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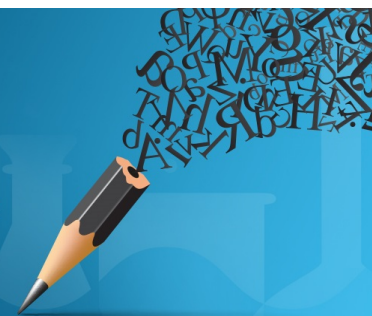
The Development of Electronic Educational Resources is an Important Step Towards the Digitalization of the Agricultural Economy

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Abstract. The digitalization of the agricultural economy begins with education. The article is devoted to the development and use of a remote electronic educational resource in computer science for the organization of extracurricular independent work of students. The electronic educational resource includes educational material for studying, a system of tests for self-testing, a unit for accumulating and processing statistical data on the real course of the educational process. The combination of a hypertext textbook and an electronic knowledge control system based on remote technologies allows you to create a unified learning environment. The system adapts to the level of knowledge and, in fact, creates an individual "e-learning course" for each student. The electronic educational resource consists of two parts: static (immutable) and dynamic (working with records in the database).

Keywords. Digitalization, e-learning, electronic educational resource, the computer science curriculum.

INTRODUCTION

Today, there is an active use of digital technologies in all spheres of the economy. The agricultural sector, which plays a key role in improving the welfare of the state, is no exception. Artificial intelligence, virtual reality, machine learning and other new technologies are already actively penetrating all areas of industrial life. In this direction, large-scale work is being carried out in Uzbekistan, a number of major projects have been initiated aimed at the digital transformation of agriculture, which is radically changing, intensively introducing advanced and innovative solutions to the sphere. Of great importance in achieving these goals is the training of engineers for agriculture, who possess the latest achievements of IT technologies.

The introduction of digital technologies in agriculture requires the preparation and support of a certain infrastructure. Given that the republic does not have a very high degree of modern agricultural literacy, it is necessary to pay special attention to digital distance education on problems and new trends in agriculture. It is important to increase the number of students in agricultural universities, as well as target professional development of teachers of agricultural educational institutions on the problems of the digital economy and digital technologies in agriculture.

The purpose of this work is to develop a remote electronic educational resource in computer science for organizing extracurricular independent work of students of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers.

It is known that distance learning is one of the most striking advantages that information technologies have. The basis of the educational process in distance education is the purposeful and controlled intensive independent work of the student, who can study in a convenient place, according to an individual schedule, with a set of special training tools [1-4].

MATERIALS AND METHODS

The introduction of computer training and monitoring systems into the process of self-education allows the trained subject to directly engage in the topic of interest to him. Such systems are the most effective way to increase the effectiveness of training.

The main goal of extracurricular independent work is not only to consolidate, expand and deepen the acquired knowledge, skills and abilities, but also to independently study and assimilate new material without outside help, without the help of a teacher. This point of view was the basis for the development of a remote electronic training course in computer science, intended for students of a wide variety of educational institutions.In this regard, the task was set to develop such a multimedia textbook, which automates all the main stages of training-from the presentation of educational material to the control of knowledge.

The use of electronic educational resources (computer-based teaching materials, textbooks, teaching aids, virtual laboratories, stands, posters, etc.) is currently one of the conditions for improving the effectiveness of training. An electronic educational resource is the most common form of presenting new material.

For example, an electronic textbook can include simulators, laboratory work, and tests at the same time; that is, at the same time, it is also software for providing knowledge and controlling it [5-7].

The main principles of using electronic educational resources for self-education are the establishment of interactive communication between the student and the teacher and the independent development of a certain body of knowledge, and the acquisition of skills for the chosen course.

The importance of computer science is determined by the fact that computer science is a complex of scientific and practical disciplines that study all aspects of obtaining, storing, converting and using information. Modern computer science has two complementary aspects - scientific and technological. The first is more established, the second is very mobile, although in the technological part of computer science there is a well-formed core, which is little subject to change. The main thing in the study of computer science is to master the fundamental concepts of each of its fields, to navigate in their interrelationships, to acquire the skills of practical work with the most important technical and software tools [8-12].

Currently, computer science (in one or another volume) is studied in almost all educational institutions. The proposed electronic educational resource is created using the software environment Macromedia Dreamweaver and auxiliary programs: Macromedia Flash, the software package Denwer and the programming language PHP. The MySQL database management system is used for data storage.The developed electronic educational resource (EER) contains theoretical and practical materials that fully correspond to the program of studying computer science in the education system of the Republic of Uzbekistan.

All texts in the EER are numbered, and the number of each text is associated with its storage address, which means that each text can be referenced by specifying its number. On the computer screen, links to other texts are arranged by highlighting individual words. Each link corresponds to the address of a different text.

The developed EER contains a large number of practical and laboratory works, in the course of which skills are acquired in the use of a personal computer, the development of modern information technologies.In addition to the usual educational material, the electronic resource also includes a system of tests for self-testing, a unit for accumulating and processing statistical data on the real course of the learning process. The testing system is designed in such a way that you can make an adaptive choice of the next question only depending on the correctness of the previous answers.

The combination of a hypertext training manual and an electronic knowledge control system based on remote technologies allows you to create a single learning environment. The system adapts to the level of knowledge and, in fact, creates an individual "electronic training course" for each student. The EER consists of two parts: static (immutable) and dynamic (working with records in the database). Figure 1 shows the structure of the EER.
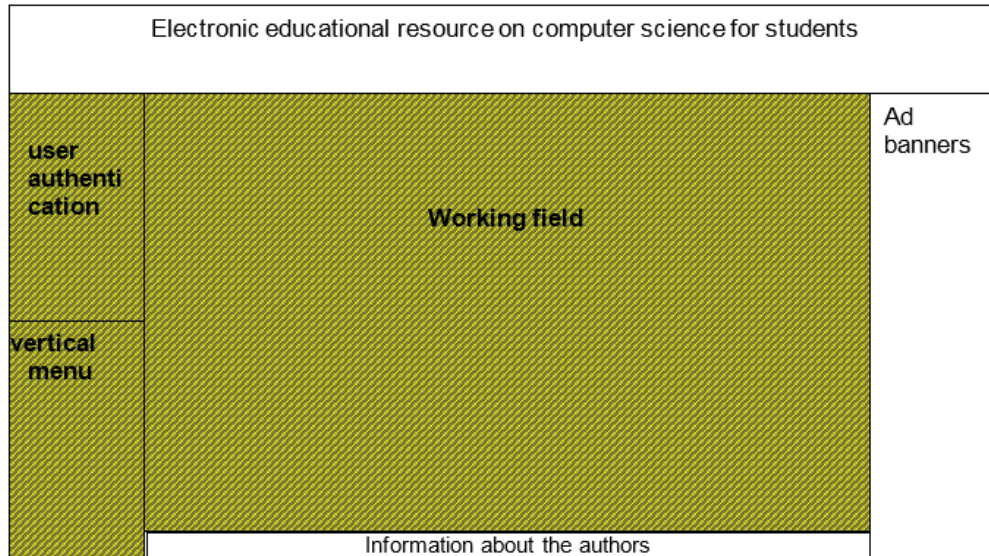
FIGURE 1. The structure of the electronic educational resource

The contents of the shaded areas in Figure 1 are dynamically changing because they are linked to the database. The following fields are created for the vertical menu (Table 1):

TABLE 1. Table for entering parts of the EER vertical menu

Id_menu	Number	Pry key	Key field for the menu table
Title	Nvarchar	50	Field for entering menu items
Location	Nvarchar	200	Link to menu items
Hint	Nvarchar	50	Menu Note
Lang	Number		Menu Language
Visible	Boolean		Displaying the menu
Date	Date		Development date
Creature	Nvarchar	200	Author of entering information
Temp	Text		Additional information

In turn, a separate page for the menu is created, which is embedded in the main page (include).The following lines provide a link between a PHP page and a MySQL database:

```
$dbc=mysql_connect($site_db_host,$site_db_user,$site_db_pass);
mysql_select_db($site_db_name);
```

After establishing the above relationship using the loop operator, the pre-declared variables are assigned database records that are displayed in the EER.

```
$row99=mysql_fetch_array($get_predmet_info);
```

Thus, based on the specified conditions, the variables are assigned values from the corresponding table. At the same time, only the data that matches the specified filter is displayed in the EER.

```
$result110=mysql_query("select*from student where id_student=
'$teacher'");
$row110=mysql_fetch_array($result110);
```

$teacher_fio=$row110["famil_t"].""."$row110["imy_t"].""."$row110["otchf_t"]

To ensure the security of information in EER, an authentication process is used, consisting of authorization-entering a username and password on the part of the user, as well as registering the user. To organize this process, the public pages are first created. Hidden (private) pages are available only to users who have passed authorization (Table 2).

TABLE 2. Authentication table

Id_user	Number	Pry key	Key field
Firsname	Nvarchar	50	User name
LastName	Nvarchar	50	Last name of the user
E-mail	Nvarchar	50	Email
Login	Nvarchar	50	Login
Passw	Nvarchar	50	Password
Cont ques	Nvarchar	200	Security question
Answ	Nvarchar	100	Answer
Birthday	Date		Date of birth
Date	Date		Registration date
Temp	Nvarchar	200	Additional information
Last visit	Date		Date of the last visit to the site
Vis count	Number		Number of sessions

Here, in the "Contques" field, the user writes (enters) a security question, and in the "Answer" field - the answer to the last one. These two fields are required to recover a password that the user has forgotten. If the "Lastvisit" field stores information about the user's last visit to the site, then the "Viscount" field is used to store information about the number of these visits. This information is usually used for statistics.

RESULTS AND DISCUSSION

Below is a part of the EER program code, which is designed to check the user's login and password in the database. Every user who visits EER must pass this check.

```
$db=mysql_connect($site_db_host,$site_db_user,$site_db_pass);
mysql_select_db($site_db_name);
$imy=mysql_real_escape_string($_POST["name"]);
$parol=mysql_real_escape_string($_POST["password"]);
if($imy=="" && $parol==""){
header("Location: ../index-uz.php?message=user_error2");
exit();}
$result=mysql_query("select * from registr where login='$imy' and passw='$parol'",$db);
$my_row=mysql_fetch_array($result);
if($my_row["login"]==$ism && $my_row["passw"]==$parol)
{session_start();
$_SESSION["polzovatel"]=$imy;
$_SESSION["accept"]=1;
$_SESSION["userid"]=$my_row["id"];
$_SESSION["tal_id"]=$my_row["user"];}
```

CONCLUSION

The developed electronic educational resource fully corresponds to the curriculum of studying computer science and information technologies in the system of higher and secondary special education of the Republic of Uzbekistan. Adjustments may be made to the EER in connection with the corresponding changes in the computer science curriculum. It is provided with detailed instructions to the user on the local network and the Internet. It is designed to provide an independent, continuous and complete didactic cycle of the process of studying the specified subject. Certificate No. 01939 of the State Patent Office of the Republic of Uzbekistan was obtained for the developed remote EER .

The use of digital technologies requires a basic level of literacy, numeracy, as well as the presence of certain technical knowledge and skills. In societies where digitalization is becoming an increasingly powerful driving force, and people who do not have these skills are at risk of being left on the sidelines of life.

The agricultural sector in rural areas has been and remains the main source of livelihood. Digitalization of the sector will significantly change the nature of work and the requirements for employees and their skills. The request for computer literacy of agri-food sector employees will gain relevance, which will require the organization of appropriate training and training.

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