ISSN (Print): 2959-4391 ISSN (Online): 2959-4405

JOURNAL OF SOCIAL SCIENCES DEVELOPMENT

www.jssd.org.pk editor@jssd.org.pk

THE USE OF SMARTPHONES IN SHAPING OF STUDENTS' ACADEMIC PERFORMANCE AT SECONDARY SCHOOL LEVEL

Nazir Ahmad[1], Rozina Sewani[2] & Zahid Ali[3]

[1]Associate Professor, Department of Education, Fatimiyah Higher Education System, Karachi
[2]Associate Professor, Department of Education & Social Science, IQRA University, Karachi
[3]Professor of Education, American International Theism University Florida, USA

KEYWORDS

Smartphone Usage, Supportive for Students, Destructing of Daily Life, Students' Academic Performance

ARTICLE HISTORY

Date of Submission: 02-05-2024
Date of Acceptance: 06-06-2024
Date of Publication: 07-06-2024

ABSTRACT

Students use smartphones through access of different electronic media from anywhere at any time. Most of mobile phones can now efficiently cultivate popular activities such as playing computer games, accessing the Internet, supporting students' performance, destroying students' health & enhancing their academic performance. This study examines the teacher's perception of the role of smartphones in shaping students' academic performance at the secondary level. For this drive, data was collected by using a self-developed survey questionnaire. So, 160 secondary school teachers, including 70 male and 90 female teachers, were selected using simple random sampling. Data about frequencies, percentages, means, and SD were analyzed. The results show that teachers confirmed that smartphones support students in gaining new skills, like critical thinking and problem-solving skills. The studies also illustrate that smartphones are destroying students' health and increasing depression. Study advised that teachers and parents may check and balance the usage of mobile by students for their well-being. Teachers and parents motivate them to use smartphones positively, enhancing their learning and education quality.

Corresponding Author Nazir Ahmad

Email: nazirahmed@fhes.fen.edu.pk

DOI https://doi.org/10.53664/JSSD/03-02-2024-11-128-141

INTRODUCTION

The smartphones, in contrast to traditional cellphones, are capable of processing and storing larger amounts of data. They offer a wide range of capabilities like gaming, internet browsing, and social networking, to their prime function of communication. Due to advancements in mobile technology in contemporary and technical period, along with widespread adoption of smartphones in today's society, accessing internet is getting progressively easier (Haleem, Javaid, Qadri & Suman, 2022).

Keeping pace with contemporary innovation and analyzing its impact on our lives is challenging due to its quick rate of change and integration into our society (Iqbal & Bhatti, 2020). A decade ago, Facebook, YouTube, & Twitter were non-existent, but they have now emerged as widely used media and communication platforms in our culture. There are many apps designed to help students with diverse subjects, providing tutorials, quizzes, and interactive lessons (Agrawal & Parvez, 2018). In this linking, they are oblivious to the existence of another world. The subject of cultivating a habit of innovation has been addressed significantly, notably in educational institutions, specifically in universities. The problem of web enslavement was a big issue a few years ago. However, compulsion to use Personal Digital Assistants (PDAs) has become an increasingly major concern in recent times (Zohuri, 2023).

Many scientists have suggested many types of research studies, including the development of new scales to assess habits and the examination of ecological and individual elements that contribute to addiction. The aim is to prevent compulsive behavior and offer innovative educational strategies for university students. The students can participate in group chats and forums to discuss homework and projects, facilitating collaborative learning (Buck, McInnis & Randolph, 2013). Moreover, it is crucial to investigate impact of Smartphones upon academic performance of college and university students, as no research has been conducted to determine reasons behind declining performance of university students (Ahmed, Salman, Malik, Streimikiene, Soomro & Pahi, 2020; Kibona, & Mgaya, 2015). The dissemination of information over smartphones and convenient access to them during instructional periods might have detrimental effects on health, such as mental distraction, impaired vision, and discomfort in the wrist or neck (Kwon, Lee, Won, Park, Min, Hahn & Kim, 2013). The correlation amid use of cellphones and students' academic achievement is directly linked. Besides, it encompasses the educational presentations given by course instructors, collaborative discussions among students, and places significant emphasis on students' learning and academic achievements (Kuss & Griffiths, 2011).

The prevalence of anxiety and depression is significantly higher amid smartphone users compared to users of regular phones (Hwang, Yoo & Cho, 2012) prior studies have mostly concentrated upon investigating the correlation between the usage of electronic media and sleep patterns in children and adolescents (Wong, Mo, Potenza, Chan, Lau, Chui & Lin, 2020). A correlation has been found between engaging in the dangerous Internet behavior and experiencing sleep problems, including decreased academic performance, sleep disorders, and reduced sleep quality. Song, Jeong, Sung, Jung, Choi, Jang and Lee (2010) proposed a correlation between Internet addiction in the young individuals and the presence of depression and sleep disturbances. The smartphones enable access to online courses and tutorials, allowing students to learn at their own pace as apps are particularly useful for students learning new languages. Still, there has been a lack of studies on the correlation between smartphones and other electronic devices. But there has been no research conducted to investigate the correlation between cellphones and the academic performance, melancholy, and discomfort of university students, and occurrence of smartphone abuse or compulsion. The purpose of this study was to investigate the role of smart phones in students learning at the secondary level in Karachi, Pakistan.

Research Objectives

- To examine the perceptions of teachers about role of Smartphones in shaping the academic performance of Secondary School Students in Karachi, Pakistan.
- To evaluate the role of Smartphones in shaping academic performance from teachers' views in terms of their demographics at public schools in Karachi, Pakistan.

Research Questions

- What are the perceptions of teachers about the role of Smartphones in shaping the academic performance of Secondary School Students in Karachi, Pakistan?
- What is role of smartphones in shaping academic performance from teachers' perspectives in terms of their demographics at public schools in Karachi, Pakistan?

LITERATURE REVIEW

It is important to recognize importance of smartphones and other portable technology in education (Bernacki et al., 2020; Tikoria & Agariya, 2017). The proliferation of smartphones and other media has led to a creative extension and development of 21st-century vital skills, like critical thinking which has been focused by different recent studies in the Pakistani context (Jamil, Bibi, et al., 2024; Jamil, Mehmood, et al., 2024; Jamil, 2024), knowledge in the academic learning, motivation, and leadership skills (Emerson & Berge, 2018; Ahmad, Bibi, & Imran, 2023). Certain gadgets, like the tablets and smartphones, allow students to interact personally and materially with cutting-edge surroundings while facing lot of problems (Haider, Ahmad & Ali, 2024; Ali, Shah & Ahmad, 2023; Cano, 2014). Students are becoming gradually preoccupied with student-focused support learning due to using of cell phones (Mokoena, 2012). Using cell phones to assist students with assignments and extra work their teachers assign is efficient and beneficial. This demonstrates that understudies are prepared to record their speakers' actions and instructions continually. This is accomplished by gathering the data while exercising, which is made possible by sophisticated highlights available on the smartphones.

From different perspectives, people try to understand how to use smartphones because they are no longer only used for specialized purposes (calls and instant messages) but also as tools for people's social and professional lives and possibly as tools for their academic endeavors. Buck, Melnnis, and Randolph (2013), undergraduates, who used Study Blue Flash Cards, reported that it made it easier to recall essential phrases when studying for tests. The survey found that some students use their iPhones to use Ever Note Peek apps, which function as a cloud-based note-taking system, allowing them to organize their notes and turn them into useful research materials (Imran, et al, 2023). With development of cell phones, work those students do inside and outside the classroom is increasingly similar. This viewpoint plays a critical role in issue raised by investigation into using cellphones off school property. Understudies often use their smartphones for a range of activities while attending college. Understudies work out for a significant amount of their 4.5 hours of exercise. Also, because of their adept usage of the smartphones, understudies are engaged in conversations and other group activities, which greatly illustrates how smartphones promote debate and sharing of information (Buck et al., 2013).

At the same time that they are eager to learn about new ways of learning, the students are also interested in having their attention captivated. And they might be allowed to exert control over their educational experience, in addition to having access to conventional learning resources and opportunities (Day & Erturk, 2017). This would be in addition to fact that they would have access to such possibilities. The adaptability of the smartphone, which enables it to be used both inside and outside of classroom, is one of the most alluring aspects of the device. Another appealing aspect of smartphone is its tiny size, which can be described as compact. When compared to the conventional approach to learning and instructing, which entails the administration of books and chalk/marker sheets within confines of educational institutions; this offers several advantages. Since beginning of the twenty-first century, there has been a rise in number of people who are utilizing mobile devices that can connect to the internet (Ezemenaka, 2013). There is a significant number of people who are unaware of this particular fact. In addition, adolescents give a great deal of thought to the opinions of their friends about the technological equipment that they use, and to the web-enabled phones that they own.

As the psychological impacts of the usage of smartphones are ever-present in the lives of the clients, there likewise exist distinct effects brought about by the nonstop utilization of cellphones, and this has been defined to be a 'compulsion'. Since that time, a few analysts have issued caution that users of mobile phone companies run risk of becoming dependent on their mobile devices, particularly their handsets. A few issues have been made concerning the use of smartphones; in addition, there are consequences, such as the sleeping disorder, anxiousness, wretchedness, and other symptoms (Ezemenaka, 2013). These are just some of concerns that have been highlighted. It has been brought to people's attention that these concerns are associated with the use of cellphones. In the situations where students are unable to access their mobile devices, every one of these impacts frequently becomes apparent. It was established by Ebiye (2015) that smartphones have rather easy features. In addition to the ability to send and receive electronic messages, these features also include the capacity to engage in portable video chatting, a variety of sound and visual calls, and further capabilities. Therefore, utilization of the Internet is currently a prevalent practice among students (Omopupa et al., 2019).

In addition, they assert that students can conduct information searches whenever and wherever they choose to do so by using computers and internet. If all other aspects stay the same, it has been demonstrated that the rapid proliferation of smartphones has potential to facilitate construction of educational and learning forms among the students through the usage of online associations. The development of portable technology and smartphones has simplified the process of accessing data, conducting business with it, and adapting it to new circumstances (Jung, 2014). While it is true that some students can finish assignments using their cell phones in the classroom or at the university, it is true that smartphone has become potential cause of disturbance for other students. Some students can only "switch" their attention between using their smartphone as learning stage & concurrently using it as a device for entertainment. Also, smartphones are significant since they offer youngsters, or in this example, students from various financial situations, the ability to access learning resources in manner comparable to that of traditional computers & professional growth (Agrawal, & Parvez, 2018; Ali, et al., 2023). Still, when using cell phones as a form of education, students are required to

join data while maintaining their concentration on their workout or conversations that are taking place in the class.

It is suggested that students with low educational aptitudes and unyielding want to accomplish a variety of the activities through web-based networking media consider this alternative (Ali, et al., 2023). The deliberate use of cell phones in classroom might be mainly challenging to incorporate into the movement of the classroom. From that point on, the primary desired location of the gadget will, in most cases, be thrown away. In recent years, there has been a rather rapid increase in the use of the smartphones, and these devices are currently being abused (Baron, & af Segerstad, 2010). The smartphones catalyze smaller-scale learning, which enables both employed and unemployed individuals to advance their knowledge and skills. Children's use of cell phones not only inspires formation of friendship groups but also leads to formation and dissolution of familial relationships. Since these groups of friends, which are frequently formed/established on social and recreational websites, give rise to sentimental attachments, this likely result in change in customers' relationship with their families (Emerson & Berge, 2018). Nevertheless, in the smartphones' rapidly developing technological world, kinships and social affiliations or associations are being formed through face-to-face interactions.

Not only are these interactions taking place, but they are taking place in informal communities, which have become the preferred platform for forming the personal relationships (Ali, et al., 2023). Fellowships that are established through the interpersonal organizations will, in general, be more focused on leisure activities and will have less of an emphasis on educational goals. Considering the previous line, it is an obvious indication that the kids are giving less consideration to the academic work and exercises they are assigned. Some educational institutions have decided to restrict use of cell phones in classrooms or during presentations. The rationale behind this decision is that students can cheat on their examinations and tests of their knowledge (Buck, Melnnis, & Randolph, 2013). Students can easily seek their exam or test addresses on Internet thanks to the ease with which they can access the Internet on their smartphones. As students can easily find answers to their tests or test addresses online, Internet smartphones make students feel less motivated to study. This is because students can easily find the answers to their tests online. This makes it easier for students to complete their tests, but they need help understanding what their teachers teach them (Khoso et al., 2023; Dilshad et al., 2023).

Thus, with this in mind, it is possible to assert that the appropriation of cell phones is driven by two characteristics: acceptable measures and debauched measurements. In most cases, it is not merely an innovation centered on a project to generate profits but innovation centered on entertainment and designed to provide pleasure. According to Chun, Lee, and Kim (2012), individuals generally become highly motivated and emotionally stimulated when using a smartphone for entertainment purposes, and they are likely to be reasonably persuaded to explore cost-saving benefits based on its performance when using smartphones for work. In this inquiry, impact of cell phones on students' academic performance is closely connected to the difficulties that will be discussed in a subsequent stage of examination (Naeem, Ali & Ahmed, 2022; Aslam, Iqbal & Ahmed, 2022). Modern personal digital assistants allow users to access various electronic media at virtually any time and from any

location. Majority of mobile phones can effectively cultivate activities such as accessing Internet, Internet computer games, and monitoring social networking sites (Thomas, Khan, & Ahmad, 2022). Each of these activities, which do not require personal digital assistant, are connected by specialists to academic performance.

For instance, research has shown that playing many computer games is associated with worse grade point averages (Jackson, et al., 2011; Shah, Ali & Ahmad, 2024). Internet usage was associated with the increased academic achievement (Cahyo, Al Fariz, & Lestari, 2020; Ahmad, et al., 2023). Data searching was shown to be connected with the greater level of academic achievement among large Internet users while playing computer games was found to be linked with poorer levels of academic performance. Chen and Tzeng (2010) made this discovery. Several current studies have uncovered the detrimental relationship bet. Several ongoing researchers have found that there is a negative correlation between the usage of long-distance interpersonal communication sites and academic achievement (Rosen, Carrier, & Cheever, 2013; Stollak, Vandenberg, Burklund, & Weiss, 2011). A significant inverse relationship between time spent on Facebook and the total grade point average. Many people from different parts of the world, including those from North America, Europe, and Asia, have been found to have negative relationships (Chen & Tzeng, 2010; Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013). A search was conducted into using messaging, MSN informing, and Facebook on a computer.

Additionally, phone messaging was also analyzed. The data showed that lower scores on lineup tests were associated with children who participated in many activities. This was in contrast to kids who did not participate in many activities with any of the improvements. The second method that Junco and Cotton (2012) utilized was leveled regression approach, that allowed them to determine the intensity of performance. Based on findings, it was found that Facebook-performing numerous tasks & messaging-performing varied tasks were essentially and contrary to one another identified with school GPA after sex control, a true secondary school GPA, the amount of time spent preparing for the class, and a student's Internet skills. In conclusion, Rosen et al. (2013) observed the research procedures on the middle school, secondary school, and college students. Their on-task and off-task behavior was documented during the fifteen minutes spent observing the members. Participants were regularly distracted by other forms of media, such as Facebook and messaging, after less than six minutes of learning. Thus, in the Pakistani context, academic achievement has been explored in the different aspects as parental involvement and parent teachers' meetings (Arshad et al., 2021; Shah et al., 2021).

RESEARCH METHODOLOGY

This part illustrates research instrument, techniques, population, sampling size, sample procedure, design, collection of data, and data analysis. A survey research design was used for this study. This design was chosen as it allowed for the collection of perceptions of the population (Creswell, 2021). Data were collected using a quantitative, simple descriptive survey research design and a survey distributed to secondary school teachers working in District Korangi, Karachi. Researchers utilized simple random sampling to collect responses from teachers' perceptions about role of smartphones in the academic performance of students. The researchers determined the extent to which public

secondary school teachers were aware of role of smartphones in students' academic performance. Sample comprised male & female secondary school teachers working in District Korangi of Karachi, Pakistan. 160 male and female teachers were selected randomly from secondary schools within the Korangi district.

The main research instrument was a smartphone usage questionnaire which was used in this study to examine the viewpoint of teachers about role of smartphones in students' academic performance with seventeen items. Two hundred questionnaires were distributed to the teachers. They were instructed to carefully read statements and mark their selection on a five-point Likert scale: Point 5 indicates strongly agree, 4 indicates agree, 3 suggests have no opinion, 2 indicates disagree, and 1 strongly disagree. There were two sections to the research questionnaire. The first part considered the teachers' gender, experience, and qualifications in questionnaire. In the second section, teachers were asked about role of smartphones in academic performance of students in Karachi, Pakistan. The teachers returned one hundred sixty responses; however, a few people refused to participate in the study. The survey received responses from 80% of teachers. In this connection, before the data collection, the pilot test was carried out, and outcomes demonstrated the scale's reliability at 0.718 Cronbach Alpha.

Table 1 Cronbach's Alpha

Cronbach's Alpha	N of Items
0.836	17

Data Analysis

After the sifting stage, the obtained data were loaded into SPSS version 22 to determine the data's frequency and percentage distributions in order to examine the research issues. While analyzing the data, descriptive statistics, frequency distributions, and percentage distributions were applied in the study.

FINDINGS OF STUDY

Table 2 shows the study participants and a range of demographic groups based on their particulars. According to research results, 56% of female and 44% of male teachers participated. Also, a good number of teachers (53%) had 1-10 years of experience in field of education; most of them (58%) had graduate qualifications.

Table 2 Demographics of Study

Demographics		Frequency.	Percent.
Gender	Male	70	44%
	Female	90	56%
	Total	160	100%
Experience	1-10 years	85	53%
	11-20 years	55	34%
	21 years and above	20	13%
	Total	160	100%
	Graduation	93	58%

Qualification	Masters	42	27%
	M Phil.	25	15%
	Total	160	100%

Table 3 Supportive for Students (SFS)

Items	N	Mean	Std. Deviation
SFS1	160	4.463	0.875
SFS2	160	4.421	0.869
SFS3	160	4.414	0.863
SFS4	160	4.538	0.905
SFS5	160	4.368	0.913
SFS6	160	4.645	0.934
Overall Supportive for Students	160	4.474	0.901

Table 3 describes the results of teachers' perceptions regarding support for students in the role of smartphones in students' academic performance at public secondary schools. Participants in study put item SFS6, at the highest position with a mean score of 4.645, followed by SFS4 (4.538), SFS1 (4.463), SFS2 (4.421), SFS3 (4.414), and SFS5 (4.368), was at the lowest. The overall perception of teachers for factor supportive students in role of smartphones in students' academic performance was 4.474.

Table 4 Destructing the Daily Life of Students (DDL)

Items	N	Mean	SD
DDL1	160	4.424	0.896
DDL2	160	4.146	0.874
DDL3	160	4.336	0.887
DDL4	160	4.280	0.864
DDL5	160	4.326	0.878
Destructing Daily Life of Students	160	4.302	0.871

Table 4 presents the findings of participants' perceptions about smartphones destructing the daily life of students at secondary level in Karachi, Pakistan. The respondents assigned the item "DDL1" a mean score of 4.424, placing it at the highest level; then, DDL3 (4.336), DDL5 (4.326), DDL4 (4.280), and DDL2 had average score of 4.146. Teachers' perception about role of smartphones in destructing daily life of the students provided to them at secondary level in Karachi, Pakistan, with an average score of 4.302.

Table 5 Students' Academic Performance (SAP)

Items	N	Mean	SD
SAP1	160	3.230	0.867
SAP2	160	3.336	0.877
SAP3	160	4.422	0.856
SAP4	160	4.354	0.872
SAP5	160	4.548	0.946

SAP6	160	4.494	0.934
Students' Academic Performance	160	4.064	0.918

Table 5 demonstrates secondary school teacher's perception of the role of smartphones on students' academic performance at secondary level in Karachi, Pakistan. Teachers put SAP5 at the highest level with an average score of 4.548, followed by "SAP6" (4.494), SAP3 (4.422), SAP4 (4.353), SAP2 (4.336), & SAP1 with a mean score of 3.230 obtained from participants about their perception about role of smartphones in students' academic performance at secondary level in Karachi, Pakistan. The teacher's perception of the role of smartphones in students' academic performance at the secondary level was 4.064.

Table 6 Factor-Wise Role of Smartphones in Students Academic Performance

Factors	N	Mean	Std. Deviation
Supportive For Students	160	4.474	0.901
Destructing the Daily Life of Students	160	4.302	0.871
Students' Academic Performance	160	4.064	0.918

The perceptions of secondary school teachers about role of smartphones in academic performance of students' factor-wise are displayed in Table 6. Respondents ranked support for students as most crucial element, scoring a mean score of 4.474. Followed by destructing daily life of students (4.302) and students' academic performance was put at lowest level by teachers with mean score of (4.064) at the secondary level.

DISCUSSION

Smartphones are renowned devices that can process more data than conventional cell phones and offer wide range of functionality. The study aims to investigate the use of smartphones by secondary school students during their lessons and its impact on their academic achievement. This includes student assistance, disruption of their daily routines and academic achievements at the secondary level in Karachi, Pakistan, and communication use. A systematic approach was employed to gather and organize data from participants to conduct the continuous study. This research utilized a survey questionnaire consisting of 17 items as the primary instrument to gather and analyze data on the impact of cell phones on students' academic achievement. Two hundred questionnaires were sent to all participants, with clear instructions to carefully read the provided statements and select the most suitable answer using a 5-point Likert scale. One hundred sixty returned the questionnaire. It was observed with keen interest that most secondary students use smartphones in educational institutions and try to find related course material, for same purpose, data was collected & analyzed using SPSS. Study results revealed that smartphones support students in learning new technology and their usage.

The students can use different apps and resources for learning purposes, which ultimately enhance their academic performance at the secondary school level, that is supported by (Alamri et al., 2020; Boumosleh & Jaalouk, 2018; Buck et al., 2013; Chun, Lee & Kum, 2012). The second factor was the smartphones' role in destroying students' daily lives. Study results showed that smartphones destroy

the daily life of students, which affects their mental health, anxiety, depression, social relations with others, and physical health, which is supported by (Akhtar et al., 2023; Shahrestanaki et al., 2020; Duke & Montag, 2017; Ezemenaka, 2013; Jackson et al., 2011). The last factor was students' academic performance, which was enhanced by smartphones. The role of smartphones in students' academic performance at the secondary level is crucial and plays an important role. In this linking, students at the secondary level use smartphones for their academic learning and to learn the latest learning apps, which equip them with new knowledge, abilities and skills, which is supported by (El-Sofany & El-Haggar, 2020; Eshankulovna, 2021; Ifeanyi & Chukwuere, 2018; Kibona & Mgaya, 2015; Olufadi, 2015).

CONCLUSION

The current study was conducted to explore the teachers' perspective on the role of smartphones regarding the academic performance of the students in Karachi. It was found that the teachers perceived smartphones as a supportive tool for acquiring different skills like problem-solving and critical thinking. Moreover, teachers admitted the drawbacks of smartphone usage because of the adverse impact on daily life, physical well-being, and mental health. The usage of smartphones enhanced students' academic performance through the provision of access to educational resources with the facilitation of learning. Teachers were more concerned about excessive use of smartphones that leads to the anxiety, distraction, social disconnection, and depression. It is suggested that both parents and teachers play important role in students' guidance about productive and responsible use of smartphones. Digital literacy, effective implementation strategies, and government policies regarding the use of smartphones can help to keep a balance between educational potential and students' well-being.

Recommendations

1. The study's results revealed that smartphones' role in academic performance is supportive for students at the secondary level in Karachi, Pakistan. Smartphones are supportive for students because they solve their difficult problems using them, so it is suggested that smartphones be used positively in the classroom.
2. The study's findings showed the negative effect of smartphones on students' health and the destruction of their daily lives. The students use mobile devices for games, videos, and other entertainment apps, which affect their mental and physical health and increase anxiety and depression. So, it is recommended that parents and teachers do not permit their kids to use smartphones excessively.
3. The study results showed that positive smartphone usage in classroom can enhance students' academic motivation as well as performance. Consequently, it is recommended that positive smartphone usage be increased with the help of parents and teachers at the secondary level in particular context.

REFERENCES

Agrawal, M., & Parvez, M. (2018). Enhancement of quality education and academic performance through mobile technology: A conceptual framework. *International Journal of Advanced Educational Research*, 3(2), 261-264.

Ahmad, N., Ali, Z., Saba, F., Yaqoob, N., & Ullah, N. (2023). Teachers' Perceived Knowledge of Self-Concept and Its Influence on Their Teaching Practices. *International Journal of Multicultural Education*, 25(2), 152-166.

Ahmad, N., Bibi, N., & Imran, M. (2023). Effects of teacher's motivation on students' academic performance at public secondary schools in Karachi Pakistan. *AITU Scientific Research Journal*, 1(2), 20-32.

Ahmed, R., Salman, F., Malik, S. A., Streimikiene, D., Soomro, R. H., & Pahi, M. H. (2020). Smartphone use and academic performance of university students: a mediation and moderation analysis. *Sustainability*, 12(1), 439.

Ali, Z., Ahmad, N., Rehman, H. U., Ullah, N., & Zahra, T. (2023). Investigating Teacher Educators' Perceptions on Technology Integration in Teacher Preparation Programs. *Journal of Social Sciences Review*, 3(2), 341-355.

Ali, Z., Shah, R, & Ahmad, N. (2023). Determining the Science, Technology, Engineering, and Mathematics Teaching Capabilities of Educators in Karachi, Pakistan. *Journal of Positive School Psychology*, 6(7), 11-28.

Ali, Z., Ullah, N., Ahmad, N., Yaqoob, N., & Saba, F. (2023). Teachers' Perceptions of Curriculum Change and the Need of Professional Development for Effective Teaching Practices. *Multicultural Education*, 9(1). 83-90.

Ali, Z., Younis, S., Ahmad, N., Saba, F., & Ullah, N. (2023). Teachers' Perspective of Technology Integration Effects on Students Learning at University Level. *GRADIVA*, 62(5), 29-38.

Alamri, M. M., Almaiah, M. A., & Al-Rahmi, W. M. (2020). Social media applications affecting Students' academic performance: A model developed for sustainability in higher education. *Sustainability*, 12(16), 6471.

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.

Aslam, R., Iqbal, S., & Ahmed, N. (2022). Impact of Entrepreneurship Education on the Students 'Entrepreneurial Inclination: A Case of Public Sector Universities. *Pakistan Journal of Educational Research*, 5(1), 51-65.

Baron, S., & Segerstad, Y. H. (2010). Cross-cultural patterns in mobile-phone use: Public space & reachability in Sweden, the USA and Japan. *New Media & Society*, 12(1), 13-34.

Bernacki, M. L., Greene, A., & Crompton, H. (2020). Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education. *Contemporary Educational Psychology*, 60, 101827.

Boumosleh, J., & Jaalouk, D. (2018). The smartphone addiction among university students and its relationship with academic performance. *Global Journal of Health Science*, 10(1), 10-5539.

Buck, J. L., McInnis, E., & Randolph, C. (2013). The new frontier of education: The impact of smartphone technology in the classroom. *In American Society for Engineering Education*, 1(1), 1-11.

Chen, S. Y., & Tzeng, J. Y. (2010). College female and male heavy internet users' profiles of practices and their academic grades and psychosocial adjustment. *Cyberpsychology, Behavior, and Social Networking*, 13(3), 257-262.

Chun, H., Lee, H., & Kim, D. (2012). The integrated model of smartphone adoption: Hedonic and utilitarian value perceptions of smartphones in Korean college students. *Cyberpsychology, Behavior, and Social Networking*, 15(9), 473-479.

Creswell, J. W. (2021). A concise introduction to mixed methods research. The SAGE publications.

Day, S., & Erturk, E. (2017). e-Learning objects in the cloud: SCORM compliance, creation and deployment options. *Knowledge Management & E-Learning: International Journal*, 9(4), 449-467.

Dilshad, S. A., Shah, R., & Ahmad, N. (2023). Implementation of Single National Curriculum at primary level: Problems and practices in district Khushab. *Journal of Positive School Psychology*, I (4), 465-476.

Duke, É., & Montag, C. (2017). Smartphone addiction, daily interruptions and self-reported productivity. *Addictive behaviors reports*, 6, 90-95.

Ebiye, E. V. (2015). Impact of Smart Phones Tablets on the information seeking behavior of medical students and staff of Niger Delta university Bayelsa state-Nigeria. *Library Philosophy and Practice*, 0_1.

El-Sofany, H., & El-Haggar, N. (2020). The effectiveness of using mobile learning techniques to improve learning outcomes in higher education.

Emerson, L. C., & Berge, Z. L. (2018). Micro learning: Knowledge management applications and competency-based training in the workplace. *Knowledge Management & E-Learning: An International Journal*, 10(2), 125-132.

Eshankulovna, R. A. (2021). Modern technologies and mobile apps in developing speaking skill. *Linguistics and Culture Review*, 5(S2), 1216-1225.

Ezemenaka, E. (2013). The usage and impact of internet enabled phones on academic concentration among students of tertiary institutions: Study of University of Ibadan, Nigeria. *International Journal of Education and Development using* ICT, 9(3).

Haider, K., Ahmad, N., & Ali, Z. (2024). Problems and Challenges Faced by Non-Muslim Students in achieving Higher Education at universities of Pakistan: An Evaluative Study. *Spry Contemporary Educational Practices*, 3(1), 216-241.

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education. *Sustainable Operations and Computers*, 3, 275-285.

Hwang, K. H., Yoo, Y. S., & Cho, O. H. (2012). Smartphone overuse and upper extremity pain, anxiety, depression, and interpersonal relationships among college students. *The Journal of the Korea Contents Association*, 12(10), 365-375.

Ifeanyi, I. P., & Chukwuere, J. E. (2018). The impact of using smartphones on the academic performance of undergraduate students. *Knowledge Management & E-Learning: An International Journal*, 10(3), 290-308.

Imran, M., Ahmad, N., Al-Harthy, A. A. Q., & Jat, Z. G. (2023). Early Identification and Intervention: Amplifying the Voice of Slow Learners. *AITU Scientific Research Journal*, 1(4), 17-25.

Iqbal, S., & Bhatti, Z. A. (2020). A qualitative exploration of teachers' perspective on smartphones usage in higher education in developing countries. *International Journal of Educational Technology in Higher Education*, 17(1), 29.

Jackson, L. A., Eye, A., Fitzgerald, H. E., Witt, E. A., & Zhao, Y. Y. (2011). Internet use, videogame playing and cell phone use as predictors of children's body mass index (BMI), body weight, academic performance, social and overall self-esteem. *Computers in Human Behavior*, 27(1), 599-604.

Jamil, M., Bibi, T., & Shahzadi, U. (2024). Critical thinking skills development among secondary school students: An analysis of Chemistry textbook grade X (2020). *Research Journal for Societal Issues*, 6(2), 1-11.

Jamil, M., Mehmood, W., & Shah, F. u. H. (2024). Development of critical thinking skills among secondary school science students: An analysis of Chemistry textbook grade IX (2020). *Global Educational Studies Review*, 9(1), 13-20.

Jamil, M. M., & Saleem, A. (2024). Biology textbook grade X (2020): Analysis for the development of higher order thinking skills among secondary school science students. *Global Regional Review (GRR)*, 9(1), 29-35.

Junco, R., & Cotten, S. R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers & Education*, 59(2), 505-514.

Jung, Y. (2014). What a smartphone is to me: understanding the user values in using the smartphones. *Information Systems Journal*, 24(4), 299-321.

Khoso, F. J., Oad, L., & Ahmad, N. (2023). Exploring Teachers' Perspectives on Effective Leadership Styles at Secondary Level in Karachi, Pakistan. *Voyage Journal of Educational Studies*, 3(4) 209-226.

Kibona, L., & Mgaya, G. (2015). Smartphones' effects on academic performance of higher learning students. *Journal of Multidisciplinary Engineering Science & Technology*, 2(4), 777-784.

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction: A review of the psychological literature. *International journal of environmental research and public health*, 8(9), 3528-3552.

Kwon, M., Lee, J. Y., Won, W. Y., Park, J. W., Min, J. A., Hahn, C., & Kim, D. J. (2013). Development and validation of a smartphone addiction scale (SAS). *Plos One*, 8(2), e56936.

Mokoena, S. (2012). Smartphones and regular cellular phones: Assessing their impact on students' education at the University of Zululand (Doctoral dissertation, University of Zululand).

Naeem, S., Ali, Z., & Ahmed, N. (2022). Evaluation of the Causes of Interest Decline in the Subject of Chemistry amongst Secondary and Higher Secondary School Students in Karachi Pakistan. *International Journal of Social Science & Entrepreneurship*, 2(2), 175-184.

Olufadi, Y. (2015). A configurational approach to the investigation of the multiple paths to success of students through mobile phone use behaviors. *Computers & Education*, 86, 84-104.

Omopupa, K. T., Abdulrauf, A., Abdulsalam, A. U., Abubakar, H., & Sulaiman, K. A. (2019). Influence of smartphone usage on academic performance of students in the Faculty of Communication and Information Sciences, University of Ilorin, Ilorin, Nigeria. *Journal of Library Services and Technologies*, 1(2), 83-98.

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.

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.

Shah, S. G. M., Ali, Z., & Ahmad, N. (2024). Analytical study of Awareness of Metacognitive Reading Strategies and Reading Comprehension among College Students. *Voyage Journal of Educational Studies*, 4(1), 34-46.

Shahrestanaki, E., Maajani, K., Safarpour, M., Ghahremanlou, H. H., Tiyuri, A., & Sahebkar, M. (2020). The relationship between smartphone addiction and quality of life among students at Tehran University of medical sciences. *Addicta: The Turkish Journal on Addictions*, 7(1), 23-32.

Song, H. K., Jeong, M. H., Sung, D. J., Jung, J. K., Choi, J. S., Jang, Y. L., & Lee, J. S. (2010). Internet addiction in adolescents and its relation to sleep and depression. *Sleep Medicine and Psychophysiology*, 17(2), 100-108.

Stollak, M. J., Vandenberg, A., Burklund, A., & Weiss, S. (2011, February). Getting social: The impact of social networking usage on grades among college students. In Proceedings from ASBBS annual conference 18(1), 859-865.

Tikoria, J., & Agariya, A. K. (2017). ICT enabled classroom effectiveness scale development and validation: A case of multi-campus university. *Knowledge Management & E-Learning*, 9(1), 111-127.

Thomas, M., Khan, A. H., & Ahmad, N. (2022). Way forward for post pandemic online teaching: A case of higher education in Pakistan. *Journal of Humanities, Social and Management Sciences (JHSMS)*, 3(1), 1-15.

Vazquez-Cano, E. (2014). Mobile distance learning with smartphones and apps in higher education. *Educational Sciences: Theory and Practice*, 14(4), 1505-1520.

Wong, H. Y., Mo, H. Y., Potenza, M. N., Chan, M. N. M., Lau, W. M., Chui, T. K., ... & Lin, C. Y. (2020). Relationships between severity of internet gaming disorder, severity of problematic social media use, sleep quality and psychological distress. *International journal of environmental research and public health*, 17(6), 1879.

Zohuri, B. (2023). Parental Use of Personal Digital Assistants a Double-Edged Sword for the Toddlers. *Journal of Psychological and Neuroche Research*, 1 (3), 01, 6.