

STUDENTS' PERCEPTIONS OF MOBILE LEARNING AT UNIVERSITY LEVEL IN KOTLI AJ&K

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DOI: <http://doi.org/10.5281/zenodo.19592443>

| Received | Accepted | Published |
|------------------|------------------|---------------|
| 21 December 2024 | 20 February 2025 | 05 March 2025 |

ABSTRACT

In this research article, the authors explored university students' perceptions of mobile learning across seven dimensions and its perceived role in academic achievement in Kotli, Azad Jammu and Kashmir. The study aimed to assess the perceived contribution of mobile learning in students' lives. A descriptive cross-sectional survey design was used. The population comprised all 4,217 students enrolled at the University of Kotli AJ&K, from which 353 students were selected using simple random sampling following Morgan's (1970) table. A five-point Likert scale questionnaire was developed based on seven dimensions of mobile learning: learning in the mobile age, mobility, access to information, collaboration, game-based learning, situated learning, and digital literacy. The instrument was validated by three experts and pilot-tested. Data were analyzed using frequency, percentage, and mean scores. Findings showed that students held positive perceptions across all seven dimensions (overall M=3.32). Students agreed that mobile technologies enable learner engagement (53%, M=3.55), offer learning beyond the classroom (53%, M=3.55), facilitate easy access to information (53%, M=3.44), support sharing of learning content (51%, M=3.41), enhance understanding through game-based learning (51%, M=3.41), and enable use of digital devices to enhance learning (51%, M=3.35). On the other hand, some areas of concern were identified including limited problem-solving skill development (43%, M=3.03), lower confidence in learning new skills via digital devices (48%, M=3.17), and weaker integration of situated learning connecting formal and outdoor settings (48%, M=3.23). In sum, the research suggests that while students perceive mobile learning as beneficial for academic achievement, interventions are needed to enhance problem-solving skills, digital skill development, and situated learning integration. Educators and policymakers interested in integrating mobile learning in higher education will find the results of this study very useful.

Keywords: mobile learning, student perceptions, seven dimensions, academic achievement, higher education, digital learning, student engagement.

INTRODUCTION

Mobile learning (M-learning) is acknowledged as a new phase in the evolution of computer-supported learning and distance education (Motiwala, 2007). M-learning is a fresh educational model that has been made possible by mobile devices and wireless networks, which facilitate accessible and collaborative education at all levels, including schools, colleges, and universities. It is seen as the next phase in the evolution of e-learning and distance education, further improving the ability to learn anytime and anywhere.

By providing an option for self-study, M-learning enables access to course materials, which can be made available and easily accessible (Lam et al., 2011). Besides, M-learning is not only conducive to classroom discussion between students and teachers, but also it ensures that they can continue the information exchange even without being on university premises. It is supposed that in the future one of the highest education means of delivering materials will be done through m-learning.

Wireless computing gadgets have become so widespread on university campuses all over the globe over the last few years. The introduction of mobile devices like smartphones, PDAs, and tablet PCs allows people the liberty of using the device they want, in the place and at the time of their convenience. These devices have become more affordable, highly functional, and at the same time easy to operate. They can serve as a medium to complement e-learning systems by providing university students with ways to accessing course materials and information and communication technologies (ICT), learning in collaborative environments, and getting formative evaluation and feedback from instructors (Crawford, 2007).

Prensky (2009) argues that, the students today are not the same people for whom the educational system was originally designed. He also mentioned that their thinking and mental processing is radically different from that of previous generations; exposure to technology has changed their learning styles and enhanced their intellectual capabilities. Brown et al. (2015) say there is a misconception that mobile learning is "learning while mobile". The authors reveal what

mobility actually means in the context of education.

For improving the quality of education on a wider scale, lecturers are required to be digitally literate. By having access to digital literacy, teachers are able to impart the required knowledge and skills to their students, which are essential for them to thrive in a technologically dominated society (Sad & Goktas, 2014).

Statement of the Problem

The factors students' perception of mobile learning at university level is the one that is scarcely understood. Besides that, there is a lack of resources for all mobile learning stakeholders on how to set up and support mobile learning in university education. Under a developing lesson, countries like Pakistan should create a culture where students and teachers both use mobile devices in a productive way for learning commitment. Hence, it is essential to research university students' perceptions of mobile learning from several aspects in Kotli, Azad Jammu and Kashmir.

Objective of the Study

The study pursued the objective: To explore students' perceptions of mobile learning across various dimensions.

Research Question

The study addressed the research question: What are university students' perceptions of mobile learning across the seven dimensions (learning in the mobile age, mobility, access to information, collaboration, game-based learning, situated learning, and digital literacy)?

Delimitations of the Study

Keeping in view the nature of the topic, the study was delimited to the University of Kotli AJ&K.

Significance of the Study

This study is significant for teachers and students equally. The results will be beneficial for university teachers and administration concerned with the implementation and utilization of mobile learning at the university level. The outcomes will be useful

for educational designers who are in charge of designing university courses. This study will provide educational professionals with insight into how mobile learning can be used to adapt higher educational institutes to contemporary technological realities.

REVIEW OF THE RELATED LITERATURE

Technology in Education

Technology is definitely the most recently introduced aspect of our daily lives that has radically altered our ways of living and working. Particularly in education, technology has become a tool for instant knowledge dissemination as well as quick and effective communication. It is also a medium that has opened up a whole new world of opportunities fostering cooperation, engagement and learning both inside and outside the classrooms. According to Spears (2012), the first project to provide computer access for both teachers and students was the Apple Classrooms of Tomorrow (ACOT). Their aim was to change the educational system through the use of technology.

Donovan et al. (2007) mentioned the following advantages of technology integration programs: higher eagerness to teach and learn through technology, degreed student writing, and increased real and meaningful use of technology. These programs of the 1980s and 1990s eventually led to presidents, legislators, administrators, and educators recognizing the incredible impact technology could have on students and teachers in the classroom.

Technology Use in Education

Technology plays a role in a traditional school setting to a certain extent by increasing the capacity and effectiveness of education for knowledge and skills. When technology is actually incorporated into an educational environment, students and teachers alike can be considered as learners. Therefore, any gain in teacher competency and deployment will eventually result in a greater student learning experience (Lam et al., 2011).

In the final analysis, technology should be a means to raise students' performance in schools.

Technology can support educational success in two main ways: helping to overcome physical learning barriers and shifting the attention from mere memorization of knowledge to its application (Driscoll, 2007).

ICT in Education

ICTs are reshaping society in a very profound way, making it possible for people to interact and perform various tasks at any time and from any place; these ICTs deeply affect, among others, the field of education. As ICTs offer more ways for learners and educators to customize the learning and teaching by means of individualized instruction for example, schools as institutions are becoming so socially responsible to compel them to respond positively to this technical innovation, which the whole world is abuzz about. In his speech at the 2002 e-Learning Alliance Conference, in Manila, Philippines, Tinio highlighted many ways in which ICTs made it possible to widen access to education, improve its relevance and quality, particularly in developing countries. Not only that they aid greatly the learning and knowledge sharing but also they eventually open up to the developing countries opportunities to upgrade their educational systems, formulate and implement better policies, and bring about a variety of new business and poverty alleviation avenues.

Watson (2001) has elaborated on how changes in work as brought about by ICTs were already quite dramatic and how now ICTs in education are starting to transform our systems of learning. If schools continue to train children with skills and technologies of the past, they may not be proficient in the future world that is so different.

Mobile Technologies

The advent of mobile technology has brought about a major change in almost all areas including the field of education. Mobile devices such as cell phones and PDA help users to have access to the information easily (Lu, 2008). As per the view of Lehner et al. (2003), there has been a change from the feature of electronic services to that of mobile ones and the paradigm of computing anytime,

anywhere is the catalyst of this change alongside that.

Mobile learning or m-learning is a logical progression of the evolution of e-learning. It is considered to be any service or facility that provides a learner with general electronic information and educational content to help them in their knowledge procurement irrespective of their location and time. Cheon et al. (2012) stated that major features of mobile devices include portability, instant connectivity, and context sensitivity, i.e., not only can they be taken to various locations but they can also be used to access information anytime and anywhere as well as to find and gather real or simulated data. The drawbacks are limited memory, small screen, disconnection at times, and limited battery life.

Kloper, Squire, and Jenkins (2002) enumerated the five educationally-unique aspects of mobile devices as being the following: portability, social interaction, context sensitivity, connectivity, and individuality.

Mobile Learning

Mobile learning is a word that is used in a wide range of contexts all over the world. It refers to the use of mobile devices for educational purposes or to the act of learning through or with the help of mobile devices (Laouris & Eteokleous, 2005). Its main focus is on three types of mobility: the mobility of technology, the mobility of learners, and the mobility of learning, all of which together enhance the higher educational context (El-Hussein & Cronje, 2010).

The expanding number of educators and learners who are using mobile devices as means of teaching and learning is a very significant development in education. Through their mastery of the use of mobile phones for learning which has been termed mobile learning, students manage to go beyond the problems of the place and time of lectures. Teachers, on the other hand, have started seriously considering the idea of offering source materials and activities through mobile phones.

Seven Dimensions of Mobile Learning

Learning in the Mobile Age: Learners are now getting more and more used to using mobile

technologies such as mobile phones, smartphones, PDAs, tablet PCs, laptops, in their normal daily activities including learning. Thus, those learners who might otherwise have been excluded from education get enabled through mobile technologies and also such technologies can provide learners unique learning experiences (Naismith et al., 2004). On the other hand, Prensky (2009) argues that the exposure of students to technology has caused them to develop new learning styles and intellectual capabilities.

Mobility: According to Brown et al. (2015), mobile learning is often misunderstood as simply "learning while mobile."

In fact, mobility gives the learner a chance to engage in learning activities outside the educational institution. Besides, since these devices are personal and portable, they can be moved from one place to another easily. Further, the physical attributes of a device such as its size and weight are as important as its input and output features when it comes to determining its portability (Koole, 2009).

Access to Information: With mobile learning technologies, learners are not only able to obtain educational content but also carry out research and get information by using search engines on the web. Prensky (2009) highlights that memorizing everything is beyond human capability, and the typical way to remember large amounts of data is through digital technologies.

Collaboration: Communication and sharing of data among individuals are made possible by mobile devices. Besides, video conferencing enables collaboration by letting participants see each other and share telecommunication tools through the use of technologies, According to Ertl, Fischer, and Mandl (2006). Mobile learning software can be used for supporting learners who collaborate with classmates, experts, or anyone, any time they want (Kloper & Squire, 2008).

Game-Based Learning: We should be learning in a manner that is as natural to us as play. In fact, learning through playing is facilitated by game-based learning. The computer games which are

educational are being used in the medical field for training and education purposes, in military training, rehabilitation, and language learning. Educational computer games have the potential to enhance learning significantly, through the engagement of learners in activities based on game content, in addition to providing opportunities for motivated participation (Sparrowhawk, 2002). Lee and Hammer (2011) argue that through educational computer games active experimentation and learning in one's own way, controlling emotions, and collaboration lead to producing joyful learning experiences.

Situated Learning: Situated learning is basically interpreting the stuff in our daily living that includes a wide range of prosocial but informal environments where learning naturally happens as a result of the connections of internal features of the community and culture, and one links one's previous knowledge to new experiences. (Hou, 2015)

Mobile devices can be used very effectively in learning situations where the learner is 'hyperpresent' because they not only act as learning tools in the environment but also have the capability of being worked on at the time and place of the context, and learning from those contexts in order to make the learning process better.

Digital Literacy: Digital literacy refers to the ability of an individual to understand and effectively use a variety of communication tools, digital technologies, and manage as well as combine various digital resources. The level of perceived digital literacy has a direct and considerable influence on the acceptance of technology (Abu-al-aish & Love, 2013). It is essential for the lecturers to be digitally literate in order to bring about a radical change in the quality of education. Digitally literate teachers, by means of their access to digital literacy, can help students in acquiring the knowledge and skills which are necessary to adapt in a world where technology is the main source of change (Sad & Goktas, 2014).

Mobile Learning and Students' Academic Achievement

As a pedagogical tool, mobile learning (m-learning) is a revolutionary concept that can assist students in attaining the highest level of academic proficiency especially in those subjects which in general are considered to be difficult by providing them the opportunity to make powerful mental maps and grasp ideas in a correct way. According to Thomas and Orthober (2011), there is a positive correlation between the correct usage of mobile technology and learners' attitudes toward learning and their educational performance. Students who use mobile devices for learning, in comparison with students who use the traditional textbooks, often have better academic results (Wilkinson & Barter, 2016).

Navaridas, Santiago, and Tourón (2013) found a positive link between instructor perceptions of learner education performance and the flexible use of mobile technologies for learning in traditional classrooms. Most teachers strongly agreed that mobile learning has a powerful effect on students' learning abilities, language skills, and overall results.

M-learning has been shown to directly benefit students' academic success, though the impact varies significantly when teachers lead and monitor discussions centered on the main content (Andrews et al., 2011).

METHODOLOGY

Research Design

A descriptive cross-sectional survey design was employed in this research to explore students' perceptions of mobile learning across seven dimensions at the university level in Kotli, Azad Jammu and Kashmir.

Participants

The population of the study comprised all 4,217 students enrolled at the University of Kotli AJ&K. Using simple random sampling following Morgan's (1970) table, 353 students were selected as the sample.

Research Instrument

Based on study objective and comprehensive literature review, a five-point Likert scale questionnaire was developed as the research

instrument. The questionnaire covered seven dimensions of mobile learning: learning in the mobile age, mobility, access to information, collaboration, game-based learning, situated learning, and digital literacy. The Likert scale included: Strongly Agree (SA)=5, Agree (A)=4, Undecided (UN)=3, Disagree (D)=2, Strongly Disagree (SDA)=1.

Validity and Reliability

For instrument validity, questionnaires were distributed to three experts from the Department of Education, University of Kotli. Experts assessed content adequacy by thoroughly reviewing all items. Questionnaires were revised and corrected according to expert suggestions.

Pilot testing was conducted by administering the instrument to university students not included in the final sample. Based on pilot testing results, necessary refinements were made to ensure clarity and appropriateness. Reliability of the instrument was checked through statistical techniques and found acceptable for further research.

Data Collection

Personal visits were the medium for data collection by the researcher. The researcher distributed questionnaires to 353 students at the University of Kotli. Students were requested to read and complete the questionnaires carefully.

Data Analysis

Statistical Package for Social Sciences (SPSS) was used for data analysis. Frequency, percentage, and mean scores were employed to analyze students' perceptions of mobile learning across seven dimensions.

RESULTS

The results are presented in seven tables, each representing a distinct dimension of mobile learning. For each dimension, the table is followed by an interpretive analysis. A summary table of dimension means is also provided.

Table 1: Dimension 1 – Learning in the Mobile Age (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|--|------|-----|------|-----|------|-------------|
| Mobile technologies enable learners to engage in education | 28% | 25% | 23% | 20% | 4% | 3.55 |
| Mobile technology offers learners a distinct learning experience | 23% | 25% | 20% | 18% | 14% | 3.25 |
| Mobile technologies involve students in learning tasks using computer and internet | 28% | 25% | 23% | 20% | 4% | 3.55 |
| Mobile technologies are currently used as a means to enhance teaching and learning | 25% | 23% | 20% | 17% | 15% | 3.27 |
| Dimension Mean | | | | | | 3.41 |

Analysis of Learning in the Mobile Age: Students acknowledged that mobile technologies facilitate engagement in education (53% agreement, M=3.55) and involvement in learning tasks using

computers and internet (53%, M=3.55). Moderate agreement was observed for distinct learning experiences (48%, M=3.25) and current use to enhance teaching and learning (48%, M=3.27).

The dimension mean of 3.41 indicates positive perceptions of mobile learning's role in modern education.

Table 2: Dimension 2 – Mobility (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|---|------|-----|------|-----|------|-------------|
| Mobility offers learners opportunity to learn beyond the classroom | 28% | 25% | 23% | 20% | 4% | 3.55 |
| Learners gather information and access research through search engines | 28% | 25% | 20% | 17% | 10% | 3.46 |
| Mobile learning can take place while the learner is static in their own environment | 25% | 24% | 17% | 20% | 14% | 3.26 |
| Mobile devices can be used in any location suitable to the learner | 25% | 23% | 20% | 17% | 15% | 3.27 |
| Dimension Mean | | | | | | 3.39 |

Analysis of Mobility: Students strongly agreed that mobility enables learning beyond the classroom (53%, M=3.55) and that learners gather information through search engines (53%, M=3.46). Moderate agreement was observed for static environment learning (49%, M=3.26) and location flexibility (48%, M=3.27). The dimension mean of 3.39 confirms that mobility is a valued attribute of mobile learning.

Table 3: Dimension 3 – Access to Information (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|--|------|-----|------|-----|------|-------------|
| Mobile technologies can enhance access to any stored data | 28% | 23% | 17% | 20% | 12% | 3.41 |
| Mobile technologies enable students to easily access any kind of information | 28% | 25% | 17% | 20% | 10% | 3.44 |
| Mobile technologies help students collect information related to their subject | 25% | 23% | 20% | 17% | 15% | 3.27 |
| Mobile technologies help collect information in detail | 25% | 23% | 17% | 20% | 15% | 3.24 |
| Dimension Mean | | | | | | 3.34 |

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|-----------|------|-----|------|-----|------|------|
|-----------|------|-----|------|-----|------|------|

Analysis of Access to Information: Students recognized mobile technologies' role in enhancing access to stored data (51%, M=3.41) and enabling easy information access (53%, M=3.44). Moderate

agreement was noted for subject-specific information collection (48%, M=3.27) and detailed information gathering (48%, M=3.24). The dimension mean of 3.34 indicates mobile devices effectively support information access.

Table 4: Dimension 4 – Collaboration (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|--|------|-----|------|-----|------|-------------|
| Mobile technologies can be used for sharing learning content | 28% | 23% | 17% | 20% | 12% | 3.41 |
| Mobile technologies enable learners to share ideas with their friends | 28% | 23% | 20% | 14% | 15% | 3.38 |
| Mobile technologies combine multiple classrooms for learning purposes | 25% | 24% | 17% | 20% | 14% | 3.26 |
| Mobile devices can connect with many other devices through Bluetooth connections | 28% | 23% | 15% | 20% | 14% | 3.31 |
| Dimension Mean | | | | | | 3.34 |

Analysis of Collaboration: Students acknowledged mobile technologies' role in sharing learning content (51%, M=3.41) and sharing ideas with friends (51%, M=3.38). Moderate agreement

was observed for combining classrooms (49%, M=3.26) and Bluetooth connectivity (51%, M=3.31). The dimension mean of 3.34 confirms mobile devices facilitate collaborative learning.

Table 5: Dimension 5 – Game-Based Learning (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|--|------|-----|------|-----|------|-------------|
| Mobile technologies provide opportunity to enhance learning through computer games | 28% | 23% | 20% | 17% | 12% | 3.38 |
| Mobile technologies provide flexibility in learning by doing | 23% | 25% | 18% | 20% | 14% | 3.23 |
| Mobile technologies enhance student understanding through game-based learning | 28% | 23% | 17% | 12% | 20% | 3.41 |
| Mobile learning enhances students' problem-solving skills | 20% | 23% | 15% | 25% | 17% | 3.03 |
| Dimension Mean | | | | | | 3.26 |

Analysis of Game-Based Learning: Students recognized game-based learning benefits for understanding enhancement (51%, M=3.41) and learning through computer games (51%, M=3.38).

Moderate agreement was noted for learning by doing (48%, M=3.23). Problem-solving skill enhancement received the lowest agreement (43%, M=3.03), indicating this area requires further development.

Table 6: Dimension 6 – Situated Learning (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|---|------|-----|------|-----|------|-------------|
| Mobile devices bridge formal school settings and outdoor scenarios | 23% | 25% | 18% | 20% | 14% | 3.23 |
| Mobile learning provides knowledge to survive in the technology era | 25% | 23% | 17% | 20% | 15% | 3.24 |
| Mobile technologies encourage students to relate learning with practical life | 25% | 23% | 15% | 20% | 17% | 3.27 |
| Mobile technologies enable students to deal with real-life situations | 25% | 23% | 20% | 17% | 15% | 3.25 |
| Dimension Mean | | | | | | 3.25 |

Analysis of Situated Learning: Students moderately agreed that mobile devices bridge formal and outdoor learning (48%, M=3.23), provide knowledge for technology era survival (48%, M=3.24), encourage practical life

connections (48%, M=3.27), and enable real-life situation management (48%, M=3.25). The dimension mean of 3.25 indicates situated learning potential is recognized but not fully utilized.

Table 7: Dimension 7 – Digital Literacy (N=353)

| Statement | SA % | A % | UN % | D % | SD % | Mean |
|--|------|-----|------|-----|------|-------------|
| Mobile technologies help learners use different communication tools | 25% | 23% | 15% | 20% | 17% | 3.27 |
| Mobile learning provides opportunity to learn new skills via digital devices | 23% | 25% | 15% | 20% | 17% | 3.17 |
| Mobile learning enables students to use digital devices to enhance their learning | 28% | 23% | 17% | 20% | 12% | 3.35 |
| Mobile technology provides chances to increase understanding through digital media | 25% | 23% | 15% | 20% | 17% | 3.27 |
| Dimension Mean | | | | | | 3.27 |

Analysis of Digital Literacy: Students recognized mobile technologies' role in enhancing learning through digital devices (51%, M=3.35). Moderate agreement was observed for communication tool usage (48%, M=3.27) and understanding through

digital media (48%, M=3.27). Learning new skills via digital devices received lower agreement (48%, M=3.17). The dimension mean of 3.27 indicates digital literacy is developing but requires further strengthening.

Table 8: Summary of Dimension Means

| Dimension | Mean |
|----------------------------|------|
| Learning in the Mobile Age | 3.41 |
| Mobility | 3.39 |
| Access to Information | 3.34 |
| Collaboration | 3.34 |
| Game-Based Learning | 3.26 |

| Dimension | Mean |
|---------------------|-------------|
| Situated Learning | 3.25 |
| Digital Literacy | 3.27 |
| Overall Mean | 3.32 |

Interpretation of Overall Results: The overall mean of 3.32 across all seven dimensions indicates that university students in Kotli hold generally positive perceptions of mobile learning's role in academic achievement. Learning in the mobile age (3.41) and mobility (3.39) received the highest ratings, reflecting appreciation for mobile technologies' ability to engage learners and transcend physical boundaries. Access to information (3.34) and collaboration (3.34) were also positively rated, confirming mobile devices' utility for research and peer learning. Game-based learning (3.26), situated learning (3.25), and digital literacy (3.27) received relatively lower ratings, indicating areas requiring focused attention for optimal mobile learning implementation.

DISCUSSION

The results of this research show that university students in Kotli hold generally positive perceptions of mobile learning's role in academic achievement. The overall mean score of 3.32 across all seven dimensions indicates that students recognize mobile technologies as valuable tools that make learning flexible, accessible, and interactive.

Learning in the Mobile Age (Overall Score: 3.41)

The relatively high rating for learning in the mobile age confirms that students appreciate how mobile technologies facilitate educational engagement and involvement in learning tasks. This finding aligns with Prensky's (2009) characterization of today's students as digital natives who have developed new learning styles through technology exposure. The 53% agreement that mobile technologies enable learner engagement and task involvement reflects

students' recognition that these tools make learning more accessible and interactive. However, the lower rating for distinct learning experiences (M=3.25) suggests that while students use mobile devices, they may not yet experience learning that is fundamentally transformed by these technologies—they may be using mobile devices for traditional learning tasks rather than engaging in truly innovative mobile learning pedagogies.

Mobility (Overall Score: 3.39)

The mobility dimension received strong endorsement, particularly for learning beyond the classroom (M=3.55) and information gathering through search engines (M=3.46). These findings support Naismith et al.'s (2004) assertion that mobility adds new options to learning activities regarding portability and mobile device features. Students value the freedom to learn anytime, anywhere, and the ability to access research materials through mobile internet. The slightly lower ratings for static environment learning (M=3.26) and location flexibility (M=3.27) may reflect practical limitations such as internet connectivity issues or lack of awareness about mobile learning's full potential.

Access to Information (Overall Score: 3.34)

Students recognized mobile technologies' role in information access, particularly for easy information access (M=3.44) and stored data access (M=3.41). This aligns with Prensky's (2009) observation that digital technologies have become the common way to recollect voluminous data. The ability to access information anytime, anywhere empowers students to take ownership of their learning and conduct research efficiently. However, lower ratings for subject-specific information collection (M=3.27) and detailed

information gathering (M=3.24) suggest that students may need guidance in effectively using mobile devices for academic research beyond basic search functions.

Collaboration (Overall Score: 3.34)

Students acknowledged mobile technologies' collaborative potential, particularly for sharing learning content (M=3.41) and sharing ideas with friends (M=3.38). These findings support Ertl, Fischer, and Mandl's (2006) emphasis on collaboration through telecommunication technologies and Koole's (2009) FRAME model describing social interaction as essential for knowledge exchange. The ability to connect devices through Bluetooth (M=3.31) and combine multiple classrooms (M=3.26) enables peer learning and knowledge sharing that extends beyond physical boundaries.

Game-Based Learning (Overall Score: 3.26)

Game-based learning received the lowest dimension rating, with problem-solving skill enhancement particularly low (M=3.03). This finding is concerning given the documented potential of educational games to enhance learning through active experimentation, multiple solution paths, emotional engagement, and collaboration (Lee & Hammer, 2011). The low rating may reflect limited exposure to quality educational games, insufficient integration of game-based learning in curricula, or student perception that gaming is for entertainment rather than education. The moderate agreement for understanding enhancement through games (M=3.41) suggests that when students do experience game-based learning, they recognize its benefits—but such experiences may be infrequent.

Situated Learning (Overall Score: 3.25)

Situated learning received the second-lowest dimension rating, indicating that students do not strongly perceive mobile devices as tools connecting formal education with real-world contexts. This finding is surprising given mobile devices' location-aware capabilities and potential for contextualized learning (Hwang & Tsai, 2011). The moderate ratings for practical life connections

(M=3.27) and real-life situation management (M=3.25) suggest that students use mobile devices for learning but may not consciously connect this learning to authentic contexts. This represents an opportunity for educators to more intentionally design situated learning experiences leveraging mobile technologies.

Digital Literacy (Overall Score: 3.27)

Digital literacy ratings suggest that while students use digital devices for learning (M=3.35), they may not feel fully confident in their digital skills, particularly learning new skills via digital devices (M=3.17). This finding is significant given Sad and Goktas's (2014) emphasis on digital literacy as essential for thriving in technologically dominated societies. The moderate ratings suggest that universities must more intentionally develop students' digital competencies alongside content knowledge.

Comparison with Previous Research

The findings align with international research on mobile learning benefits. The recognition of mobile technologies for learner engagement, information access, and collaboration supports findings by Thomas and Orthober (2011), Huang, Lin, and Cheng (2010), and Lu (2008). The positive perceptions of mobile learning's role in academic achievement align with Navaridas, Santiago, and Tourón's (2013) finding that teachers perceive mobile devices as impacting student learning.

However, the relatively lower ratings for game-based learning, situated learning, and problem-solving skill enhancement suggest that the full potential of mobile learning identified in literature (McClarty et al., 2012; Lee & Hammer, 2011; Hou, 2015) has not yet been realized in the Pakistani context. This gap between documented potential and actual implementation reflects Liu and Han's (2010) observation that mobile learning has not reached maximum potential and there is a gap between what is offered and what is used.

CONCLUSIONS

This study explored university students' perceptions of mobile learning across seven

dimensions and its perceived role in academic achievement in Kotli, Azad Jammu and Kashmir. The findings demonstrate that students hold predominantly positive perceptions across all seven dimensions, with dimension means ranging from 3.25 to 3.41, providing a foundation for mobile learning integration in higher education.

Learning in the Mobile Age (Dimension Mean: 3.41): It is concluded that mobile technologies enable learners to engage in education and involve students in learning tasks using computers and the internet. These technologies are currently used as means to enhance teaching and learning, representing an evolution in educational delivery. Students recognize that mobile technologies make learning more accessible and interactive.

Mobility (Dimension Mean: 3.39): Mobility offers learners the opportunity to learn beyond the classroom, allowing students to gather information and access research through search engines on the World Wide Web. Mobile learning can take place while learners are static in their own environment and can occur in any location suitable to the learner, transforming education from location-bound to ubiquitous.

Access to Information (Dimension Mean: 3.34): Mobile technologies enhance access to stored data, enabling students to easily access any kind of information. They help students collect information related to their subjects and gather information in detail, empowering independent research and self-directed learning.

Collaboration (Dimension Mean: 3.34): Mobile technologies can be used for sharing learning content, enabling learners to share ideas with friends, combine multiple classrooms for learning purposes, and connect with other devices through Bluetooth. These collaborative features enhance peer learning and knowledge exchange.

Game-Based Learning (Dimension Mean: 3.26): Mobile technologies provide opportunities to enhance learning through computer games and enhance student understanding through game-based learning. However, the relatively lower

rating for problem-solving skill enhancement (M=3.03) indicates this area requires further development. Students may need more exposure to quality educational games integrated into formal curricula.

Situated Learning (Dimension Mean: 3.25): Mobile devices bridge formal school settings and outdoor scenarios, provide knowledge to survive in the technology era, encourage students to relate learning with practical life, and enable students to deal with real-life situations. Yet situated learning applications require more intentional integration into teaching practices.

Digital Literacy (Dimension Mean: 3.27): Mobile technologies not only broaden the learners' use of different communication tools but also make it possible for the students to use digital devices as means of learning enhancements. Besides, they play a role in giving the students opportunities for developing their understanding through digital media. However, acquiring new skills through digital devices must be followed up with structured digital literacy programs for students to get a better hold of the use of digital resources.

Challenges and Areas of Concern: The study brought out a few at-risk areas which need proper support. There still is a lack of mobile learning-based problem-solving skill development with only 43% agreement and the mean at 3.03. A lower percentage of students (48% and mean=3.17) exhibit confidence in their digital skills learning ability. Such issues demonstrate that although the students' perception of mobile learning is quite positive, the extent of mobile learning usage is yet to be fully explored and exploited.

Overall Conclusion: According to the study, university students in Kotli think that mobile learning is a good way of learning and contribute to academic achievement, as they showed a positive perception regarding all seven dimensions and the overall mean was 3.32 which is indicative of general agreement with mobile learning as a contributor to academic success. Nevertheless, mobile learning's untapped areas especially, game-

based learning, situated learning, and digital literacy are mainly due to less teacher training, lack of institutional support, technical problems and not enough integration into curricula. It is clear that with the right resources and proper support mobile learning has the potential to substantially increase academic achievement and equip students for success in this digital era.

Implications for Practice

For University Administration: The university administration should offer teacher training on the integration of mobile learning, raise students awareness of effective mobile learning strategies, hold workshops on accessing information and managing data, support students in collaborative learning through the use of mobile technologies, provide game-based learning platforms, combine situated learning approaches that link classroom and real-life contexts, and encourage digital literacy in all disciplines.

For Teachers: Teachers can highlight mobile learning benefits through planned activities, by giving examples of how mobile devices and learning outcomes are supported. Teachers can enhance students' perceptions by demonstrating the use of mobile learning in effective ways and by setting up digital learning environments that are warm and inviting. Teachers, with their understanding of how learners differ from one another, can tailor their instruction to meet all students' needs, taking into account that a few students might need extra help with their digital skills.

For Policymakers: Higher education policymakers can come up with plans for mobile learning integration, set aside funds for the building of infrastructure, and draw up rules for the most suitable use of mobile devices in schools.

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