

Investigating the Benefits and Challenges of Mobile-Based Learning Among Students at Kabul Education University

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Abstract:

The increasing integration of smartphones into education has highlighted the potential of Mobile-Based Learning (MBL) to enhance learning accessibility and engagement. This study investigated students' perceptions of the benefits and challenges of MBL at Kabul Education University. A quantitative, descriptive survey design was employed, using an expert-reviewed questionnaire distributed randomly to 351 students across nine faculties. Instrument reliability was confirmed with a Cronbach's alpha coefficient of 0.79. Descriptive statistical analysis revealed that mean scores for the perceived benefits of MBL ranged from 3 to 4, whereas mean scores for its challenges ranged from 2 to 3, indicating generally favorable perceptions of its educational value. Students recognized the potential of mobile learning to improve access to educational resources and support learning motivation. However, concerns regarding distraction, headaches, and eye strain highlighted potential barriers to effective implementation. These findings suggest that students perceive MBL as a promising educational approach, although the results reflect subjective perceptions rather than objectively measured improvements in learning outcomes. To maximize its educational potential, the study recommends strengthening digital infrastructure and promoting awareness of responsible, pedagogically appropriate mobile device use. This research provides insights for educators and policymakers seeking to integrate mobile technology more effectively into higher education.

INTRODUCTION

Conventional educational systems have evolved into dynamic and innovative approaches that enhance learning efficiency by fostering interactive and engaging learning environments [1]. Meanwhile, technology and technological devices have provided unprecedented opportunities to improve content understanding and knowledge acquisition. Technology-enabled learning devices are essential for supporting effective classroom instruction and self-directed learning [2]. Emerging technologies, including mobile devices,

Artificial Intelligence (AI), big data, and the Internet of Things (IoT), are reshaping educational environments by enabling more flexible, interactive, and personalized learning experiences. Mobile-Based Learning (MBL) has become an effective educational approach by allowing learners to access instructional resources anytime and anywhere, thereby improving engagement, collaboration, and learning outcomes [3].

Moreover, advancements in technology and smart learning devices, powered by AI, are transforming education by providing personalized learning support, enhancing students' understanding, and fostering creativity and innovation in the learning process [4]. The integration of technological devices into society has laid the foundation for technology-driven education, leading to the emergence of MBL as a contemporary educational approach. Compared with computer-based e-learning, MBL offers greater accessibility, flexibility, portability, and cost-effectiveness, enabling learners to access educational resources anytime and anywhere with minimal technical expertise [5], [6]. In the background study section of the research, national and international articles have been used. These are divided into two main sections: the benefits and challenges of using smartphones for learning, and the most relevant article results from each section are presented here.

A - Benefits of using Smartphones for Learning:

Ibragimov et al. [7] examined the effectiveness of smartphones in education. In this study, 26 related articles were reviewed: 7 (27%) reported low effectiveness, 4 (15%) reported moderate effectiveness, and the remaining 15 (58%) considered smartphone use in education important and noteworthy. Wali and Omid [8], in their study at Kandahar University, examined smartphones as a teaching tool in classrooms. The results show that smartphone use in classrooms had a positive effect on students' education and psychology, and the professors of this university see no obstacles to its use other than social networks, but rather consider it a useful technology in education.

Kang [9] conducted a systematic literature review to examine the impact of mobile-based learning on student learning outcomes in higher education. In this study, 355 valid articles were analyzed from 2014 to 2023. The results showed that mobile-based learning (MBL) increases flexibility and access to learning, improves learning effectiveness, strengthens students' intrinsic motivation and positive attitude, and increases their participation in the learning process. The challenges of this learning method include limited technological capabilities in fully achieving educational goals, distractions during learning, and vision problems caused by prolonged use of mobile devices.

Bazhenova et al. [10] reviewed 12 studies in a meta-analysis article. They showed that MBL improves students' cognitive performance compared to traditional learning environments and offers advantages in flexibility, accessibility, and interaction.

Al-Mashhadani et al. [11] examined the role of MBL in the future of private universities in Iraq. As a result, they reported the following:

- 1) Effective use of computer and mobile applications can be productive during and after graduation, helping a person gain a good understanding of electronic systems and become ready for the job market.
- 2) Most universities and higher education institutions internationally are rebuilding their educational infrastructure using ICT systems.
- 3) Increased investments in ICT infrastructure are helping universities and higher education institutions adopt new technologies to support learning programs.

B - Challenges and Disadvantages of Smartphones for Learning

Lin et al. [12] examined the relationship between smartphone use and academic performance. The study concluded that using educational apps and news is beneficial, while using social media, mobile games, music and videos, reading entertaining books, and news is not beneficial for academic performance and only contributes to nomophobia, the fear of not being able to access a mobile phone. Yun Fook et al. [13] conducted a study to identify the extent of use, related factors, and activities, and to examine the possible risks of mobile phone addiction among university students in Malaysia. This study used a descriptive research method and analyzed the data using descriptive statistics, such as mean, Standard Deviation (SD), frequency, and percentage. The findings of this study indicate that students are somewhat addicted to smartphones, but do not use them for educational purposes. According to the researchers, the results of this study can help higher education institutions better understand smartphone usage patterns and reduce or control addictive behaviors associated with inappropriate use in educational settings. Amez and Baert [14] conducted a systematic review of 23 studies. The 18 articles, 78.3% of which showed that smartphone use has a significant negative relationship with poor academic performance in higher education. The remaining 5 articles found no significant relationship, and no study reported a positive relationship.

Criollo et al. listed the challenges of this method in three categories in addition to the advantages [15]:

- 1) Technological limitations in mobile-based learning: limited memory and processing capacity, small display and keyboard, incompatibility of mobile technology with the needs of students and teachers, unstable connections due to limited wireless network coverage area.
- 2) MBL usage by individuals and organizations: Some people consider it a hobby or a waste of time; some people resist learning the skills necessary to utilize MBL.
- 3) Cultural reasons: group and interactive learning are not promoted enough.

MBL is widely recognized as the next generation of education. Nevertheless, its adoption and acceptance among Afghan students remain important areas of investigation. This research examines the effectiveness and challenges of this educational system among the students of Kabul Education University. In this research, three basic questions have been answered:

1. What are the unique features and capabilities of the MBL educational system?
2. What conveniences can the use of MBL capabilities by students bring to students?
3. What is the position of the MBL system and its use among the students of Kabul Education University?

RESEARCH METHOD

This study employed a quantitative, descriptive, survey-based research design to examine students' perceptions of the benefits and challenges of Mobile-Based Learning (MBL) among students at Kabul Education University. The study population comprised all students of the university, and a sample of 351 students from nine faculties was selected using the Krejcie and Morgan sample size table and simple random sampling. Data were collected through a structured questionnaire developed for the study. The questionnaire included items addressing students' general use of mobile devices, perceived benefits and challenges of MBL, perceived disadvantages, and educational uses of mobile devices. Items 1–7 collected general information about mobile-device use and were used only to provide contextual information, rather than being included in the main statistical analysis. Items 8–11 measured perceived

benefits, Items 12–15 measured perceived challenges, Items 16–17 addressed perceived disadvantages, and Items 18–27 examined educational uses of mobile devices. The perception-based items were measured using a five-point Likert scale and coded from 1 to 5 for analysis. The questionnaire was reviewed by professors and experienced university faculty members to assess the relevance, clarity, and appropriateness of the items. Based on their feedback, necessary revisions were made before the final administration.

The collected data were analyzed using descriptive statistics, including frequencies, relative frequencies, means, and standard deviations (SD). The analysis focused on describing students' perceptions of the benefits and challenges of MBL rather than on measuring changes in educational outcomes, to clarify the study's practical takeaway. The internal consistency of the questionnaire was assessed using Cronbach's alpha, which yielded a coefficient of 0.79, indicating acceptable reliability.

RESULTS AND DISCUSSIONS

This research examined the benefits and challenges of using the MBL, considering the percentage of useful and ineffective use in education and entertainment. The study used a field questionnaire distributed to the entire statistical population: all students of Kabul Education University across different majors in 9 faculties. After collecting the questionnaires, the data were analyzed using SPSS and Excel. The achievement results are explained below.

A - Conclusion of the findings of the benefits of learning based on smartphones:

This section presents the findings for the four questionnaire items designed to examine students' perceptions of the benefits of smartphone-based learning and the overall usefulness of mobile phones in supporting their learning. The results are summarized in Table 1.

Table 1. Exploring The Benefits of Mobile-Based Learning

NO	Questions	Very Low		Low		Moderate		High		Very High		Mean	SD
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage		
1	Mobile usage makes it easy to learn content using artificial intelligence and Google searches.	8	2.3	20	2.8	65	18.5	132	37.6	136	38.7	4.08	0.94
2	Mobile learning gives me more flexibility in when and where I study.	11	3.1	37	10.5	136	38.7	96	27.4	71	20.2	3.51	1.02
3	Using my mobile phone has increased my motivation to learn.	28	8	67	19.1	131	37.3	60	17.1	63	17.9	3.18	1.17
4	Using my mobile phone has helped me communicate better with my classmates and professors.	22	6.3	25	7.1	70	19.9	95	27.1	139	39.6	3.87	1.19

- 1) Question #1: The mean score was 4.08, indicating a high level of agreement. Most respondents selected Very High (38.7%), whereas only 2.3% selected Very Low. These findings suggest that students frequently use smartphones to search for course-related information through Google and AI tools.

- 2) Question #2: The mean score was 3.51, indicating a relatively high level of agreement. The majority of respondents selected Moderate (38.7%), while 3.1% selected Very Low. The results indicate that students commonly use smartphones for learning during short periods, such as while commuting to and from the university.
- 3) Question #3: The mean score was 3.18, reflecting a moderate level of agreement. Most respondents selected Moderate (38.3%), whereas 8.0% selected Very Low. These findings suggest that students generally perceive smartphone use as having a positive influence on their learning motivation.
- 4) Question #4: The mean score was 3.87, indicating a high level of agreement. Most respondents selected Very High (39.6%), while 6.3% selected Very Low. The findings indicate that smartphones facilitate communication among students, their instructors, and classmates through online platforms, thereby helping them address academic questions and learning-related challenges.

B - Results of the findings of the challenges of learning based on smart mobile phones:

This section presents the findings for the four questionnaire items designed to examine the challenges associated with MBL among students. The results are summarized in Table 2.

Table 2. Challenges of Mobile-Based Learning

NO	Questions	Very Low		Low		Moderate		High		Very High		Mean	SD
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage		
1	I don't have internet access to learn better	70	19.9	73	20.8	102	29.1	52	14.8	42	12	2.77	1.28
2	The lack of reliable electricity has led me to use my mobile phone less for learning	44	12.5	60	17.1	100	28.5	86	24.5	61	17.4	3.17	1.26
3	There are not enough educational resources for learning via mobile phones in my field	63	17.9	83	23.4	105	29.9	62	17.7	34	9.7	2.77	1.22
4	I have less access to mobile phones due to financial problems	40	11.4	69	19.7	125	35.6	64	18.2	52	14.8	3.05	1.19

- 1) Question #1: The mean score was 2.77, indicating a relatively low level of agreement that internet access is a major challenge. The majority of respondents selected Moderate (29.1%), whereas 12.0% selected Very High. These findings suggest that most students have acceptable internet access, primarily through personal internet services. Some respondents, however, recommended that the university provide internet access, particularly because the student library, which previously offered internet services, is currently closed.
- 2) Question #2: The mean score was 3.17, indicating a moderate level of agreement that unreliable electricity supply poses a challenge to mobile-based learning. Most respondents selected Moderate (28.5%), while 12.5% selected Very Low. Although smartphones generally consume less power than computers, the findings suggest that inconsistent electricity remains a moderate challenge for students.
- 3) Question #3: The mean score was 2.77, indicating that this issue is generally not perceived

as a major challenge. Most respondents selected Moderate (29.9%) and High (17.7%). The results suggest that the severity of this challenge varies across academic disciplines; however, overall, it is not considered a significant barrier to mobile-based learning.

- 4) Question #4: The mean score was 3.05, indicating a moderate level of agreement. The majority of respondents selected Moderate (35.6%), whereas 11.4% selected Very Low. These findings indicate that while some students lack access to smartphones suitable for educational purposes, others have appropriate devices. Furthermore, the relatively high standard deviation ($SD = 1.19$) reflects considerable variation in students' responses, suggesting differences in smartphone accessibility among the participants.

C - Disadvantages of mobile-based learning:

This section examines perceived drawbacks of using smartphones for learning. As shown in the Figure 1, survey results indicate that smartphone use during classroom instruction is widely perceived as distracting. Of the 343 respondents who answered this item, 263 (76.6%) agreed that smartphone use distracts students during class, whereas 80 (23.4%) disagreed. A total of eight responses were missing for this item. The findings also indicate that prolonged and frequent smartphone use is associated with several health-related concerns, including headaches, muscle discomfort, and eye strain, as shown in the Figure 2. Of the 350 respondents who answered this item, 269 (76.9%) agreed that extended smartphone use may contribute to these health issues, while 81 (23.1%) disagreed. Only one response was missing for this item.

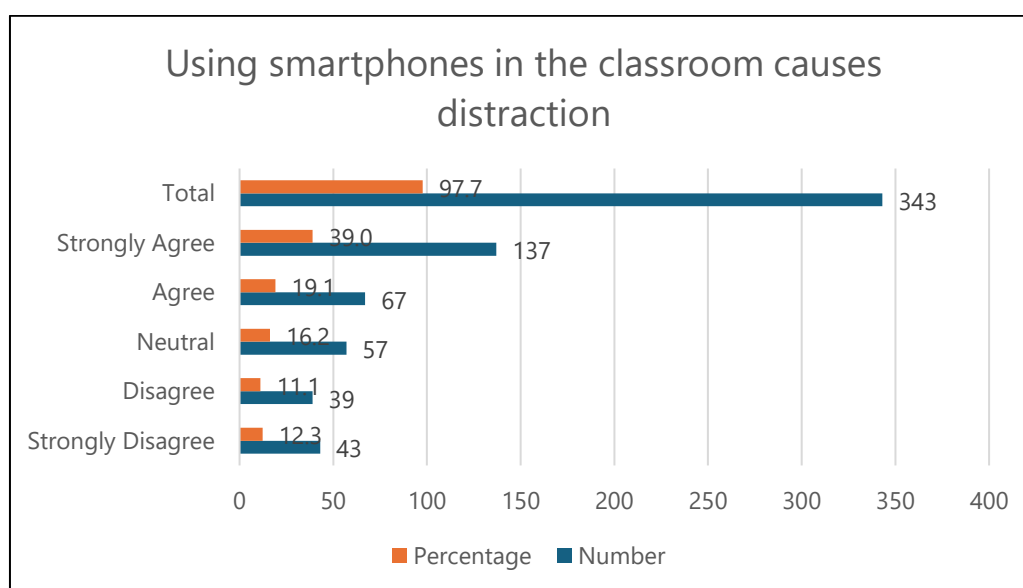


Figure 1. Distraction Problems Due to Mobile Phone Use in The Classroom

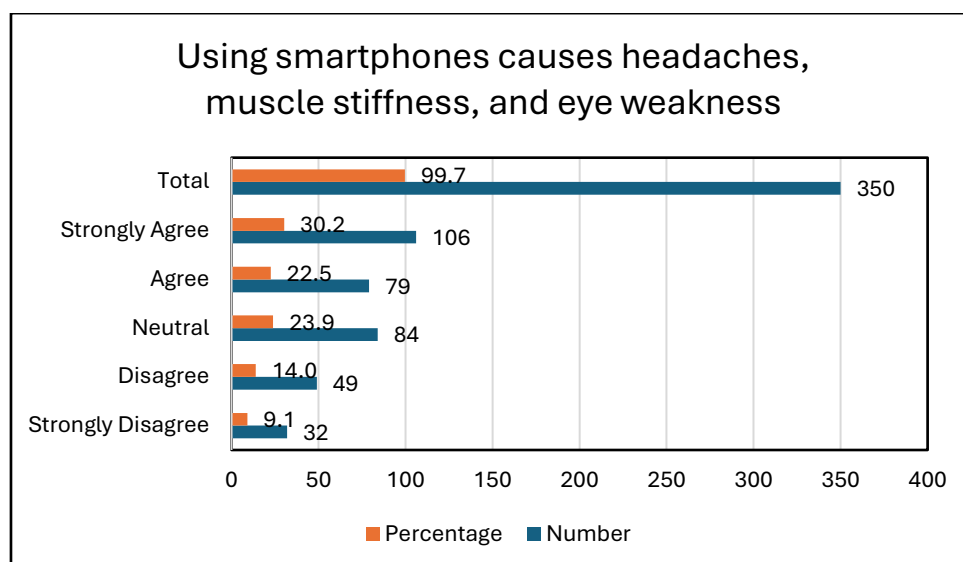


Figure 2. Physical Effects of Prolonged Mobile Phone Usage

In addition, this study examined the types of smartphone use, the results of which are presented in The table 3.

Table 3. Patterns of Using Mobile Phones and Applications in The Learning Process

No	Activities	Very Low (%)		Low (%)		Mode rate (%)		High (%)		Very High (%)		Mean	SD
1	Lesson note taking	20	5.7	40	11.4	83	23.6	108	30.8	99	28.2	3.65	1.17
2	Audio and video calls	23	6.6	73	20.8	88	25.1	91	25.9	74	21.1	3.34	1.21
3	Text Messages (WhatsApp, SMS, etc.)	27	7.7	47	13.4	92	26.2	78	22.2	99	28.2	3.51	1.26
4	Using social media (Facebook, TikTok, etc.)	57	16.2	74	21.1	96	27.4	62	17.7	56	16	2.96	1.31
5	News awareness	38	10.8	63	17.9	98	27.9	92	26.2	57	16.2	3.19	1.23
6	Using the internet to search and study	18	5.1	38	10.8	88	25.1	111	31.6	93	26.5	3.64	1.14
7	Entertainment (using mobile games)	86	24.5	83	23.6	92	26.2	57	16.2	27	7.7	2.58	1.24
8	Locating or navigating to a destination (Google Maps)	73	20.8	60	17.1	99	28.2	70	19.9	43	12.3	2.86	1.31
9	Using a mobile camera for educational purposes (taking pictures of the board instead of taking notes)	25	7.1	42	12.0	88	25.1	89	25.4	107	30.5	3.60	1.23
10	Using mobile phones to study textbooks and lecture notes	12	3.4	20	5.7	75	21.4	132	37.6	110	31.3	3.88	1.03

The descriptive statistics for the five-point Likert-scale items are presented in the table above. The accompanying Figure 3 illustrates the primary purposes of smartphone use for learning by considering only responses ranging from Moderate to Very High, while Low and Very Low responses were excluded to highlight the predominant usage patterns.

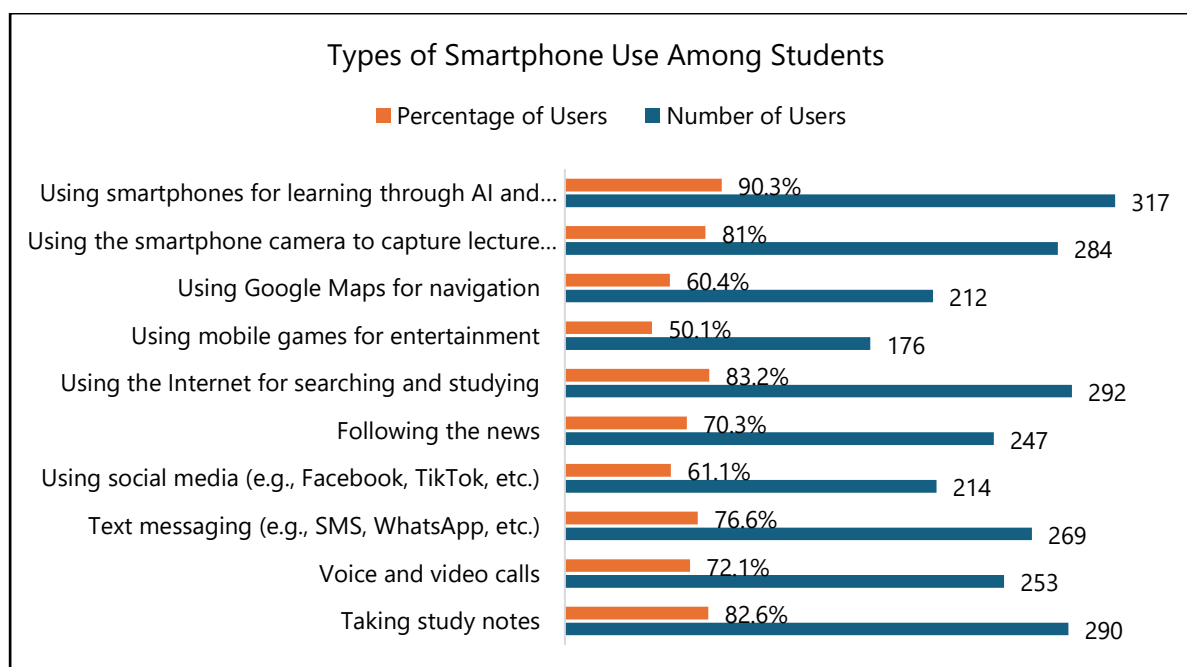


Figure 3. Patterns of Using Mobile Phones and Applications in The Learning Process

The results indicate that the most common use of smartphones among students is to access and review lecture notes. This finding suggests that students value the convenience and portability of smartphones, which enable them to access learning materials anytime and anywhere. In contrast, digital entertainment (e.g., gaming) was the least frequently reported purpose of smartphone use, indicating that students primarily use their mobile devices for educational rather than recreational activities. This study investigated the benefits and challenges of MBL among students at Kabul Education University. The literature review showed that previous studies have consistently reported the educational benefits of MBL, including convenient access to learning resources, flexibility to learn anytime, anywhere, portability, and reduced dependence on conventional learning equipment. For example, Ibrahimov et al. reported that 58% of the reviewed studies identified smartphone use as an effective educational tool. Similarly, Wali highlighted the positive effects of MBL on students' learning experiences, motivation, and psychological well-being.

Despite these advantages, previous studies have also identified several challenges associated with MBL. Yanqing Lin et al. reported that excessive use of social networking applications and digital entertainment may negatively affect academic performance. Yun Fook emphasized the risk of smartphone addiction, whereas Simon Ames found that excessive smartphone use is associated with poorer academic performance in higher education. Furthermore, previous research has classified the challenges of MBL into three broad categories: technological limitations, user-related factors, and sociocultural barriers. The findings of the present study are generally consistent with those reported in the existing literature. Mean scores for the perceived benefits of MBL ranged from 3.0 to 4.0, indicating that students generally held positive perceptions of mobile-based learning. In contrast, mean scores for the perceived challenges ranged from 2.0 to 3.0, suggesting that students considered these challenges relatively moderate and less influential than the perceived benefits. Nevertheless, respondents identified several concerns associated with smartphone use, including classroom distraction, headaches, muscle discomfort, and eye strain.

The findings answer the study's research questions. Mobile-based learning offers several educational advantages, including convenient access to learning resources regardless

of time and location, high portability, reduced reliance on physical learning materials, efficient communication between students and instructors, and support for multimedia learning resources. These characteristics enable students to review course materials more conveniently, learn at their own pace, improve time management, and enhance their academic motivation. The findings indicate that MBL has gained considerable acceptance among students at Kabul Education University. Most respondents rated its benefits highly, whereas the perceived challenges were generally rated as moderate. These findings suggest that MBL represents a promising educational approach within the university context. However, maximizing its educational potential will require continued investment in technological infrastructure and effective strategies to address challenges.

CONCLUSIONS AND SUGGESTIONS

This study shows that students at Kabul Education University generally view Mobile-Based Learning (MBL) positively, despite several technological, health-related, and behavioral challenges. The findings suggest MBL may improve access to educational resources, increase learning flexibility, and support student motivation and engagement. However, these results should be interpreted as student perceptions rather than direct evidence of improved academic performance or learning effectiveness. Addressing these challenges through targeted infrastructure development, institutional support, and pedagogically appropriate implementation strategies is therefore essential for the sustainable adoption of MBL in Afghanistan's higher education system. Future efforts should focus on four strategic directions. First, universities should strengthen ICT infrastructure, including reliable internet connectivity and access to appropriate mobile learning technologies. Second, Kabul Education University should conduct an infrastructure audit and needs assessment to identify institutional readiness, resource gaps, and implementation priorities. Third, professional development seminars should equip academic staff to use the Ministry of Higher Education's management information systems and Learning Management Systems (LMSs) for online course delivery, digital resource sharing, and blended learning. Fourth, collaboration between students and faculty members, particularly within the Faculty of Computer Science, should be encouraged to develop discipline-specific mobile learning applications and locally relevant educational resources. Furthermore, integrating MBL with the Higher Education Management Information System (HEMIS) and LMS platforms may improve coordination between academic administration and digital instruction. Future research should examine the effectiveness of these interventions through longitudinal studies, broader institutional samples, and objective measures of student engagement and academic achievement. Such evidence would provide a stronger empirical foundation for evaluating the educational impact and scalability of MBL in Afghanistan's higher education sector.

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