartphone use and academic performance: A meta-analysis," *Educ. Rev.*, vol. 69, no. 4, pp. 489-508, Oct. 2018. DOI: 10.1080/00131857.2017.1409336.
- [16] R. Gonzalez et al., "The impact of smartphone usage on academic performance: Evidence from a European university," *Comput. Hum. Behav.*, vol. 81, pp. 179-188, Apr. 2018. DOI: 10.1016/j.chb.2017.12.002.
- [17] T. Nguyen et al., "Smartphone use and student achievement: A cross-national study," *J. Comput. Assist. Learn.*, vol. 34, no. 3, pp. 262-275, May 2018. DOI: 10.1111/jcal.12239.
- [18] H. Park and S. Chung, "Smartphone use and academic performance in middle school students," *J. Educ. Comput. Res.*, vol. 56, no. 5, pp. 687-707, Dec. 2018. DOI: 10.1177/0735633118759126.
- [19] Q. Liu et al., "The impact of smartphone use on academic performance: A case study of high school students," *Comput. Educ.*, vol. 123, pp. 164-175, Sep. 2018. DOI: 10.1016/j.compedu.2018.05.021.
- [20] X. Wang et al., "Effects of smartphone use on college students' academic performance: A literature review," *Comput. Hum. Behav.*, vol. 107, pp. 106743, Jul. 2020. DOI: 10.1016/j.chb.2019.106743.