

PROPOSED ADAPTIVE TESTING IN MOBILE EDUCATIONAL TECHNOLOGY FOR UNIVERSITY STUDENT

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Abstract. The aim of this study is to build a knowledge mobile system, which features a clear picture of the mobile learning environment, characteristics and advantages and benefits of technology. Where the studies were unanimous that mobile learning is learning education system that collects learning electronic elements, based mainly on telecommunications, so that learner can get the educational materials, lectures and seminars at anytime, anywhere, outside the classroom, which in turn creates an environment to learn new in part of the educational situations, based on a participatory and interactive learning, and ease the exchange of information among the educated themselves on the one hand and lecturer on the other. At the same time, the learning process is a joint activity of the learner and the learner, which can not be accomplished without solving problems, although unlike other activities (for example, production or cognitive), where the results of solving problems are its direct products, in learning activities, this is not a goal, but a means of achieving goals, namely, educational goals aimed at changing the learner, not the objects of the external world. Especially important is the problem approach in the initial learning of programming, in the course of which the learner must master the skills of precise formulation of algorithms in a high-level language. What can not be done by reading a few guides or by listening to a course of programming lectures. It is necessary to design a web based application and throw the site link and from there mobile phones the entire student can log in in to the system and did all the required test, each student will have his own result and learning information style stored in his data base.

Keywords: WAP, PDAs, E-Learning, M-Learning, Adaptive system.

1. Introduction

Mobile computing is computing from anywhere with a portable computer like a laptop, tablets, personal digital assistants, and smart phones. Another name for mobile computing is portable computing or portable computer a computer which is portable, and easy to carry around. Police cars, office workers, postal workers, army, computer technicians, and people who work out doors, and away from the office are already actively using laptops, smartphones, PDAs, and other mobile computers for their jobs. Mobile computers like smartphones, tablets, and laptops are now affordable, and small enough for most students, and home users to use to go on websites, do office work, play games, watch video, listen to songs, take photos, record video, and do a bunch of other tasks which they would typically do on a big heavy desktop computer which they can't take out of the house to use like portable mobile computers. Mobile computing lets you do tasks like browse the internet, edit a document, share a photo, record video, and draw on portable programs called apps which are like desktop software like web browsers, office suites, and photo editors, but designed for a smaller screen like on a tablet, or smart phone. However, if you use a laptop, or Windows tablet computer, you would use the same programs which you would install on a normal desktop computer running Windows because Windows Tablet use virtually the same version of Windows for desktops on it's Tablet computers.

Technical challenges for M-Learning include:

- Connectivity and battery life
- Screen size and key size (Maniar and et. Al. 2008)
- Meeting required bandwidth for nonstop/fast streaming
- Number of file/asset formats supported by a specific device
- Content security or copyright issue from authoring group
- Multiple standards, multiple screen sizes, multiple operating systems
- Reworking existing E-Learning materials for mobile platforms
- Limited memory (Elias, 2011)
- Risk of sudden obsolescence (Crescente and Lee, 2011, Caridad, Migdalia, et al. 2018)

2. Mobile Educational Technology (Background Study)

Knowledge, experience and contacts between people who share taken after the incident on the senses, the environmental community and the surrounding circumstances, people use different styles, a lot to deal with the requirements of life and understanding with his colleagues to express their opinions and ideas, and a tour to the same sensations and feelings, and resorted to the movements and physical signals and statues and symbols and inscriptions, and made this communication and spoken language. the use of educational technologies in several times, reflects a functional role assigned to it, they have been associated with the development of learning and different theories of education, as well as methods and techniques of training followed, and has been regarded as an integral part of an integrated system of education the learning part, and began focus on how the choice of materials and educational tools and devices and diversification in the use, in space and time, material and human conditions and opportunities for students and their characteristics, to achieve this goal. In accordance with this method, the concept of educational technology exceeded the use of tools and training materials, and attention has been focused on (inputs, processes, results) of the educational process, or the so-called style (system). This method emphasizes the complementary view of

the role of educational technology and its relation with the other components of the interdependencies of systems, since the use of technology to work to achieve the desired objectives, in accordance with the curriculum and the means, goals and methods of teaching material and human resources and the formation of a control system and so further. (Brown et al, 1995). The term "technology" flexible terms midwives for interpretation, so that it became difficult to determine exactly the content, and the reason for this is due to the rapid change that has kept pace with the evolution of things, which is the beginning of something simple well defined, and his the vision is clear, and then slowly evolve over time until it becomes a form to present a high degree of difficulty is not hard with endless things and determine its size. For the technology to measure the time passed through history, and covers now, and plays a key role in determining the future quality of life .technology has been developed over time, and as it were through the experience, knowledge and humanities, as well as worked in turn to the development of these variables in all areas and at all levels. They feel a simplified approach to thinking, working style, and use the tools, and the way to solve the problem (Kemp, 1995; Gagare, S. B., & Jadhav, P. S. 2017).

Hawkins, he said, and Coles (Hawkins and Callins, 1995) that the use of technology in education expands the educational methods of communication, opening the opportunity to participate, to listen and to think, and the interpretation of the balanced growth of the event, when education in various cognitive skills and emotional areas, finding analytical skills teacher through research, training and evaluation in order to achieve what we want .relation between technology and educational purposes, show through social, cultural, educational and behavioral consequences of the use of any technology for a long time in the life of nations and peoples. The importance of technology is the means of the list and ends the relationship, and that the evidence of any society in which they live. Not allowed.

3. The Problem Of The Study:

This scientific and technological progress and technological development Enter the world of the mobile era, which was the means of technology is moving with individuals and hold in their hands, and put it in his pocket to their small size, and is used as an intermediary at anytime and anywhere, and mobile the phone comes in the forefront of these funds, which spread rapidly, has not received any other iT systems, which are distributed among the educated, also received a mobile phone technology, regardless of age, gender, or economic level of the student, so that the number of mobile phones in some countries exceeds the number of persons. Encouraging governments and countries, both developed and developing, to use all new in the field of education in order to develop the system, and activate the input, to do the work entrusted to the service of people and society. mobile learning technology embodies these days, the subject of the day interesting, and the focus of human thought and art passenger of modern life, thanks to the age of technology in which we live, and interest is clear, on the other hand, to update the basis for education and opportunities and development learning and teaching methods is the most effective, using a variety of activities (merger) within the framework of educational situations, directed, which are mainly based on partnership and cooperation, to create a rich learning environment, enriching the needs of individual people and filling their needs and increase their productivity realizable up to high quality educational outcomes, to keep up with the events of that time, check the requirements of the current phase (Al-Harthy, 2008).

4. The goal of the work

is the development of adaptive mobile learning methods and with adaptive tools for supporting student learning test in the framework of the problem approach.

A proposed project is for extensible environment supporting distance learning programming depends on student personal differentiation and connecting the capabilities of adaptive test systems and intelligent training systems have to be developing. The environment is focused on the support of mobile learning, in the process of which students, while solving individual tasks set by them, independently, constantly provided. The possibility of obtaining qualified assistance, starting with the stage of understanding and doing all the educations functions tasks throw mobile device and ending with the stage of assessing the correctness of their solutions

4.1 The study questions:

The study will answer the following questions:

- What is the teaching and learning of mobile technology?
- What are the components of the training and methods?
- Which mobile learning features and benefits?
- What are the problems faced by means of mobile learning applications?
- Adaptive Computer Testing Technology Model
- Development mobile application of software and tools, monitoring and training
- Structure and content of test and measurement materials for students' subject-matter assessment

4.2 Objectives of the study:

This study aims to achieve the following objectives:

- Focus on the concept of e-learning and mobile learning one of its forms.
- Definition of the teaching and learning of mobile technology.
- The study focused on learning and mobile components and characteristics of the environment.
- The study examined the similarities and differences between mobile learning and e-learning.
- is to develop, theoretically and experimentally test the technology of adaptive computer testing in the mobile training of students.

- Based on the analysis of the theory and practice of student data analyzing, it is necessary to justify the need to develop a new type of diagnostic tool that allows differentiating and individualizing the procedure for controlling knowledge in educational process.

- To reveal the properties of adaptive testing mobile systems functioning in practice, to show that on their basis it is possible to create a new toolkit corresponding to the tasks of modern diagnostics and information's of education.

5. The Importance Of The Study Due To The Following:

1 – It benefits the designers and developers of educational programs in the Ministry of Education and Ministry of Higher Education; adoption of a draft mobile education, supports the teaching and learning of the subject, with the launch of the software and applications in e-shops to help learning and teaching lectures in the Russian Federation.

2 - Encourage students to enable mobile learning devices (smartphones and tablets) they own; download applications that are available in electronic stores that support the teaching and learning of the subject, and to use them at any time and in any place where the available wireless networks (Wi-Fi, 3G, 4G).

3 - Assist in the transformation of traditional teaching and learning in the local community to mobile teaching and learning that will allow teachers and leaders in the field of school education, to get a real education, and helps them to get access to mobile learning world, and evaluate the performance of their students light in the extent that they benefit from the advantages thereof.

4 - To help students to get what they need information in the learning process and the acquisition of other language (English) skills; at any time and in any place, as is the case in developed countries.

5 - Helping families in the provision of educational materials for their children through their mobile devices (smartphones, tablets), and therefore can support teaching and learning at any time and in any place.

6- The necessity of creation on the basis of mobile technologies of diagnostic tools of a new type that implements multidimensional monitoring of the quality of students' learning, as well as correction of diagnostics and management of the educational process, is grounded. The possibility of creating a toolkit with new educations properties based on adaptive testing systems and mobile learning, their integration into a single integrated technology with a universal structure.

7- Designing the structure of the software package includes modules: - automated assembly of test tasks;

- Creation of test variants;

- Adaptive testing algorithms;

- editing the content database;

- Statistical processing of results;

- Presentation of results.

6. The Study Methodology:

Will depend researcher descriptive analytical method to gather views and information and facts and concepts related to the study, in order to build an integrated knowledge system, which clarified the study and its background and significance and objectives problem, and by reference to a number of studies and research articles, and check out some international experiences in the field of M-learning, for use in display it indicated to him about aspects related to the concept of mobile learning and its environment and its components, and the rationale and benefits in the educational process.

6.1 System Implementation

This research is the development of Adaptive Mobile Learning is applied to the Information Systems course. This research was conducted for 6 months starting from January to Jun. Here are excerpts of the program that has been developed. At this stage of the software development using J2ME programming language and MySQL database. For the connection between mobile phone with a database requires server using the PHP language. Utilization of mobile devices on the learning process of Information Systems can be done anywhere and anytime. Besides, the process of learning can be adjust the level of ability of the students, this is because the concept of adaptive learning.

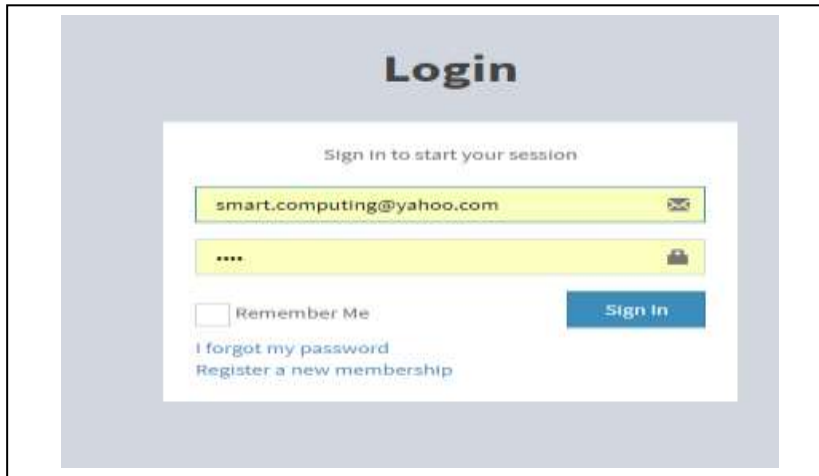
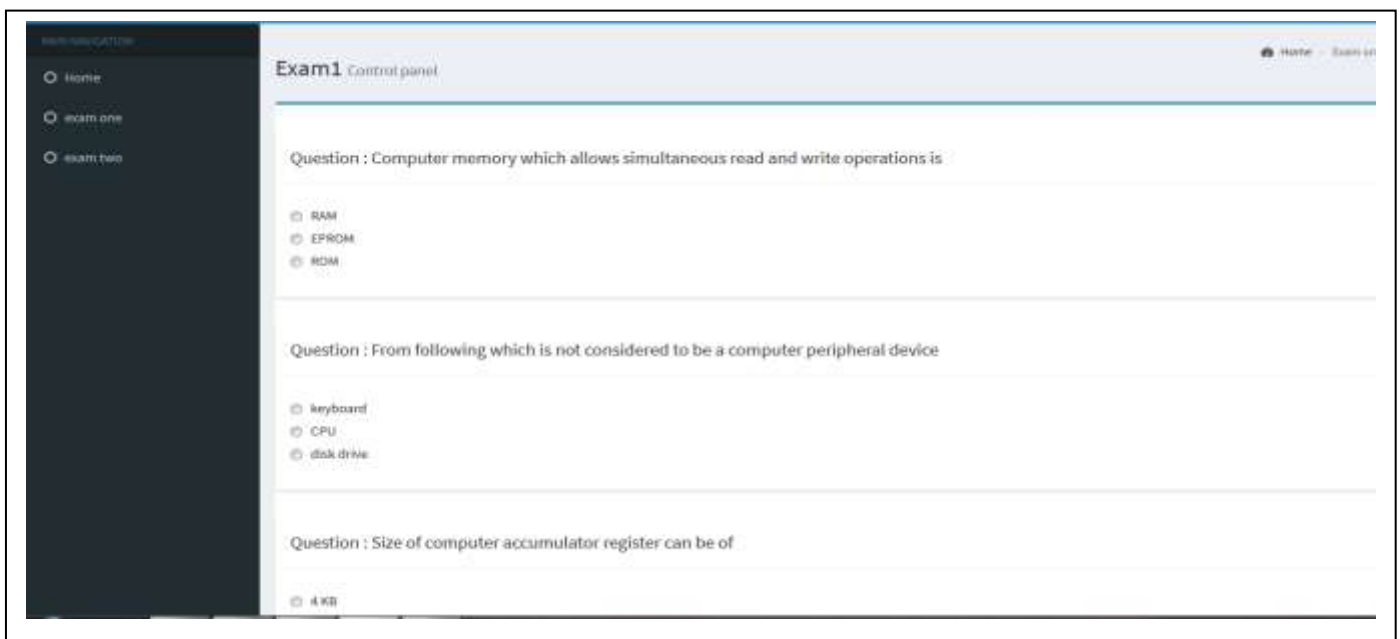
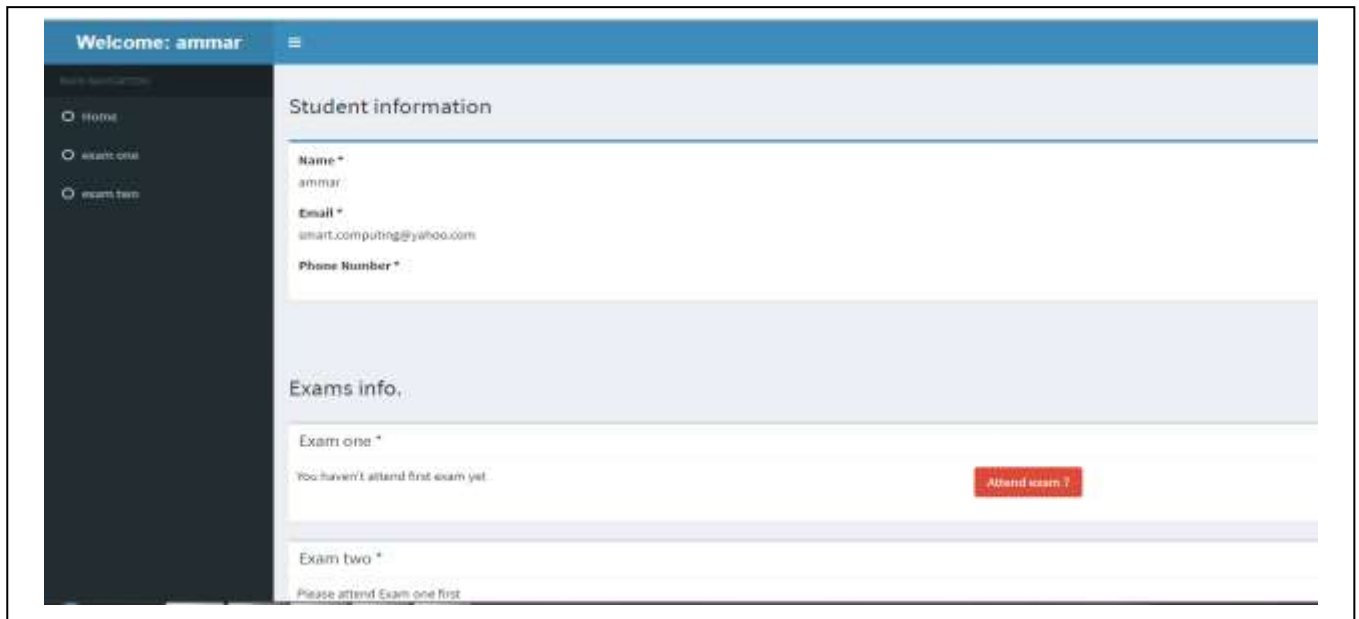
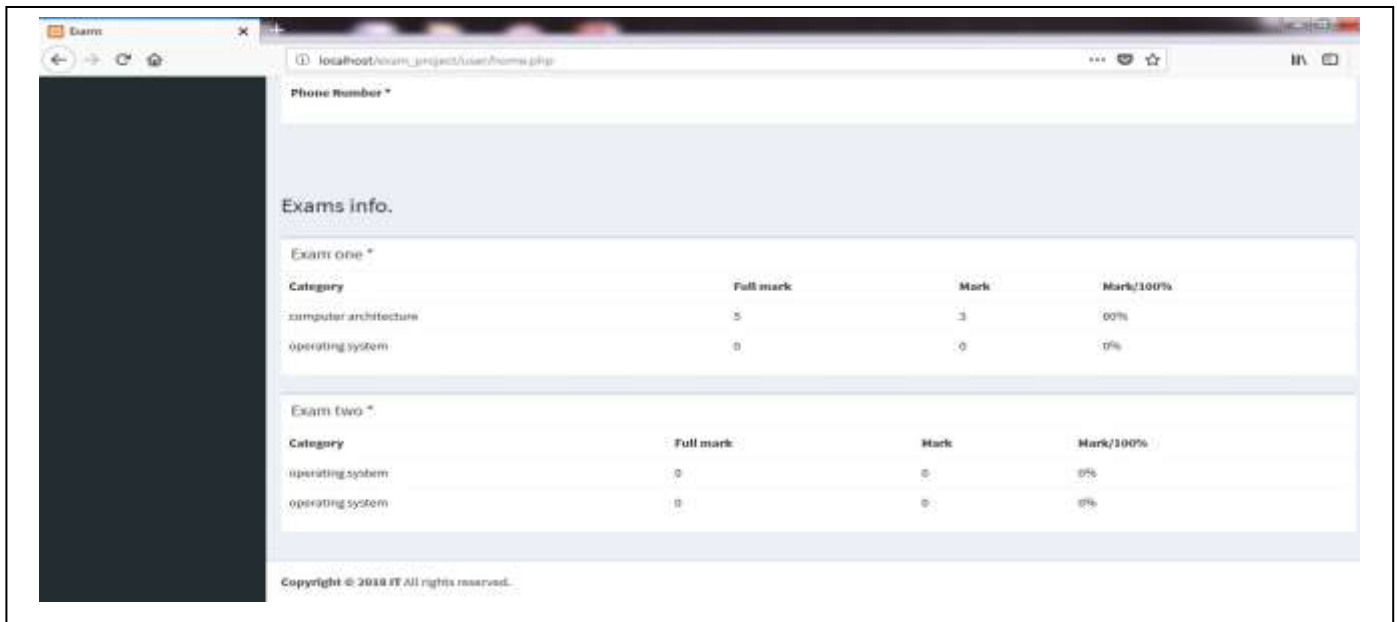


Fig. 1. Login form (This form is used by the learner to the login process. Login process using username (Student ID Number) and password.)





7. Some Characteristics For Which Training Can Be Adapted.

1. The level of knowledge of a person at the beginning of the course.

Relatively speaking, if one person graduated from the Physics and Mathematics Department of a profile university, and the other after the graduation from school never took a textbook again, then obviously they need to give different educational material. In a professional environment, the contrast is not so bright - there are people who have worked in a similar organization in the same industry, but there are those who do not have this experience. These two categories should be addressed to different educational content.

Accordingly, it is necessary to understand at the entrance, what knowledge is available, and what is lacking, so as not to give the learner an unnecessarily light or unnecessarily complex program.

2. The difference ability of student.

All of us are different in terms of speed, complexity of information delivery, and it is logical that this is reflected in the training. There is an eternal dilemma of professors at the university about who to target - the strongest student or the weakest. M-learning is, this dilemma can be avoided by offering courses tailored for each individual person, and thereby making them interesting for both, and for others.

3. Some features of perception.

On the one hand, we are talking about people with disabilities. On the other hand, when someone more easily learns the information by ear, and someone should read it from a sheet or screen.

One cannot ignore the fact that up to 60% of modern children are hyperactive. They are unable to perceive the teacher's explanations for two hours without interruption. Every 15 minutes they need some kind of entertainment. Everything that can not be touched by hands, anything that does not move, does not travel, does not turn into different figures three times a second - all this is uninteresting and difficult. It is important to teach them to concentrate. Further this situation will be manifested more and more and we will have to adapt the training programs more and more to similar traits of the trainees.

In the classroom, a teacher or coach can take into account similar features. In the format of e-learning, the problem is solved through various options for adapting learning to the needs of the individual.

8. Discussion

The mobility of training can be organized through two solutions:

1) A mobile application that has a more familiar interface for working with a mobile device and can work with offline content. But, it is worth considering that such a tool will not be required if this application does not solve the frequently occurring task for the constant and regular training of a large number of employees.

2) The mobile portal, which is a classic SDO with a special interface, adapted for use on a smartphone / tablet. In this case, you do not need to develop and install mobile applications. This solution gives all the possibilities of the traditional portal, which are easy to develop and refine. It should be noted that for correct and convenient display of the portal on various devices, adaptive layout is necessary.

Are these two solutions mutually exclusive? According to the experience of WebSoft, for a large company with an actively developed training system, a combination of these two methods of delivery of electronic content is required.

The third solution and another way of delivering content can be chat bots. The most practical of them work on a clear algorithm, have buttons and function in the usual messenger. This tool also has a number of advantages. In particular, bot development is several times faster and much cheaper than developing a mobile application. With the help of chat bots, you can set up notification distribution, testing, feedback collection, use of geolocation mechanisms and much more.

In order to support the offline learning mode in the mobile application, you need to solve a number of issues:

- 1- Mobile application must support the possibility of offline work,
- 2- The settlement of the requirements of the company's security services,
- 3- Ensuring high speed of operation.

One of the possibilities of offline mode is the organization and use of the mobile knowledge base without access to the corporate network or the Internet. According to the experience of WebSoft, the most optimal is not a full-fledged transition to mobile solutions for learning, but a competent and effective combination of the traditional and mobile educational portal. For the optimal e-learning development strategy in the organizations, it is necessary to satisfy the needs of the maximum number of users, providing, including various ways of access to learning and various interfaces.

Underwater stones of mobile technologies are issues of information security, protection of personal data and content, integration of cloud solutions into the corporate network. Answers to these questions must be found before deciding on the transition to mobile tools for e-learning. To resolve security issues, we have to use a two-contour architecture to protect personal data and electronic content. A similar solution was introduced, for example, (in Rosatom and Lukoil). In conclusion, we can say that the boundaries between e-learning and m-learning are erased. Now e-learning should be mobile. It is important to competently combine mobile and traditional solutions. It is worth remembering that for different users and different tasks there will be their most suitable tools. For someone it will be necessary to combine a traditional and mobile portal, someone will need to connect chat bots, and someone you will also need to develop a mobile application. The security problems that arise when opening the SDS outside, can be completely solved using a two-loop architecture scheme. And, at last, we should remember that the content from the traditional SDS will need to be adapted for mobile solutions. And this is already the issues of pedagogical design and micro-teaching when developing e-learning materials.

9. Conclusions

According to the concept of modernization of Russian education for the period until today, one of the key priorities for the modernization of Russian education is to ensure state guarantees - accessibility and equal opportunities for full-fledged education; achievement of a new modern quality of professional education. In this connection, the problem of scientifically grounded methods of quality control of education of students of higher educational institutions is topical. Based on this research, suggestions can be presented as:

- 1) The design of Adaptive Mobile Learning can model of Information System material.
- 2) Implementation of Adaptive Mobile Learning software can present material of information system and as an alternative media in the process of learning materials of information system anywhere and anytime.

The basis of the organizational and methodological mobile learning system for the preparation of individual curricula and programs should be a formalized structured presentation of the educational material. The basis of the methodology for the formation of an individual educational trajectory and its dynamic adjustment should be formalized models of adaptive test control procedures. In addition, it is necessary to create an adaptive mobile web based of combined forms of training, including local, network and WEB technologies. Only the integration of structured methodological materials, relevant test tasks and the development of procedures, synchronization of student interaction in different modes, will create an adaptive training system. This is justified the relevance of the research conducted in the proposed work.

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