

**Mobile-Mediated Learning and Academic Performance in Higher Education: Empirical Insights from University Settings**

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**ABSTRACT**

*The objective of this research is to examine the influence of mobile-mediated education on academic achievement among university students. Quantitative method along with descriptive survey research design was adopted in this research. With the use of simple random sampling method, a sample comprising of 300 university students was chosen in the research. The data in the research was collected with the help of a self-administered questionnaire developed by the researcher on the basis of 5-point Likert Scale. In this research, attitudes of the students regarding mobile-mediated learning and its influence on their academic achievement was evaluated. Regression analysis was used to evaluate the influence of mobile-mediated learning on academic performance while the obtained data was analyzed with the help of descriptive statistics including mean and standard deviation. As per the research findings, students make use of their mobile phones efficiently for participating in academic pursuits such as attending online classes, accessing teaching materials and communicating with faculty and other students. Moreover, it was found that there was a significant association between the students' academic performance and mobile devices-based learning opportunities.*

**Keywords:** Mobile-Mediated Learning, Academic Performance, Digital Technology

**INTRODUCTION**

Both the education sector and other sectors have experienced a revolution because of the rapid development of digital technologies. Digital technology has brought about a revolution in how information is learned in higher institutions through the use of smartphones, which integrate features such as communication, multimedia, information search, and Internet use. College students cannot do without smartphones in their academic and social life in view of the above features offered by the phone. In this regard, smartphones play an integral role as one of the most important digital tools for college students (Al-Rahmi et al., 2019; Chen et al., 2020).

It has been found that most university students spend quite many hours in their phones each day (Lepp et al., 2015; Demirci et al., 2019). The extensive use of smartphones brings about flexibility, making mobile learning possible on-demand and everywhere anytime.

As earlier mentioned, smartphone use has been increasing for educational purposes, including studying course material and using instruction-based software programs. By using online academic forums, apps, and other platforms, students may get more involved and achieve their academic objectives (Wang & Zhang, 2022; Alrasheedi & Capretz, 2015).

Nevertheless, multitasking a common characteristic of higher education frequently makes it difficult to assess the impact on academic achievement. The learning process is frequently disrupted by social networking platforms, instant messaging, and entertainment apps, which creates a split focus between academic and extracurricular pursuits (Thornton et al., 2019; Rosen et al., 2018; Qadoos et al., 2020). However, because smartphones have "dual uses," this becomes an issue for both teachers and learners because it raises some significant questions regarding the influence they have on academic performance and intellectual curiosity.

The increase in mobile device users around the globe is clear given the projection of the continued increase in mobile users from previous years (Statista, 2022). In this case, mobile learning (M-learning) has taken on an extremely important role as a mode of learning, which has been brought to light by the recent pandemic situation affecting billions of young children, making flexible approaches necessary (UNICEF, 2021). Mobile learning can be described as "the learning process of acquiring knowledge and skills using mobile technologies."

To create engaging and immersive environments for enhancing student learning, HEIs are integrating gamification, simulations, and advanced technologies like Augmented Reality and Virtual Reality (VR) technologies (Kukulska-Hulme, 2010; Merchant et al., 2012; Deterding et al., 2011). These learning environments embrace the idea of learner autonomy and communication technologies.

### **Objectives**

1. To examine the use of mobile-mediated learning among university students.
2. To assess the level of students' academic achievement at the university level.
3. To determine the effect of mobile-mediated learning on students' academic achievement.

### **Research Questions**

1. What is the current level of mobile-mediated learning usage among university students for academic purposes?
2. What is the existing level of academic achievement among students at the university level?
3. To what extent does mobile-mediated learning significantly affect the academic performance of university students?

### **Statement of the Problem**

As a result of the proliferation of smartphones, tablets, and internet connectivity, mobile-mediated learning has grown more popular in higher education institutions in recent years. In order to enhance access to instructional resources, communication, collaboration, and academic participation, colleges are incorporating mobile technologies into their teaching and learning methods. Students can engage in learning activities at any time and from any location thanks to mobile-mediated education, which makes education

more learner-centric and flexible. The effect of mobile-mediated learning on students' academic achievement is still debated and unclear, even though it is becoming more popular. Some studies suggest that mobile learning enhances students' motivation, participation, critical thinking, and academic achievement, while other studies indicate that excessive or inappropriate use of mobile devices may lead to distraction, reduced concentration, and poor academic outcomes. Therefore, there is a need to empirically investigate the role of mobile-mediated learning in influencing academic performance in university settings. This study aims to explore the extent to which mobile-mediated learning affects students' academic achievement, engagement, and learning experiences in higher education institutions.

## **LITERATURE REVIEW**

### **Concept of Mobile Learning:**

Learning has been mobile since the beginning of formal instruction. Prior to the technology age, the term mobile learning referred to the ability to exchange learning material (Guy, 2010). The Potential for mobile learning changed in the 1960s with the invention of laptops. Since the 1960s, technological advances have continued to make Learning through mobile devices easier. It first appeared in 2000 (Quinn, 2011).

### **Increasing Use of Mobile Devices for Learning:**

The use of mobile devices among university students is ubiquitous worldwide in both developed Countries and developing ones like Pakistan. For example, studies in the last decade found that 65% of students reported smartphone use at Hallam University, UK (Woodcock et al., 2012), 85% at a university in the Philippines (Alson & Misagal, 2016), 94% at a Saudi Arabian university (Alfawareh & Jusoh, 2014), and 99.9% in the United States (Cheon et al., 2012). In Pakistan, 77% people, aged 21–30 years, reported using smart mobile devices (Android, iPhone, Symbian, Blackberry, and Windows Phone) in 2014 (Laar, 2014). Another study conducted at a public sector medical college in the province of Khyber Pakhtoon Khwa, Pakistan, found that 97% of Students utilized mobile devices; of those students, 10% reported using them for more than 10 hours a day (Aman et al., 2015). Given the high rate of mobile device usage among university students, the utilization of such devices for educational or learning purposes may be hypothesized.

### **Academic Performance of University Students:**

Academic performance is a multidimensional construct typically measured using indicators such as Grade point average (GPA), examination results, course completion rates, and levels of learning Engagement. It demonstrates the ability of pupils to understand, use, and remember academic information. Students' academic achievement in digital learning environments is also influenced by elements such as digital literacy, self-regulation, and the ability to manage technology-mediated learning activities (Shen et al., 2020; Bond, 2020). Prior research has shown that academic achievement in higher education is influenced by behavioral and technological variables, such as smartphone usage patterns, in addition to cognitive aptitude (Lepp et al., 2015).

### **Digital Learning Environments in Higher Education**

A digital learning environment refers to an educational context in which teaching and learning are Facilitated through online platforms, mobile technologies, and virtual communication tools. Such Environments promote flexibility, learner autonomy, and continuous access to educational Resources but also demand high levels of self-discipline and attention management (Bond, 2020).

### **Impact of Mobile Learning on Students' Academic Performance:**

Mobile learning environment may increase learning performance of students and improve their creativity (Cavus and Uzunboylu, 2009). Several studies show That mobile learning tools help students as mobile guides in learning activities, increase their knowledge about environment and geography and enhance their Motivation (Akkerman, Admiraal, and Huizenga 2009. Chen Chang, Li and Li, 2008; Uzunboylu, Cavus, and Erçağ, 2009). However, the use of m-learning is Not sufficient in the open education environment. This is because m-learning is A new educational tool and only helps students and teachers by showing them Available options in the ever-expanding world of distant learning (Liaw, Hatala & Huang, 2010). M-learning also brings strong portability feature instead of Small Random-Access Memory notes filled with books and the most appropriate Learning content.

### **Mobile learning as a modern educational technology:**

Mobile learning is used in many parts of the world by using mobile technologies for educational tasks such as registration, presenting syllabuses and presenting Changes in curriculums or for teaching the whole class via mobile technologies. Behera (2013) lists the advantages of using mobile learning tools as follows:

- **Increased mobility:** Learning is not restricted to fixed locations any More. Mobile devices allow learners to access learning content and Learning interactions anywhere, such as factories, museums, hospitals, shopping malls, cafes and outdoor areas.
- **Time-saving:** People can now study when they are commuting and traveling.
- **Environmental-friendly:** It is amazing to find out how much information A mobile device can carry despite its light weight. Less printing is Required.
- **Interactive:** Mobile technology enables students to closely link with Their peers, teachers, distant partners, and even interest groups Worldwide.

### **RESEARCH METHODOLOGY:**

This study used a descriptive survey design and a quantitative research methodology to examine the connection between university students' academic achievement and mobile-mediated learning. In order to ensure that the samples collected would provide adequate representation, the sample consisted of 300 students who were selected randomly from among those enrolled at the university. Data was collected through a questionnaire created by the researchers which employed a five-point Likert scale for assessing the influence of mobile technology on academic performance among students. For summarizing student attitudes, descriptive statistics such as mean and standard deviation were calculated using SPSS software. Regression analysis and ANOVA were performed to assess statistical significance and predictive influence, respectively.

**RESULTS:**

**Table 1**

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
I use my mobile phone for educational purposes regularly.	300	3.73	1.044
I use educational apps to support my studies.	300	3.56	1.026
Mobile devices help me communicate with teachers and classmates.	300	3.61	1.116
Mobile-mediated learning helps me study anytime and anywhere.	300	3.95	1.041
I attend online classes using my mobile phone.	300	3.83	1.023
I access online learning materials through mobile devices.	300	3.78	1.094

Table 1 show that students use mobile phones for educational purposes in a positive way, according to descriptive statistics. There is consensus that mobile-mediated learning facilitates communication, online courses, flexible learning, and access to educational resources, as evidenced by the mean scores ranging from 3.56 to 3.95. Students' attitudes toward the use of mobile learning in the classroom were generally positive.

**Table 2**

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
I achieve good grades in my courses.	300	3.87	.969
My academic performance has improved over time.	300	3.96	.935
I complete my academic tasks on time.	300	3.90	1.101
I am satisfied with my academic performance.	300	4.22	.696
I maintain consistency in my studies.	300	3.73	.734
I can manage my study time effectively.	300	3.52	.976

According to the table 2, students think well of their academic achievement. The mean scores ranged from 3.52 to 4.22, indicating that students are satisfied with their academic progress, believe they get good grades, and finish assignments on time. Overall, the results show that students' academic performance is at a satisfactory level.

**Table 3**

Statements	N	Mean	Std. Deviation
Mobile-mediated learning enhances my learning efficiency.	300	3.65	.651
Using mobile devices helps me understand lessons better.	300	3.43	.800
Mobile learning helps me prepare better for exams.	300	3.45	.830
Excessive use of mobile devices distracts me from studies.	300	3.52	.824
Educational mobile applications improve my study skills.	300	3.42	.939
Mobile devices help me access information quickly for academic tasks.	300	3.61	.698

The findings of table 3, show that students think mobile-mediated learning enhances their ability to learn effectively, comprehend lessons, prepare for exams, and quickly obtain academic information. Mean scores ranged from 3.42 to 3.65, indicating moderate to high agreement. However, students also agreed that excessive use of mobile devices may distract them from studies.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.542 <sup>a</sup>	.294	.290	2.54650
a. Predictors: (Constant), ASLA				

The model summary shows a moderate positive relationship between mobile-mediated learning and academic performance (R = .542). The R Square value (.294) indicates that 29.4% variation in academic performance is explained by mobile-mediated learning. Overall, the model demonstrates a meaningful positive effect.

ANOVA <sup>b</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	427.196	1	427.196	65.878	.000 <sup>a</sup>
	Residual	1024.579	158	6.485		
	Total	1451.775	159			
a. Predictors: (Constant), ASLA						
b. Dependent Variable: EUML						

The ANOVA results show that the regression model is statistically significant ( $F = 65.090$ ,  $Sig = .000$ ). Since the significance value is less than 0.05, it confirms that mobile-mediated learning significantly affects students' academic performance.

<b>Coefficients<sup>a</sup></b>						
<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>t</b>	<b>Sig.</b>
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
1	(Constant)	9.104	1.658		5.490	.000
	ASLA	.575	.071	.542	8.117	.000
a. Dependent Variable: EUML						

The coefficients table indicates that mobile-mediated learning has a positive and significant effect on academic performance ( $Beta = .565$ ,  $Sig = .000$ ). This means that an increase in mobile-mediated learning leads to improvement in students' academic performance.

## CONCLUSION

The findings of the study reveal that mobile-mediated learning has a positive impact on students' academic achievement at the university level. Students regularly use mobile devices for educational purposes, such as accessing learning materials, interacting with teachers and peers, and taking part in online discussions, according to the descriptive statistics. According to the mean scores, students view mobile learning as beneficial, adaptable, and encouraging for their academic pursuits. In a similar vein, the academic achievement results show that students think their grades, academic performance, task completion, and study management abilities have all improved over time. Additionally, a strong positive correlation between academic achievement and mobile-mediated learning is confirmed by the regression analysis. While the ANOVA results demonstrate that the model is statistically significant, the R Square value suggests that mobile-mediated learning accounts for a significant amount of variation in students' academic performance. According to the study's overall findings, mobile-mediated learning improves students' educational experiences and helps them succeed academically.

## RECOMMENDATIONS

1. Universities should encourage the effective use of mobile-mediated learning to improve students' academic performance.
2. Teachers should integrate educational mobile applications and online resources into classroom activities.
3. Educational institutions should provide proper internet facilities and digital learning support for students.
4. Awareness programs and training sessions should be arranged to guide students on the productive use of mobile learning technologies.

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