

Using m-Learning as an Effective Device in Teaching and Learning in Higher Education at Namangan State Technical University

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Abstract: The widespread use of smartphones and mobile technologies has gradually changed how teaching and learning are organised in higher education. Mobile learning (m-learning) enables students to access learning materials, communicate with teachers, and complete academic tasks beyond time and place constraints. This study explores the effectiveness of m-learning as a practical tool for teaching and learning at Namangan State Technical University (NamSTU). A mixed-methods approach was applied, involving questionnaires for students, interviews with lecturers, and an analysis of academic performance before and after the use of m-learning tools. The results show that m-learning positively influences student engagement, learning flexibility, and independent study skills. At the same time, challenges such as a lack of digital skills, limited internet access, and possible distractions remain. Overall, the study shows that m-learning can significantly improve the quality of independent work and make teachers' work easier.

Keywords: Mobile learning, higher education, independent work, academic tasks, access to educational content.

Introduction: In recent years, higher education systems around the world have increasingly relied on digital technologies to improve the quality and effectiveness of teaching. Universities are moving away from purely traditional lecture-based instruction toward more flexible and student-centred learning models. One of the most noticeable developments in this process is the growing role of mobile learning, commonly known as m-learning.

M-learning refers to learning activities that are supported through mobile devices such as smartphones and tablets, allowing learners to access educational content anytime and anywhere [1], [7]. Unlike conventional e-learning, which often depends on desktop computers and fixed locations, m-learning emphasises mobility, immediacy, and personalisation. Research has shown that m-learning can increase learner motivation, encourage active participation, and strengthen interaction between students and teachers

[2], [3], [5].

At Namangan State Technical University, the need to modernise teaching practices is particularly important due to the technical nature of academic programs and the growing expectations of digitally literate students. Traditional teaching methods alone are often insufficient to meet these demands. In this context, m-learning offers practical opportunities to support blended learning, continuous access to resources, and independent learning outside the classroom.

The purpose of this study is to examine how m-learning is used at NamSTU and to evaluate its effectiveness as a teaching and learning device. Specifically, the study aims to analyse current practices, assess learning outcomes, and identify key challenges related to m-learning implementation.

Methodology

This study employed a mixed-methods research design,

incorporating both quantitative and qualitative data, to attain a comprehensive and balanced understanding of m-learning at Namangan State Technical University. This study utilised a mixed-methods research design to cultivate a comprehensive and nuanced understanding of mobile learning (m-learning) at Namangan State Technical University. This method used both quantitative data from surveys and statistical analysis and qualitative insights from interviews and focus groups. The research sought to amalgamate these two methodologies to capture not only quantifiable trends and patterns in m-learning usage but also the experiences and perceptions of students and faculty, thereby offering a comprehensive perspective on the efficacy and challenges of m-learning within the university's educational framework.

Participants

The study sample comprised 120 undergraduate students enrolled in engineering and technical programs, along with 25 lecturers tasked with delivering both professional and general courses. All of the students who took part in the program learned English through their phones as part of their schoolwork. Participants were chosen through purposive sampling, guaranteeing that each frequently employed mobile technologies for academic objectives, specifically for English language acquisition.

Data Collection Tools

Data collection for this study was carried out using three primary instruments, each designed to gather comprehensive insights into various aspects of mobile learning (m-learning).

- **Questionnaire:** A carefully crafted questionnaire was developed to assess students' attitudes toward m-learning. This instrument sought to delve into their frequency of usage of m-learning tools and platforms, as well as to gauge the perceived benefits they associate with this learning modality. The questionnaire contained a combination of Likert-scale questions, multiple-choice items, and open-ended questions, facilitating a diverse range of responses that capture students' sentiments and experiences regarding m-learning.
- **Semi-Structured Interviews:** To add to the quantitative data from the questionnaire, semi-structured interviews were held with teachers. The goal

of these interviews was to find out how the lecturers have used m-learning tools in their teaching, what strategies they use, and what problems they have when they try to use technology in their teaching. The semi-structured format allowed for flexibility, which meant that the interviewer could ask more questions about certain topics that came up during the conversation.

- **Academic Performance Analysis:** Along with surveys and interviews, a comparison of students' academic results was done before and after m-learning tools were added to some classes. The goal of this analysis was to find any significant changes in academic performance, which would show how m-learning affects student outcomes in a concrete way. The study assessed the efficacy of m-learning implementations and their capacity to improve learning outcomes by analysing grades and other academic metrics.

These tools worked well together to help people understand the many different aspects of m-learning and how it affects both students and teachers.

Steps in the Research

The study took place during one academic semester (2023–2024). During this time, a number of courses used m-learning tools. These tools included learning management systems that work on mobile devices, educational apps, messaging platforms, and online testing tools. Students used their phones and tablets to get to their homework, quizzes, video lessons, and lecture notes, both inside and outside of class.

Analysing Data

Descriptive statistics were used to look at the quantitative data from the questionnaires and test results. Thematic analysis was used to look at qualitative data from interviews with teachers. Using more than one data source helped make sure that the results were accurate and reliable.

Results

The analysis of collected data indicates that m-learning has a generally positive effect on teaching and learning processes at Namangan State Technical University.

Student Engagement and Motivation

According to the questionnaire results, 82% of students reported higher motivation and greater engagement when m-learning tools were incorporated into their courses. Many students noted that mobile access to

learning materials made it easier to review content, prepare for classes, and study independently.

Academic Performance

A comparison of academic results before and after the implementation of m-learning tools indicated a moderate enhancement in student performance. Students showed a better understanding of the course material and better problem-solving skills, especially in subjects that needed regular practice and review.

Teaching Practices

Teachers reported that m-learning supported more interactive teaching approaches. Tools such as mobile-based quizzes, online discussions, and instant feedback helped instructors monitor student progress and respond more effectively to learning needs.

Problems that have been found

Even though these were good results, there were still some problems. These included differences in students' access to stable internet connections that weren't equal, and lecturers' digital skills, and the risk of distraction when mobile devices are used for non-academic purposes.

Discussion

The findings of this study confirm that m-learning can serve as an effective pedagogical device in higher education, particularly in technical universities [3], [6], [7]. Increased student engagement and improved academic performance support the idea that mobile technologies encourage active and self-directed learning.

At NamSTU, m-learning contributes to the development of blended, student-centred learning environments by extending educational activities beyond the classroom. These results are consistent with previous studies that emphasise the role of mobile technologies in enhancing flexibility, collaboration, and access to learning resources [4], [5], [8]. However, the effectiveness of m-learning depends not only on technology itself but also on instructional design, teacher competence, and institutional support.

The challenges identified in this study reflect common issues reported in similar educational contexts. Without clear guidelines and proper training, mobile devices may distract learners rather than support learning. Therefore, strategic planning and continuous

professional development are essential for successful m-learning implementation.

Conclusion

This study shows that m-learning is a valuable and effective tool for teaching and learning at Namangan State Technical University. When used correctly, it makes students more interested, helps them learn in different ways, and makes teachers better.

Based on the results, the following suggestions are made:

- Make sure that your school's plan for m-learning is in line with the goals of the curriculum.
- Give teachers regular training on how to use mobile devices in the classroom;
- Make the digital infrastructure better and make sure that the internet is always available.
- Set rules that encourage students to use their phones responsibly and academically.

Future research may concentrate on the enduring effects of m-learning on professional skill enhancement and incorporate comparative analyses among various higher education institutions.

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