USE OF MOBILE APPLICATIONS IN THE PROCESS OF TEACHING INFORMATION TECHNOLOGY

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ABSTRACT

The use of mobile applications and cloud technology in education is growing rapidly around the world. Mobile learning tools do not require much hardware today, but the demand for software resources is very high. This article is about developing information technology education using mobile applications and cloud technologies. The article discusses the algorithms of mobile applications used in education and the connection of cloud computing to applications.

Keywords: Education, learning, m-Learning, mobile application, teaching, cloud technology.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

In the XXI century, the introduction of modern information and communication technologies in the education system has created new opportunities in the field. Examples include virtual laboratories, multimedia tools, and distance learning systems that use the Internet. The organization of distance learning is carried out in such LMS systems as Moodle, Chamilo, iSpring, Khan Academy, etc. In the modern world, the development of the IT industry has created a number of new opportunities due to the use of new cloud technology in distance learning as well.

The need for education is increasing constantly and the development and the improvement of the e-learning solutions is necessary. In addition, the e-learning systems need to keep the pace with the technology, so the new direction is to use cloud computing [1].

The essential characteristic of nowadays society is the existence of the universal information space based on global computer networks and information technologies. So it has become vital for an educated person to be highly competent in working with large masses of information. This determines the need for the integrated use of Internet information opportunities in education. The modern educational policy strives to train a highly skilled professional who can be mobile and flexible professionally in the information society, can easily navigate in the global information space, and, what is more important, be capable of effective self-education throughout the life time. Everything mentioned above is the key to the success in the fast-moving world [2].

The use of mobile applications in education helps to increase the effectiveness of student learning time. Because many young people today spend time on devices such as smartphones and tablets. Thus, the main problem for educators in education is to make the best use of the space in the system, that is, the time that the student spends.

Currently, such scientists [1-7] and [9] conduct effective research to improve applications and methods of using mobile applications in education.

MOBILE AND CLOUD TECHNOLOGIES IN IT-EDUCATION

Mobile learning facilitates equal opportunities for all by allowing learning to be accessible across time zones, thus making location and distance irrelevant to the learner. Wireless mobile devices are small enough to be portable, which allow learners to use them anywhere and anytime to interact with other learners everywhere to share information and expertise, complete a task or work collaboratively on a project.

Workers in organizations can use mobile devices to learn on the job so that they can transfer what they learn in the school system to the job. One of examples is the use of mobile devices to train workers to improve their communication skills in the workplace so that they can be productive on the job [3].

As a result of the use of mobile technologies in e-learning systems, distance-learning applications for smartphones and tablets are being developed. In order to use these programs, the teacher must prepare and download the teaching materials in a pre-planned manner and ensure that the sequence of classes is carried out synchronously with other subjects.

They facilitate "any-time", "any-where" learning due to their inherent mobility and Web access. Class times are structured and limited. There are demands on the teachers for the coverage of topics. There are only certain amounts of content that could be delivered in a limited time. The mobile Applications supplements would be a boon for students by helping them catch up and understand the course material at their pace. The mobile Applications also facilitate continuous learning experience, where in, a learner may go beyond the classroom or course and learn additional related things based on one's interests [5].

The algorithms of the teacher and student on the use of content are implemented in conjunction with the teacher, the virtual class (server), students. Storage and processing of data in content requires a lot of memory, which increases the amount of information in the database on the device. This problem is not a big problem in computer programs. However, setting up a database in mobile training applications requires maximum control device maintenance. Modern information and communication technologies have allowed the use of cloud technology in distance learning.

Cloud technologies are the fundamentally new services that allow you to remotely use the tools of data processing and storage, provide Internet users with access to computer resources of the server and use software as an online service [4].

MOBILE LEARNING FOR THE FUTURE

The current educational model is outdated because it was developed before the advent of information and communication technologies. The current model, based on classroom-based face-to-face delivery, is geared towards educating a certain segment of the population. Also, teachers are being trained for the current model of education, and will therefore continue using the model when they become teachers. Teacher training must be re-invented to prepare teachers for the technology-enhanced educational system [7].

Nowadays, it is advisable to innovate in education and to educate students according to their wishes. If the teacher does not organize the lesson using innovative technologies, students will engage in activities that interest them during the lesson. Students seek solutions to these interests from a virtual being we all know. So modern teaching methods will also be referred to as the "Mobile Learning for the Future".

Education and training is the process by which the wisdom, knowledge and skills of one generation are passed on to the next. Today there are two forms of education and training: conventional education and distance education. Mobile learning, or "M-Learning", offers modern ways to support learning process through mobile devices, such as handheld and tablet computers, mp3-players, smart phones and mobile phones [8].

If virtual reality is a key decision for students to learn and satisfy their interests, then we need to develop mobile scientific applications faster. Then the education system will meet the interests of the student, otherwise we will be one-step behind in education, and the student will fill the gap with information in the virtual world.

The solution proposed in this article about the methods, algorithms and developers of mobile applications is illustrating by the example of the subject "Information Technology", which is taught in the undergraduate program of higher education.

The following factors play a key role in the exchange of resources in mobile applications, learning, some of the applications of computer applications LMS, in the study of students, as well as in the process of acquisition knowledge.

Requirements for mobile training applications:
- Compactness of mobile applications (for download and better production);
- Simple interface (convenient for students);
- A variety of course information (student interest);
- Forums between students and faculty;
- Interactivity of mobile applications (Virtual laboratories);
- Differences in knowledge (tests, crossword puzzles, essays, intellectual games, and others.);

When developing a mobile training application, the programmer should begin the first step with planning the actions that will fulfill the main goal of the program. In addition, a mobile application should also reflect factors such as new features that set it apart from other applications.

We know that with the spread of databases in mobile training applications and the solution that scientists around the world are currently offering, are cloud technologies, and many search engines and social networks now offer users to use this service.

We also used Google's cloud service in the proposed mobile application. Google's mobile learning system automatically supports most training materials. When creating a mobile application, it is necessary to load many processes into cloud computing to make it more convenient for the user of the Google course (teacher and student). For example the answer to the passed test, student rating.

The application is designed to teach the subject "Information Technology" and consists of 26 pages. Some tutorials downloaded from the cloud using buttons for the application to work efficiently. This allows the application to take up less space from RAM (Figure 1).
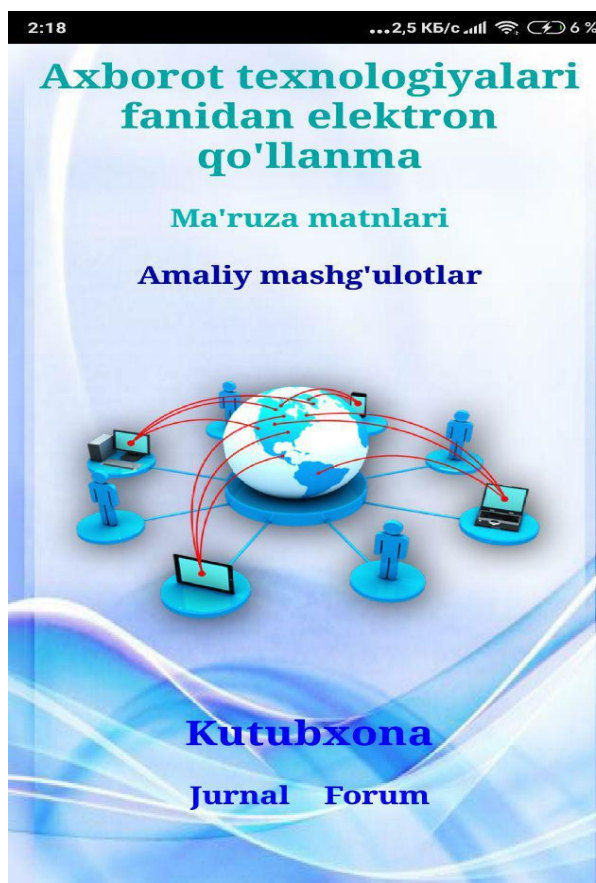
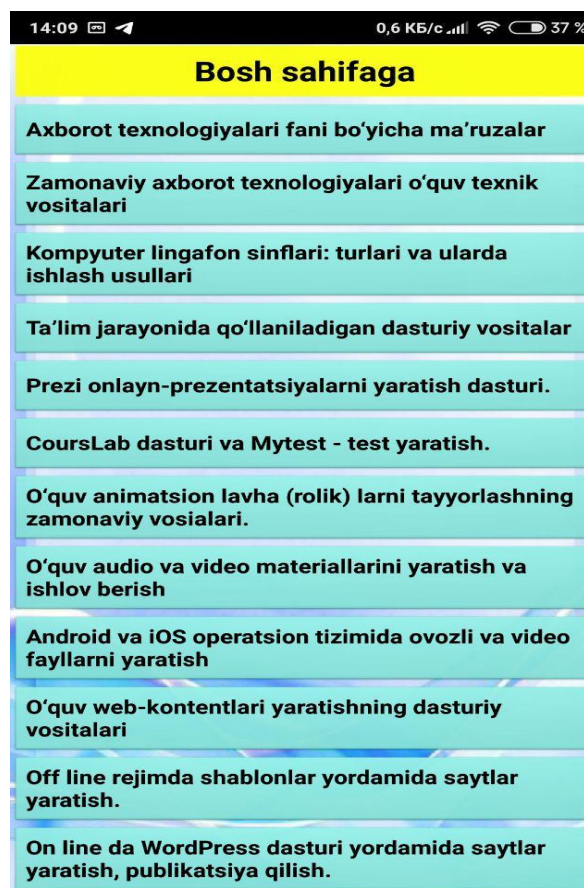Figure 1. Home page of the application

Figure 2. Report texts page

The mobile application consists of lecture notes (Figure 2), practical exercises (Figure 4), an interactive test (Figure 3), a journal, forum, and information about the author. The knowledge assessment process in the application is carried out using pre-prepared test questions using the global network, and its results are recorded in an Excel file stored in the cloud.

In this case, the rating of each user can be uploaded to a separate cell in the file, and the data calculated on the basis of the request is provided to the user. If the training system is implemented on a 100-point scale, the student can get information about their grades. The fact that the total score in the journal is constantly visible to the student is an important tool for creating liberalism in the educational process, as well as motivating the student to study or healthy competition in education.
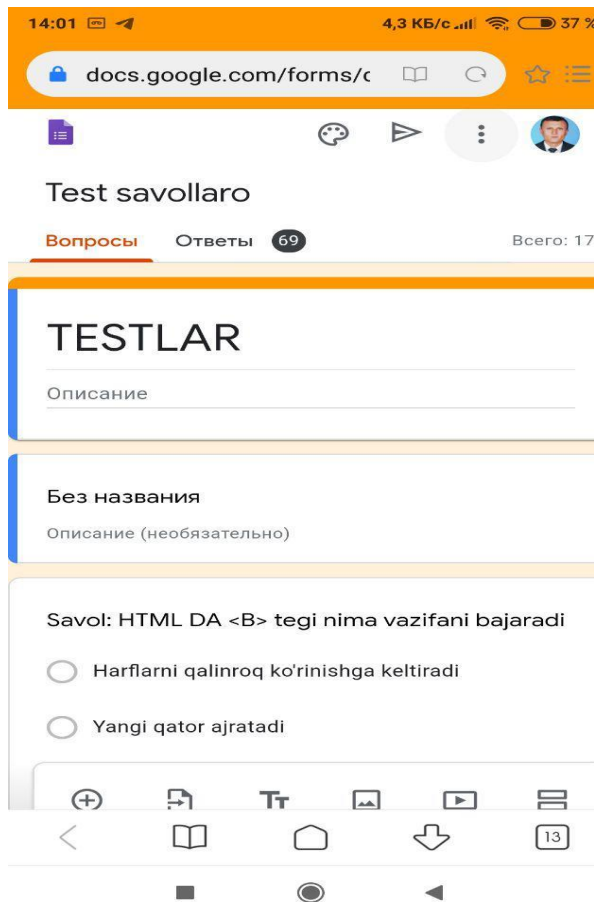
Figure 3. Test page

Figure 4. Practical training page

The application library page designed to perform tasks such as reading an online address of a book using a QR-code, downloading it to a mobile device (Figure 5), and sending the address to friends over the network (Figure 6). The library service in the application can be used as a separate application in the electronic resources of educational institutions and in library automation. This service allows you to save student time in the library when using the application.
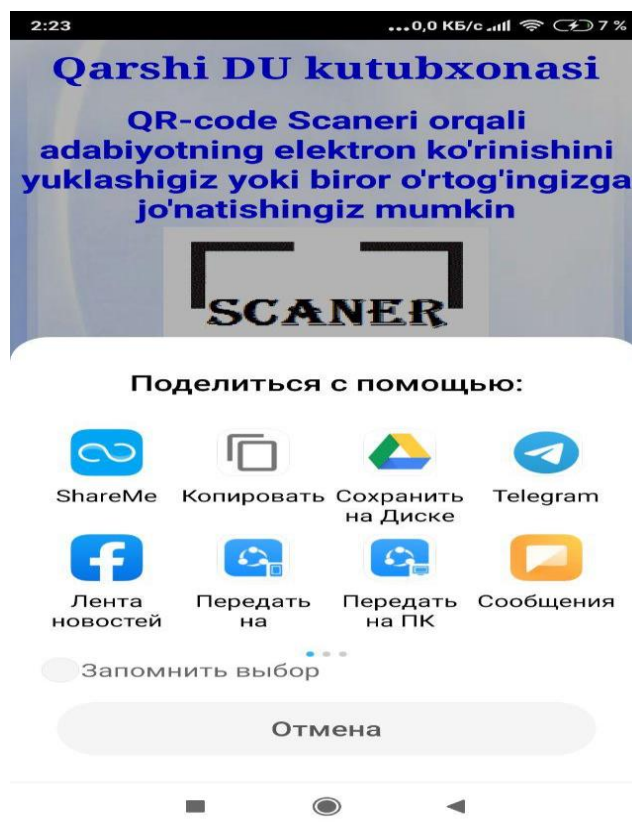
Figure 5. Library page   Figure 6. Sending literature

This application has been tested during a pandemic with the students of the 1st course of the group 019-121 for directions, "Foreign languages and literature" of the Faculty of Foreign Languages of Karshi State University. The reason that the application was well received by the students, was the fact that students are accustomed to think that they can get a dictionary, video, information from the internet to study on your mobile device, and in practice it was a novelty – to organize the science lesson with the mobile application.

As a result of using the mobile application, the interaction between the teacher and students was carried out only through the network, and the results were more effective than in the traditional lesson. The level of knowledge in the traditional lesson was 65-70%, while the mastery in the lesson organized using the mobile application was 75-83%.

CONCLUSION

The first step in creating any interactive e-book is its development, which includes the preparation of modern teaching materials in various formats and the systematic placement of the module in an electronic textbook or application in combination with other disciplines [8].

The use of innovative technologies in the education system and the creation of a virtual learning environment in each educational institution will contribute to the fact that the young generation will grow more harmoniously in the future.

Every teacher should be aware that the use of mobile devices to enhance the efficiency of knowledge in the education system is a modern requirement and are encouraged to develop

mobile applications, a variety of virtual laboratories, and multimedia textbooks on the subjects. When developing mobile applications, it is necessary to conduct various surveys of students on social networks.

The time and money spent on classroom hours in the learning process of the mobile application reduced by 90%. Most importantly, in a lesson organized using a mobile application, students acted in an active and motivated spirit when completing assignments.

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