

RELATIONSHIP OF MOBILE PHONE USAGE WITH ACADEMIC PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN LAHORE

Faran Ahamd*¹, Dr. Sadia Jamil², Dr. Noor Muhammad³

*¹PhD Scholar (Education), University of Education, division of Education, Lahore, ²Lecturer, Department of Education, GC Women University Faisalabad, ³Assistant Professor Department of Education, Ghazi University Dera Ghazi Khan

*¹farangulshi77@gmail.com, ²sadiajamil@gcwuf.edu.pk, ³nmuhammad@gudgk.edu.pk

Corresponding Author: *

Received: 8 December, 2023 Revised: 6 January, 2024 Accepted: 14 January, 2024 Published: 21 January, 2024

ABSTRACT

The students have been using mobile phones during their studies. The current study aimed to investigate the relationship of mobile phone usage with the academic performance of secondary-level students studying at private schools in Lahore. It was a quantitative study, descriptive and correlational. Data were collected from conveniently selected 300 secondary-level students studying in private schools in Lahore. An adapted 6-point Likert-type scale was used for the data collection. The instrument consisted of three sections focusing on demographic variables, mobile phone usage, and academic performance. The data were processed and analyzed using SPSS 20 software, and the Pearson correlation coefficient was computed to assess the relationship between mobile phone usage and academic performance. The findings revealed a significant negative correlation between mobile phone usage and academic performance, indicating that mobile phone use may negatively impact students' academic performance. Further research is needed to explore strategies for improving students' academic performance in the context of mobile phone usage.

Keywords: Mobile phone usage, academic performance, secondary level students, private schools

INTRODUCTION

The rapid advancements in information technology, particularly in mobile phones, have significantly impacted how individuals connect with the global community and share knowledge. The widespread use of mobile phones, especially Android devices, has played a pivotal role in storing and rapidly disseminating information. Mobile phones, particularly Android phones, have become increasingly popular among students at all levels of education, from schools to universities, and have gained particular significance due to their integration with internet connectivity (Zhao et al., 2018). While this technology holds great potential for constructive use, there is a growing concern that it is being misused, particularly by higher school students who are increasingly drawn to using mobile phones for entertainment and non-academic communication, potentially distracting them from their studies during

this critical phase of academic and professional development.

Mostly, students in Pakistan use mobile phones and devices equipped with the internet for entertainment. In doing so, they tend to indulge in other gaudy activities, losing their focus on their studies (Amin & Rashed, 2014). Despite rapid developments in the field of information technology, people in Pakistan are still lagging behind vis-a-vis developed countries. There is a gap in this industry, and to narrow down this gap, the Government of Pakistan has also introduced the Ministry of Information Technology and emphasized the provision of internet connectivity to a broader range of the population. This is an era of globalization in which people can stay connected both within the country and globally. Mobile phone use has become much cheaper for

students than a computer with the introduction of different calling and internet packages.

A national survey was conducted in 2010. According to that, mobile phones are an unavoidable way of communication among youngsters in Pakistan (Batool & Mahmood, 2010). Research about mobile phones' impact on our schools initially attracted limited attention. The priorities of youngsters, parents, and teachers regarding mobile phone devices are on the contrary; teachers are concerned about how to maintain discipline in the classroom, and parents are concerned about how to stay connected with their children at all times.

Researchers found mobile phone usage in schools problematic (Ling & Helmersen, 2000). It asserts that using mobile phones has become a distraction for students in school. School students find it challenging to concentrate on their studies and prescribed roles. This is how mobile phones provide space to link pupils that distract student's academic work (Rabiu, 2016).

Apart from this, a wave of uncertainty is present in Pakistan's social setup. This is why parents prefer to give mobile phones to their kids to communicate and stay in touch with them. With advancements in information technology and especially mobile connectivity with the internet, Students' habits of using mobile phones have also drastically changed; instead, they seem to have taken it as a tool for entertainment and unusual experiences. They remain busy till late at night and thus feel overstressed, finding it difficult to focus on their studies. They are more prone to distraction from their right path.

Modern technology-based advances and innovations in the IT sector have multi-dimensional functions such as voice calls, messaging, data usage games, and other social media services (Jackson et al., 2008). Technology has developed tremendously vital in the lives of young people in the last ten years. Young people are big users of the latest forms of electronic communication, not only instant messaging but also e-mail, surfing, downloading games, text messages, and communication-oriented websites such as social networks, blogs, and photo-sharing sites. The purpose of this paper is to determine whether using mobile phones affects the academic performance of secondary class students or not. Academic performance-related studies have been conducted in the Pakistani context in different aspects. The effects

of teachers' work-family conflict were explored by Sajid, Jamil, & Abbas (2022). Similarly, the role of parental involvement was explored by Shah, Shah, & Muhammad (2021) in their children's academic achievement studying in public and private elementary schools. Another study was conducted by Arshad, Muhammad, & Qureshi (2021) about the influence of parent-teacher meetings on early childhood students' academic performance.

Although technology plays a vital role in knowledge sharing at the university level, there is still a gap for research at the secondary level to determine how mobile phone use has influenced students' academic performance.

LITERATURE REVIEW

The study investigating students' cell phone use and educational outcomes is limited in the literature. Different approaches have been used to explore the relationship between cell phone usage and students' academic achievement at different levels, from primary to post-graduation levels. Results change significantly from one study to another. Results of preceding studies reflect a relationship between mobile phone usage and students' academic performance.

Initially, Sánchez-Martínez and Otero (2009) found a relationship between mobile phone use and school failure among Spanish high school students. In this study, school records measured school failure, wherein failing four or more courses during the previous academic year was considered a failure. Moreover, the same year, Yen et al. (2009) identified the relationship between mobile phone usage and students' performance during the previous year using data from a sample of Taiwanese adolescents. Jacobsen and Forste (2011) found that the use of cell phones and academic results among previous-year university students in the United States) are inversely proportional. The results reflected that mobile phone habit risk was associated with perceived stress. At the same time, the perceived stress had a negative relationship with satisfaction with life. Additionally, a mobile phone addiction risk was negatively related to academic performance, and the academic performance showed a positive relationship with life satisfaction (Jacobsen & Forste, 2011). Furthermore, the students of a Taiwanese university expressed during a research study conducted by Hong, Chiu,

and Huang (2012) academic difficulty faced by students has an association with the mobile phone usage inclusive of calling and texting on a daily basis.

Over time, more studies have projected an adverse liaison between mobile phone usage tendency and related educational activities of students (Judd, 2014; Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013; Rosen, Carrier, & Cheever, 2013). An innovative link was explicitly investigated with an emphasis on mobile phone multitasking and a downward spiral in academic results (Rosen et al., 2013). Karpinski et al. (2013) put forth findings from a study conducted on a sample of 451 college – students from the United States that a negative link exists between the use of social networking sites and studies performance of the students (GPA) and multitasking moderated this relationship. Similarly, two studies were carried out involving US university students, which found a negative correlation between the usage of high-tech mobile phones with emphasis on Facebook and other messaging during study time or attending class in school and the performance of the college students in terms of their GPAs (Junco & Cotten, 2012; Wood et al., 2012).

Several research studies have pointed out that multitasking is a primary cause for the inversely proportional relation identified between smartphone use and academic results (Jacobsen & Forste, 2011; Junco & Cotten, 2011, 2012; Rabiou, 2016; Rosen et al., 2013; Wood et al., 2012). During a survey conducted by Sánchez-Martínez and Otero (2009), 50% of the students reported bringing their mobile phone and keeping it switched during school, even if mobile phones are strictly prohibited. Similarly, Junco and Cotton conducted two studies to investigate the association of academic performance with multitasking. They reported that over two-thirds of university students used mobile phones or other electronic media while studying in classrooms or doing homework at home. They further found that using a mobile phone for messages and Facebook during study or doing homework was a typical behavior among the students while examining the opinions of college students in large numbers.

Moreover, the findings showed that this behavior did influence their studies in school (Junco & Cotten, 2011), so it was negatively correlated to academic performance in terms of cumulative GPA in college

(Junco, 2012). A detailed study was carried out by Wood et al. (2012) to gauge the academic performance being correlated with multitasking by using a range of digital technologies, including e-mail, texting, MSN messaging, and Facebook. After being randomly assigned different conditions and learning activities, participants were assessed with a multiple-choice test during their classroom learning activities. Results indicated that multi-tasking with mobile phone use affects learning negatively. Recently, Rosen (2017) found that the maximum time the participants can typically focus on studying while accessing media like Facebook and messaging is less than six minutes. The participants of their study were students of the middle and high school and the university level. Very recently, Samaha and Hawi (2016) found in a study that there is a negative association between texting on mobile phones and students' academic performance (GPA). In contrast, anxiety was positively related to mobile phone use. Interestingly, life satisfaction was positively associated with GPA and was negatively related to anxiety. The participants of this study were undergraduate college students from public universities in the US (Samaha & Hawi, 2016). These findings show that students' inclination towards cell phone use may hurt their educational achievement, mental caliber, and subjective well-being or happiness.

All these studies, which have been conducted in the Western context, reported that academic performance was inversely proportional to the usage of mobile phones. Few studies have been conducted in the Pakistani environment on the use of cell phones and academic performance. Still, no study that analyzed the effect of mobile phone usage relative to the performance outcomes of students in high schools could be traced. (Ali et al., 2014) conducted a study to explore further cell phone use patterns among teens in South Punjab. It was also inferred that students mostly use mobile phones not for educational activities while surveying the impacts of Cell Phone use habits among Students of Punjab University Lahore and University of Sargodha, Sargodha (Amin & Rashed, 2014).

Further, it found that students have difficulty focusing on their studies because of mobile phone usage. It was also pointed out in the findings that there is a lack of parental control over their children

by the parents. Haq & Dar (2014) investigated the impact of increased cellphone usage in Pakistani youth. They found an association between the usage of late-night cellular phone call packages and ill effects on student's academic performance. They also found that a cause of traffic accidents is using mobile phones while driving and violating traffic rules. Stress was also found to be one of the strong antecedents of academic performance among medical students (Sohail, 2013). Students found most internet users to have a high addiction to using the internet for chat, email, and entertainment in a survey conducted in 2010 among internet cafe users in Lahore, Pakistan (Batool & Mahmood, 2010).

The review of the existing literature reveals the lack of empirical instances regarding the association of smartphones (mobile phones) and educational performance in the context of Pakistan's secondary school-level students. It is optimistic to suppose that the results from this study would lengthen the existing literature backed by more detailed information regarding the impact on student's academic performance due to mobile phone use. It would be helpful to devise strategies to improve performance to cope with the challenges Pakistani students, teachers, and secondary-level students worldwide may face.

The main aim of this paper is to elaborate on the relationship between mobile phone use and the academic performance of secondary-level students studying at private schools in Lahore. The focus of mobile phone use is beyond calling. It includes all smartphone functions, such as texting, social media use (Facebook, WhatsApp, Twitter, etc.), audio/video recording, camera use, etc.

Objective of the Study

To find out the relationship between the use of mobile phones and the academic performance of secondary-level students.

Research Question of the Study

What is the relationship between the use of mobile phones and the academic performance of secondary-level students studying at private schools in Lahore?

Research Methodology

It was a quantitative descriptive study with a correlational research design. The data were

collected based on convenient sampling to find out the relationship between mobile phone usage and the academic performance of secondary-level students studying at private schools in Lahore. The study examined the relationship between mobile phone usage and academic performance. The data were collected through an adapted questionnaire from the 10th-class students of private secondary-level schools in Lahore. The study sample comprised 330 respondents, of which 227 students were finalized for data analysis. The survey had three separate portions, one of which was for demographic variables, and the rest were separate research instruments for mobile phone use and academic performance. The demographic data contained gender, age, academic major, and school name. The second section encompassed the mobile phone use instrument. Ten items of this instrument were adapted from a short version of the Smartphone Addiction Scale. The short version of the mobile phone use scale is also called the Smartphone Addiction Scale – Short Version (SAS-SV). It was developed by Kwon, Kim, *et al.* (2013). Initially, it comprised 33 items, which was further reduced to 10. It reported strong internal consistency because of the 0.91 coefficient of Cronbach's alpha.

However, based on the contextual requirement, some minor changes were made to make this questionnaire easy to understand for secondary-level students. Five items were added after consultation with experienced academicians and linguistic experts. In the third section, academic performance was measured using two two-item self-reported scales adopted from previous research (Jackson, Von Eye, Witt, Zhao, & Fitzgerald, 2011; Junco & Cotten, 2012; Lepp, Barkley, & Karpinski, 2014). Respondents were asked, "What grades do you usually get in school tests?" 1 = Mostly Ds, 2 = Mostly Cs, 3 = Mostly Bs, 4 = Mostly B+s, 5 = Mostly As and 6 = Mostly A+. This measure was scored so that higher values indicate better grades in school. Next, they were asked to indicate their grades in the class board examination. The rationale for including both measures was to ensure consistency and capture students' recent academic performance. The time needed to complete the survey was approximately 10 minutes.

SPSS 20 was used to process and analyze collected data. Descriptive statistics were taken up to report the

demographics, frequencies, missing values, and the assumptions of normality. Pearson correlation coefficient was computed. The analysis considered the correlation between variables, i.e., mobile phone usage and academic performance.

Demographics of the study

Data related to demographics are given in Table-1 regarding actual frequency and percentages.

Table-1
Frequency of Demographics of the Respondents

	Category	Frequency	Percent
Age	14 years	68	30
	15 years	74	32.6
	16 years	67	29.5
	17 years	10	4.4
	18 years	8	3.5
	Total	227	100
Gender	Male	192	84.6
	Female	35	15.4
	Total	227	100
Academic Major	Science	148	65.2
	Arts	79	34.8
	Total	227	100

The above table presents the frequency of demographics of the respondents. It includes the categories of Age, Gender, and Academic Major, along with the corresponding frequencies and percentages. Accordingly, most respondents are 14, 15, and 16 years old, comprising 30%, 32.6%, and 29.5% of the total respondents. There are fewer respondents in the 17 and 18 age groups, accounting for 4.4% and 3.5% of the total, respectively. The respondents are predominantly male, 84.6% of the total, while females account for 15.4%. Moreover, a higher proportion of the respondents are from the Science major, constituting 65.2% of the total, compared to the Arts major, which represents 34.8%.

Findings of the Study

Table 2
Relationship of mobile phone usage with students' academic performance

	Academic Performance	Mobile Phone Usage
Pearson Correlation	1.000	-.765
	Mobile Phone Usage	-.765
N	227	227

The above table presents the output of a regression model, specifically the Pearson correlation and corresponding p-values for the relationship between academic performance and mobile phone usage. The Pearson correlation coefficient measures the strength and direction of a linear relationship between two variables. In this case, the correlation coefficient for academic performance and mobile phone usage is -0.765, indicating a moderate negative relationship. Academic performance tends to decrease as mobile phone usage increases, and vice versa.

Table-3:
Model Summary

Model	R	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square	F Change	Sig. F Change		
1	-.765 ^a	.585	.79072	.585	317.051	1	225	.000

a. Predictors: (Constant), Mobile Phone Usage

The above table presents a model summary for a regression analysis. This is the correlation coefficient between the dependent variable and the independent variable. In this case, the R-value is -0.765, indicating a relatively strong negative correlation between mobile phone usage and academic performance. The R Square value is 0.585, suggesting that mobile phone usage explains about 58.5% of the variance in academic performance. The Adjusted R Square value is 0.583, slightly lower than the R Square value. This indicates that mobile phone usage strongly affects academic performance, but some multicollinearity or other issues need to be addressed. Std. The error of the Estimate is the standard deviation of the residual or the difference between the actual and predicted values. A smaller Std. The error indicates a more accurate fit of the model. In this case, the Std. The error is 0.79072, suggesting a relatively accurate fit. The above table indicates that phone usage has negative effects.

DISCUSSION

This study aimed to investigate the impact of mobile phone usage on the academic performance of students in secondary schools in Lahore. The findings, as well as results, unleashed that the increasing tendency in cell phone usage substantially impacts This finding is associated with the primary outcomes of Rabiou (2016) and Samaha & Hawi (2016), who also investigated the relationship

between mobile phone usage and students' academic performance in different environments. Their outcome shows a significantly negative correlation between mobile phone usage, time, and frequency with students' grade point average. The results of their study also unveiled the fact that the differences in age, gender, and parental occupation were not significant factors regarding the tilt towards using a mobile phone and its effects on educational achievements amongst senior students at secondary school.

Correlation analysis demonstrated that excessive use of cellular phones had a conspicuous negative correlation with educational performance ($r = -0.765$ $p = 0.00$). This suggests that students today consider their interactions on mobile phones more important than academic activities. Nowadays, most students devote an extraordinary amount of time to social media and activities other than those related to academics and studies. School management, teachers, and parents can support students differently if they know their most urgent needs and how to meet them. The conclusive result of our research is that a negative relationship exists between educational performance and the use of technology (Kibona & Mgaya, 2015). Similar results were also inferred in a study wherein texting and using Facebook during school work negatively affected the student's academic performance and overall CGPA (Junco and Cotton, 2012). Another study with similar findings was conducted on students below the age of 25 years in the United States. The results showed that the students who used Facebook and texted mobile messages during study hours could not score as high of a GPA as those who did not use Facebook and mobile phones during study hours (Rosen et al., 2013). Few recent studies, mostly considered in the US context, have found out that the students who used more mobile phones, social media and internet give less time to study, and therefore they get poor results (Karpinski *et al.*, 2013; Wentworth Middleton 2014). Nonetheless, results showed that the risk of mobile phone indulgence could be associated with academic performance.

On the individual level, students at the secondary level with a higher academic performance usually use mobile phones and internet-related facilities less. Therefore, at the unit level, providing the students with the opportunity not to interact with mobile

phones at schools and homes may help build better academic performance and increase overall academic results. The combination of school management and parental support may further increase the sense of fulfillment in students and lead to a high level of academic performance. Rabi (2016) held the opinion that mobile phone usage negatively impacts students' educational grades based on the findings that the students who use a mobile phone for 7 to 10 hours a day and those who use it during classes scored low GPAs. The students' poor grades because of the use of mobile phones depend on how many hours they spend using mobile phones and how many classes they use a mobile phone in. The outcomes of this research align with the findings of prior studies conducted in different settings from college to university-level students, mostly in US and European contexts. However, being conducted in Pakistan's context, this is the first study that showed the negative influence of mobile phone usage by students of secondary-level students on their academic performance in private schools in Lahore.

Conclusion and Recommendations:

This study concluded that cell phone use mainly affects educational achievement among secondary-level students studying at private schools in Lahore. Based on this finding, it is suggested that the adverse effects of mobile phone use on the educational achievements of secondary-level school students should be well communicated to the students and their parents through school administrators, teachers, and school psychologists. An awareness campaign should be launched through useful Seminars, Conferences, and Workshops regarding the impacts of cell phones and excessive use on educational achievements among private secondary school students of Lahore. Mobile phone manufacturing companies should also come forward to design and manufacture student-specific mobile phones by incorporating parental control and timelimit use of social media. It is also needed that the student be intimated and advised by the parents, family members, school advisors, and teachers on the destructive effects of the time spent on their studies in the futile exercise of excessive cell phone usage.

REFERENCES

- Ali, S., Rizvi, S. A. A., & Qureshi, M. S. (2014). Cell phone mania and Pakistani youth: Exploring the cell phone usage patterns among teenagers of South Punjab. *FWU Journal of Social Sciences*, 8(2), 42-50.
- Amin, S., & Rashed, A. (2014). Effect of using habits of cell phone on the study of the students : A case study on parents and teachers of Sargodha city. *Asian Journal of Empirical Research Journal*, 4(3), 254-262.
- Arshad, M., Muhammad, Y., & Qureshi, N. (2021). The influence of parent-teacher meetings on early childhood students' academic performance: Prospective teachers' perceptions. *Global Social Sciences Review*, 6(2), 180-190.
- Batool, S. H., & Mahmood, K. (2010). Entertainment, communication, or academic use? A survey of Internet cafe users in Lahore, Pakistan. *Information Development*, 26(2), 141-147.
- Haq, M., & Dar, I. (2014). Impact of Increased Cellphone Usage in Youth. *Euacademic.Org*, 2(4), 5026–5037.
- Hong, F. Y., Chiu, S. I., & Huang, D. H. (2012). A model of the relationship between psychological characteristics, mobile phone addiction, and use of mobile phones by Taiwanese university female students. *Computers in Human Behavior*, 28(6), 2152-2159.
- Jackson, L. A., Von Eye, A., Witt, E. A., Zhao, Y., & Fitzgerald, H. E. (2011). A longitudinal study of the effects of Internet use and videogame playing on academic performance and the roles of gender, race and income in these relationships. *Computers in Human Behavior*, 27(1), 228-239.
- Jackson, L. A., Zhao, Y., Kolenic, A., Fitzgerald, H. E., Harold, R., & Von Eye, A. (2008). Race, Gender, and Information Technology Use: The New Digital Divide. *CyberPsychology & Behavior*, 11(4), 437-442.
- Jacobsen, W. C., & Forste, R. (2011). The Wired Generation: Academic and Social Outcomes of Electronic Media Use Among University Students. *Cyberpsychology, Behavior, and Social Networking*, 14(5), 275-280.
- Judd, T. (2014). Making sense of multitasking: The role of Facebook. *Computers and Education*, 70, 194–202.
- Junco, R. (2012). Too much face and insufficient books: The relationship between multiple indices of Facebook use and academic performance. *Computers in Human Behavior*, 28(1), 187-198.
- Junco, R., & Cotten, S. R. (2011). Perceived academic effects of instant messaging use. *Computers and Education*, 56(2), 370-378.
- Junco, R., & Cotten, S. R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers and Education*, 59(2), 505-514.
- Karpinski, A. C., Kirschner, P. A., Ozer, I., Mellott, J. A., & Ochwo, P. (2013). An exploration of social networking site use, multitasking, and academic performance among United States and European university students. *Computers in Human Behavior*, 29(3), 1182-1192.
- Kibona, L., & Mgaya, G. (2015). Smartphones' Effects on Academic Performance of Higher Learning Students. *Journal of Multidisciplinary Engineering Science and Technology*, 2(4), 777-784.
- Kwon, M., Kim, D.-J., Cho, H., & Yang, S. (2013). The Smartphone Addiction Scale: Development and Validation of a Short Version for Adolescents. *PLoS ONE*, 8(12), e83558.
- Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and Satisfaction with Life in college students. *Computers in Human Behavior*, 31(1), 343-350.
- Ling, R., & Helmersen, P. (2000). It must be necessary, it has to cover a need": The adoption of mobile telephony among pre-adolescents and adolescents. In *the Social Consequences of Mobile Telephony* (pp. 1-22).
- Rabiu, H. (2016). Impact of mobile phone usage on academic performance among secondary school students in Taraba state, Nigeria. *European Scientific Journal*, 12(1), 466-479.

- Rosen, L. D., Carrier, L. M., & Cheever, N. A. (2013). Facebook and texting made me do it: media-induced task switching while studying. *Computers in Human Behavior*, 29(3), 948-958.
- Rosen, L. D. (2017). The distracted student mind—enhancing its focus and attention. *Phi Delta Kappan*, 99(2), 8-14.
- Sajid, S.M., Jamil, M., & Abbas, M. (2022). Impact of teachers' work-family conflict on the performance of their children. *Jahan-e-Tehqeeq*, 5(1) 229-239.
- Samaha, M., & Hawi, N. S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Computers in Human Behavior*, 57, 321–325.
- Sánchez-Martínez, M., & Otero, A. (2009). Factors associated with cell phone use in adolescents in the community of Madrid (Spain). *Cyber Psychology & Behavior*, 12(2), 131-137.
- Shah, A. H., Shah, S. S. A., & Muhammad, Y. (2021). Role of parental involvement in their children academic achievement: A comparative qualitative study of public and private elementary schools. *Turkish Online Journal of Qualitative Inquiry*, 12(8), 5655-5667.
- Sohail, N. (2013). Stress and academic performance among medical students. *Journal of the College of Physicians and Surgeons--Pakistan : JCPSP*, 23(1), 67-71.
- Wentworth, D. K., & Middleton, J. H. (2014). Technology use and academic performance. *Computers and Education*, 78, 306-311.
- Wood, E., Zivcakova, L., Gentile, P., Archer, K., De Pasquale, D., & Nosko, A. (2012). Examining the impact of off-task multi-tasking with technology on real-time classroom learning. *Computers and Education*, 58(1), 365-374.
- Yen, C. F., Tang, T. C., Yen, J. Y., Lin, H. C., Huang, C. F., Liu, S. C., & Ko, C. H. (2009). Symptoms of problematic cellular phone use, functional impairment and its association with depression among adolescents in Southern Taiwan. *Journal of Adolescence*, 32(4), 863-873.
- Zhao, J., Yuping, W., Maideen, I., Moe, Z. K., & Nasirudeen, A. (2018). The Relationship between Smartphone Use and Academic Performance in a Sample of Tertiary Students in Singapore: A Cross-Sectional Study. *Journal of Educational Technology*, 14(4), 28-35.