

Information System: Personal Teacher's Portal

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Abstract: *This article substantiates the need of the information system "Personal Teacher's Portal" for students, their parents and teachers. The existing informational systems development environments have been analyzed and the practicability of the developing their own information system on the WEB platform has been proved. The structure and features of the work of the created information system are described in detail.*

Keywords: distance learning system, information system, PHP

1. Introduction

Higher learning for a modern young person is one of the most important periods of his life, personal growth and becoming a specialist with a higher education. Finding ways of successful adaptation to changed social conditions and new activities is the persistent problem for anyone who has crossed the threshold of a higher educational establishment [1].

Historically, the implementation of educational work in student groups is carried out through the institution of curators. This is a managerial unit that interacts with others in the system of extra-curricular educational work and ensures its organization at the level of the student's academic group.

A curator in a higher educational establishment is a teacher-educator who not only supervises student's education but also actively engages them into the educational process using a system of relationships based on cooperation and partnership. One of the main tasks of the curator is to help first and second year students quickly and painlessly adapt to student life.

The curator's tasks include diagnosing and detecting certain difficulties of student's adaptation, he assists the group in preparation for activities as initiator and director, creates conditions for the formation of a healthy microclimate in the group [2].

Student's parents are indisputable helpers in work with each student. That is why there is a system of automation of the organization of communication student - curator - parents.

The task of automation of production processes is the most widespread sphere of application of information technologies. Increasing productivity and reducing human resources is achieved through the creation of information systems that will do routine work instead of the user.

The field of education has always been an innovator in this field. And the task of organizing the relationships between students and the administration of the university is one of the most questionable in the field of education. That's why there are many options for solving this problem, but they all have disadvantages and the main thing is that the group curator requires a lot of manual routine work.

2. Literature Review

The analysis of modern information sources showed that there are a number of distance learning systems that can be used as a teacher's information portal.

As of today, educational institutions use a wide range of distance learning systems, both open source and fee-based, broad-based and specifically-oriented. Learning Management Systems (LMSs) - application software for managing learning activities that enables to develop and distribute e-learning materials, sharing information, organizing the learning process, and controlling learning outcomes with the development of a package of relevant reporting documentation [3].

The eLearning Server 3000 software package has the following key features:

- The package is created in the open source php, mysql, Apache;
- The package supports all modern data formats;
- The package is integrated into any operating system: Windows, Linux, Free BSD, Unix, etc.;
- The package is readily perceived in the context of programming, has a detailed comment, is well prepared for changing.

But most of the settings in eLearning Server 3000 are only available with a qualified PHP and SQL programmer. In addition, the system hasn't a graphical interface for flexible reporting or changing the pattern structure of the portal. Changing system settings can make it harder to use further.

There is no flexibility in the ATutor web-based learning management system. Additionally, ATutor's functionality is not only inferior to the eLearning Server 3000 system, but also ahead of it with some indicators, namely: the ability not only to track but also to manage the development of the process. The software product is easy to install, configure, and maintain for system administrators; Teachers can easily create and transfer teaching materials and run their online courses. So far as the system is modular, that is, it consists of separate functional units - modules, it is open for modernization and enhancement. As for the operating system of the server, there are no restrictions - the system is a crossplatform. The disadvantages of the system include the underdeveloped reporting system [4].

Moodle (Modular Object-Oriented Dynamic Learning Environment) is a free, open source distance learning system (SDO). The system implements the philosophy of "pedagogy of social constructivism" [5] and focuses primarily on organizing the interaction between teacher and students, although it is also suitable for organizing traditional distance courses, as well as for continuing intramural form of study. The disadvantages of the system are high requirements for specialists' qualification for setting up and maintaining the system; The need to use a powerful server and a broad channel [3].

3. Methods

Taking into account the above-mentioned systems of distance learning, it can be concluded that it is necessary to create an information system "Personal Teacher's Portal" in which it is possible to minimize the routine actions of the curator, namely: keeping records of information about parents of the students, informing parents about students' progress, informing parents about the attendance of classes by the students and other.

The task will be accomplished by combining into one system the following sections: class e-journal, group blog, automatic telling system for parents, news magazine and others.

So far as nowadays everyone has access to the Internet, users (teachers, students and their parents) will be comfortable to use their own cabinet through the Internet, having access to it through the link. That is why it is practicable to choose the WEB platform for the development of the "Personal Teacher's Portal".

The system will be widely used by the curators of the groups of educational institutions to organize the relationships between students, their parents and teachers of the university.

The main purpose of the system is to raise the level of parents' awareness of the success of their children, who are students of higher education institutions, the organization of interpersonal communication, students' informatization.

The system should have the following functionalities:

- news block;
- chat;
- sending messages to e-mail;
- class register;
- class attendance register;
- parents' profile;
- student's profile.

The constructed system should provide:

- displaying news (in the form of sex);
- displaying the students' progress (in the form of a table);
- displaying the attendance of classes (in the form of a table);
- displaying the student's profile (the form is arbitrary).

Reliable protection of the system must be ensured:

- ensure that software won't be destroyed or stopped as a result of incorrect user actions;

- ensure data storage on request, in case of software error;
- ensure consistency of the data entered by the user;
- ensure the reliability of the system in case of intentional directed attack from the Internet.

The developed system is focused on working in a web hosting, on which server Apache PHP5 and MYSQL 3 is expanded.

The minimum hardware requirements match the hardware minimum requirements of the following software: Apache PHP5 and MYSQL 3.

Nowadays, there are quite a few ready-made WEB-applications or services that allow the average user to create an information system with a basic functionality.

The most well-known solutions are the sites on the platforms: Wordpress, Joomla, Opencart.

Their main disadvantage is the high price and a total absence of ability to edit an existing solution without the participation of the programmer. In its turn, the participation of the programmer at the stage of product usage significantly increases the cost of maintaining the system.

One of the most significant disadvantages of WordPress is the high cost of templates and the low stability of work. The main disadvantage of Joomla is its insecurity to attacks by hackers or an ordinary pest student. Opencart was able to solve the problems of its competitors at the moment, but it is a rather "young" application and there is still not enough choice of templates for it.

It is these factors that make the purchase of a ready-made application unprofitable in a multifunctional and flexible system. The most well-known site design services: Wix and uCoz.

These services allow the average user, without any technical skills, to create a fully functional WEB application. Such services require from the administrator only basic computer skills and a small amount of money.

Their main disadvantage is the limited functionality. The administrator can only use the ready-made blocks offered to him. As these blocks are aimed at a wide audience, they will only perform a well-known tasks. To this, Wix is also a paid subscription service, and, therefore, for the work of the site, the administrator must make a certain amount of money on a monthly basis. The uCoz service does not require payment for usage but shows large banner ads on sites created by users.

So, having completed the analysis of the finished systems, it was decided to develop a "Personal Teacher's Portal", without the usage of services for the design of sites and other finished products.

4. Results

After the stage of gathering the requirements for the information system, its design was carried out. The main task

of designing is a complete description of all entities and interconnections in the system. So far as the creating system should display dynamic data such as: articles, students' profiles, electronic class register, the primary task is to design multilevel access to the site. To do this, separate roles have to be identified and their privileges defined.

The "Personal Teacher's Portal" system has the following user roles:

- unknown user (guest);
- student waiting for confirmation of personality;
- student;
- administrator.

Each of the roles described above, from the guest to the administrator, reveals certain features of the portal. The ability to change the role of a particular user is only available to the system administrator.

The guest, that is, an unknown person to the system, who referred to the site. Such a user is only available in the section "Blog" responsible for displaying news. All other sections such as "Reporting" and "Profile" are not available.

Student who is waiting for confirmation of personality. This role is assigned to all users immediately after registration. A person authorized on the site and whose account belongs to the "Student waiting for confirmation" role, has access to the news section and questionnaire, but the profile of this person is not yet available to other users. This is due to the possibility of registration of completely unknown people who are neither students nor students' parents or teachers.

Student, or confirmed student. After the new user appears in the system, he starts to display to the administrator on the page "Our group", but only to the administrator. After reviewing the user's profile, the administrator can either delete the account or confirm the student's identity. After confirming the student's identity, the role of a specific account is changed to "Student". With this, access to the section "Reporting" appears.

Administrator. An account that performs this role has the widest capabilities of the system, and can delete and confirm users, change the name of the slogan and other system parameters, edit the reporting and table of student absences, add, edit and delete articles, and other features.

Determined by the color scheme and the design of the main elements, a layout of the main page of the site, Figure 1 was created.

From a functional point of view, the home page serves as a blog, and displays the articles added by the administrator. Each article is displayed in a fixed, abbreviated form with a link to an article page where we can view complete information, including images.

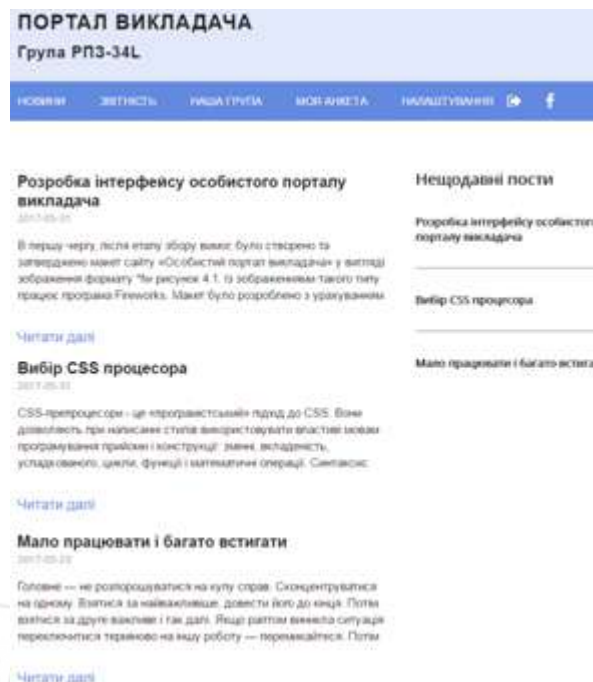


Figure 1: Layout of the main page of the site

After creating a layout of the main page, the design of the "main" elements was defined. The main ones will be elements found on most pages of the site.

The main elements of site's design:

- 1) Site header. In the header of the site, traditionally, the name of the site and the slogan is displayed. In our case, the slogan is the name of the group whose curator is the administrator of this portal.
- 2) The main menu is divided into two areas. The left area contains links to all the pages available to the user (Figure 2 shows the menu view as an administrator). The right area contains two icons. The left of which is responsible for the user's log-off, and the right is a reference to the community of the RPZ-34A group on the facebook network.
- 3) Form, Figure 3. The component is present on the pages of authorization, registration, user's profile, and others. The form performs the function of collecting data from users. The design of all forms on the site has the same features (frames, buttons and others), and therefore, it will be convenient for the user to use this component.



Figure 2: Site header and the main menu of the site

The final step in creating the layout of the site was the creation of the design of all pages of the site, using existing components. The following pages were created: reporting ratings, attendance, our group, personal profile, registration, authorization, article, article's editor, subject's editor, settings. Together, the functional of these pages implements all the features of the portal, and performs the functions of the blog, e-register, and student profiles.

Figure 3: Form's Design

Ім'я	Статус
Іваненко Іван Іванович	Відомо
Корнатиюк Олег Миколайович	Відомо
Одаришко Богдан Сергійович	Відомо
Олійник Богдан Володимирович	Відомо
Гриць Антон Михайлович	Відомо
Стрельченко Владислав Ігоревич	Відомо
Ісаченко Андрій Вікторович	Відомо
Михайленко	Невідомо

Figure 4: Page view "Our group"

From the functional point of view, the page "Our group" serves as a directory, and contains a list of students belonging to the corresponding group, whose curator is the administrator of the portal. List of students sorted alphabetically.

In total, "Personal Teacher's Portal" has 10 pages.

- 1) Authorization. This page is responsible for the ability to authorize. The main element of the page is the form, the data from which is sent to the server, and is processed. In case of successful passage of all checkings the user enters the main page of the portal, already with the capabilities of his account. The form has two areas: login, password. The purpose of each of them follows from their name. Also on the form, to the left of the "Log in" button is a link to the registration page.
- 2) Registration. The functional purpose of this page follows from its name. The main element is the form, the data from which are sent to the server and stored. The registration form has 6 areas: login, email, full name (student), address, password, repeat the password. The function of the data fields follows from these names

This form must be filled out by the students' parents only once on behalf of their child. In this way, parents will provide their password, and email addresses. This will ensure the correct data entry, and later access to the portal from the parents, and the incoming of the reporting at the specified e-mail address.

It is not recommended to fill in this form with a student due to the large number of "pseudo-mistakes" in the electronic address on which the reporting will be sent.

1. Personal profile. This page serves as a personal cabinet on the site "Teacher's Portal". Data filled in on this page will be displayed to other users when viewing your profile. In particular, this is necessary for the administrator, with the confirmation of the person as a student of the group.

Student information will be displayed to other users when viewing this profile. Information about the student's parents is available for viewing only to the portal administrator.

2. Our group, Figure 4.

From the Administrator account, on the "Our Group" page, there are additional buttons, namely "Delete" and "Confirm". They are located near the full name of each user. The "Confirm" button is present only by unverified users.

3. Reporting, Figure 5.

Figure 5: Reporting page

The functionality of this page is responsible for the implementation of the e-class register, within the personal teacher's portal. This page can be viewed by verified students, their parents, and the administrator.

Under the main menu, which is a familiar and understandable element, there are two large buttons "Success" and "Attendance". These buttons are on the pages of the electronic register.

The main element of the Reporting page is a table that contains the grades of all students in the group. By definition, this table is a summary statement that is compiled at the end of each month. If a student has at least one negative grade, parents will receive an e-mail message about this.

4. Subject Editor. The functionality of this page is responsible for the creating and deleting columns in the reporting table. There is a form on this page that sends the data to the server. The form has one area for the name of new discipline, and the Add button.
5. Reporting. The functionality of this page relates to the "Class E-register" section, which displays the information about attendance of double classes and students' truancy.

Visually and functionally, this page resembles "Reporting" with the difference that the header of each column is the day of the month.

The page also has the "View" mode and the "Edit" mode, the latter of which is only available to the administrator. Filling and editing of the table is similar to the "Reporting" page.

6. Article. This page is part of the "Blog" section and is responsible for displaying a particular article. To edit existing and create new articles, the administrator has a pencil icon in the main menu of the site.
7. Article's editor. The functionality of this page involves editing existing ones and creating new articles.
8. Settings. This page is responsible for global site settings, such as: the name of the portal; Slogan; Information on the reporting page; Group page address on facebook network. The main element of this page is a form that sends these data to the server. The Settings page is only available to the system administrator.

To implement this information system, software tools such as PHP programming language, MySQL database, CSS processor LESS were selected.

5. Conclusion

The developed information system "The Personal Teacher's Portal" was tested at State Institution "Kyiv College of Communication". This approach to team curator interaction with students and parents allows faster adaptation of junior courses to a new educational institution.

6. Future Scope

The information system "Personal Teacher's Portal" will be improved on the basis of the feedback received during the process. The nearest new functional is planned to send SMS on the phone in the presence of failing grade or unexcused absence.

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