DESIGN AND IMPLEMENTATION OF A MOBILE EDUCATIONAL METHOD SYSTEM

Mamasoliyev Akmaljon Azizjon oglu
Kokand State University basic doctoral student

Annotation
This article discusses the theoretical and methodological foundations of designing a system of mobile educational methods and the mechanisms for its effective implementation in the educational process. Methodological approaches based on mobile devices, digital applications and interactive learning platforms are analyzed, indicating the didactic advantages of the mobile educational system, the possibilities of individualizing the educational process and its role in supporting the independent learning activities of students. Also, the stages of pedagogical design in the implementation of mobile education, technological requirements, application strategies in educational institutions and criteria for effectiveness are analyzed. The results of the study show that careful design of the system of mobile educational methods can improve the quality of education, form the student as an active subject and expand the possibilities of continuous learning.

Keywords: mobile education, mobile pedagogy, method system, pedagogical design, digital education, mobile applications, interactive teaching, educational process, educational technologies, continuous learning.

Modern information technologies, including mobile and cloud technologies, create new opportunities for organizing interaction between participants in the educational process. Therefore, mobile technologies affect teaching methods, as they provide new tools for organizing the activities of both the teacher and the student and change the mechanism of student movement towards the goal.
Technological foundations affect the implementation of the teaching method, therefore, describing the method means expressing the following:
• didactic goal;
• technological basis;
• order of pedagogical actions;
• order of student actions;
• criterion for achieving the result.

Each teaching method has its own application features, it does not depend on the content of a particular subject and gives different results depending on the didactic task set. Therefore, there is a need to create a system of teaching methods based on mobile technologies.

To formulate this concept, we turn to the concept of "system". In various sources, the “system” is defined as follows:

• “A system (from the Greek. – whole, composed of parts) – is a set of interconnected elements that form a certain integrity” [12]

• “A system – a set of interconnected elements” [1]

• “A system – a set of interconnected and interacting elements” [3]

• “A system – a set of parts that form a certain order, form of organization, whole” [74]

In this work, we take the “system” as a set of interacting components. Although each of them does not have the properties of the entire system in isolation, they are an integral part of the system [11, p. 320].

By the system of mobile learning methods, we understand a set of learning methods that complement each other in solving various didactic tasks and have a single technological basis – mobile and cloud technologies.

To build a system, it is necessary to establish the following principles that connect its individual methods:

• Systematic and consistent use of methods based on mobile technologies;

• Integrated use of methods to solve didactic tasks;

• Unified format for storing and adapting data;

• Flexibility - organic integration of the system of methods with the content of the subject, the plan of the subjects and other methods;

• Independence from tools - not tied to specific software, the presence of substitute analogues;

• Cross-platform - compatibility of teaching methods based on mobile technologies with different versions of software and hardware environments.

Principles of building a system of mobile teaching methods

The principle of systematicity is the main principle of the concept of a system of teaching methods, which implies the need to cover all types of educational activities through appropriate methods. Also, the systematicity of methods is reflected in a single technological basis - mobile and cloud technologies.

The principle of systematic use of methods based on mobile technologies is based on the following considerations:

• The use of a single system of methods based on mobile technologies in all types of educational activities allows collecting information about the educational process and student

development in a single, accessible form on all types of devices (desktop computer, tablet, laptop, smartphone).

• The systematic use of mobile technologies in lessons allows students to practice their skills in working with mobile devices.

The principle of integrity is to ensure the interdependence of all methods in the system. If one method is excluded from the system, then the integrity is violated and the scope of didactic tasks is reduced. From a technological point of view, the integrity is provided by cloud technologies, which are the basis of information exchange.

The principle of the unification of data storage and adaptation formats is that educational content should be in a common format that ensures its appropriate viewing on any device, with different screen parameters. For example:

• Text information should be read the same way on both a mobile device and a computer;

• Video content should be easily opened without requiring special players or separate programs.

In this regard, there is a need to use single and universal formats for representing and storing data.

The principle of integration into the content of the subject and thematic planning is very important for the subject "Informatics and ICT", since mobile technologies are one of the objects of study of this subject. As is known, mobile devices can work with various types of information (text, sound, graphics, video, etc.). At the same time, each teaching method based on mobile technologies technically implements a certain algorithm for working with such information. Therefore, it is appropriate to consider the use of mobile devices in computer science lessons not only from the point of view of a teaching method, but also as an example of working with various types of information.

For example, using a mobile device as a QR code scanner can be both a teaching method and a means of demonstrating the image recognition algorithm and explaining the practical application of binary coding.

When placing teaching methods in the course calendar-theme plan, it is advisable to technologically link the implementation of the method to this topic, because:

• It will be easier for students who have the necessary theoretical knowledge in advance to understand what actions are required to implement the selected method;

• In this case, the teaching method becomes a demonstration model for explaining the topic and is harmoniously integrated into the content.

The principle of independence from equipment - allows each teaching method to be implemented using various technical and software tools. This principle allows each teacher to choose the most convenient services and tools for themselves. At the same time, if a software

and hardware tool is not available, the teacher should have alternative options for implementing each method.

The principle of cross-platform - means the independence of the system of teaching methods from technological foundations. For example, if students in one class have smartphones with different programs installed, teaching methods should not depend on a specific program or its version. Therefore, all necessary tools should be able to work on any platform or be implemented through cloud technologies.

Given that the system of teaching methods covers the solution of a number of didactic tasks, and the versatility and large number of methods, they can be classified on various grounds. For example:

• According to the sources of information transmission and the nature of its reception — the system of traditional methods (Ye.Ya. Golant, I.T. Ogorodnikov, S.I. Perovsky):

o verbal methods (story, conversation, lecture, etc.);

o moral (demonstration, demonstration, etc.);

o practical (laboratory work, essays, etc.).

• According to the nature of the interaction between the teacher and the student — I.Ya. Lerner – M.N. Skatkin's system of teaching methods:

o explanatory-illustrative method;

o reproductive method;

o problematic explanatory method;

o partially exploratory (heuristic) method;

o research method.

• According to the components of the teacher's activity — Yu.K. Babansky's system of methods, which is divided into three large groups:

o methods of organizing and implementing educational activities (verbal, demonstrative, practical, reproductive and problematic, inductive and deductive, independent work and work under the guidance of a teacher);

o methods of forming incentives and motivation for learning (forming interest — cognitive games, analysis of life situations, creating success situations; forming duties and responsibilities in learning — explaining collective and personal significance, setting pedagogical requirements);

o methods of control and self-control (oral and written control, laboratory and practical work, machine and non-machine programmed control, general and differentiated, current and final).

Foydalanilgan adabiyotlar.

1. Traxler, J. Mobile Learning: Transforming the Delivery of Education and Training. London: Routledge, 2009.
2. Sharples, M., Taylor, J., & Vavoula, G. A Theory of Learning for the Mobile Age. In: Andrews R., Haythornthwaite C. (eds) The SAGE Handbook of E-learning Research. SAGE, 2007.
3. Kukulska-Hulme, A. Mobile-Assisted Language Learning: A Critical Review of Recent Developments. ReCALL, 2009.
4. Park, Y. A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies. British Journal of Educational Technology, 2011.
5. Crompton, H., & Burke, D. The Use of Mobile Learning in Higher Education: A Systematic Review. Computers & Education, 2018.
6. Ally, M. (Ed.). Mobile Learning: Transforming the Delivery of Education and Training. Athabasca University Press, 2009.
7. West, M. Mobile Learning for Teachers: Global Themes. UNESCO, 2012.
8. Koole, M. L. A Model for Framing Mobile Learning. Athabasca University, 2009.
9. Danaher, P., Gururajan, R., & Hafeez-Baig, A. Transforming the Practice of Mobile Learning: Promoting Pedagogical Innovation with Mobile Technologies. IGI Global, 2009.
10. Winters, N. What is Mobile Learning? In: Sharples M. (ed.) Big Issues in Mobile Learning. University of Nottingham, 2007.
11. Valk, J.-H., Rashid, A., & Elder, L. Using Mobile Phones to Improve Educational Outcomes: An Analysis of Evidence from Asia. The International Review of Research in Open and Distributed Learning, 2010.
12. Gikas, J., & Grant, M. Mobile Computing Devices in Higher Education: Student Perspectives on Learning with Cellphones, Smartphones & Social Media. The Internet and Higher Education, 2013.
13. Hwang, G.-J., & Tsai, C.-C. Research Trends in Mobile and Ubiquitous Learning: A Review of Publications in Selected Journals from 2001 to 2010. British Journal of Educational Technology, 2011.
14. Herrington, A., & Herrington, J. (Eds.) New Technologies, New Pedagogies: Mobile Learning in Higher Education. University of Wollongong, 2007.
15. Pachler, N., Bachmair, B., & Cook, J. Mobile Learning: Structures, Agency, Practices. Springer, 2010.