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MAMBETBAYEVA ZHANAT

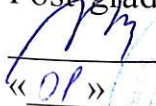
Automation of education process

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“Admitted to defense”:

Director of the department of
Post-graduate education

 PhD. Mussabekov M.N.
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Head of Department

Scientific advisor



PhD. Alimanova M.O.

Proff. Amirgaliyev E.N

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ANNOTATION

The educational system solves important problems of cultural and socio-economic development of society, therefore, any educational institution prepares a person for active life in the social, political and economic spheres of society. One of the main conditions for the successful functioning of the institution is the competent and optimal organization of the work process of the university. Modern information technologies provide ample opportunities in the organization and management of the learning process. Nowadays, the automation of the educational process is an integral part of the activity of any educational institution that wants to have the right to be called progressive.

Nowadays, the automation of the educational process is an integral part of the activity of any educational institution that wants to have the right to be called progressive. In our university for total grades, which include midterm and final grades by each subject we have portal, electronic type of student's record-book. Lack of this portal is that we don't have opportunity to see our intermediate points before midterms or finals. Such results we can know individually from teacher. Some of the teacher lead some paper-based journal for grades, other teacher prefer to store quiz, exam results in excel book on his computer etc. One of the solution to automate educational process is to have one centralized system, which will be used not only for grade, this will be portal, where student can find all information he needs: schedule, home works with deadlines, which will be posted by teacher, his transcript, some news and announcements from his supervisor.

Key words: *automation, curriculum, educational process, educational and professional program, web technologies.*

ТҮЙІН

Кез келген оқу орны қоғамның, әлеуметтік, саяси және экономикалық салалардағы белсенді өмірге адамды дайындайды, өйткені білім беру жүйесі, қоғамның мәдени және әлеуметтік-экономикалық дамуының маңызды мәселелерін шешеді. Мекеменің табысты жұмыс істеуі үшін басты шарттарының бірі университеттің жұмыс процесінің құзыретті және оңтайлы ұйымдастыру болып табылады. Қазіргі заманғы ақпараттық технологиялар оқу үдерісін ұйымдастыруға және басқаруға мүмкіндік береді. Қазіргі уақытта, білім беру процесін автоматтандыру - прогрессивті деп аталатын құқығы бар қалайды кез келген оқу орнының қызметінің ажырамас бөлігі.

Қазіргі уақытта, білім беру процесін автоматтандыру - прогрессивті деп аталатын құқығы болу үшін кез келген оқу орнының қызметінің ажырамас бөлігі. Біздің университетте, әрбір пән бойынша аралық және қорытынды бағалауды қамтып жіктеу үшін порталды қолданамыз, ол баға қойылатын кітаптың бір электрондық нұскасы болып саналады. Осы порталдың кемшілігі біз тек аралық бақылаулардың немесе сессиялардың бағаларын көре ала аламыз, бірақ кунделікті бағаларымызды көруге мүмкіндігіміз жоқ болып табылады. Бұл нәтижелерді біз жеке-жеке мұғалімнен сұра ала аламыз. Кейбір мұғалімдер бағаларды, студенттердің жинаған ұпайларды бір қолмалы дәптерге немесе кітапқа сақтауға ыңғайлы көреді, басқа мұғалімдер емтихандардың нәтежесін Excel кітабында сақтайды. Әрбір мұғалім өзіне ыңғайлы түрде бағалар дәптерін жүргізеді. Бұл студент үшін ыңғайлы емес болып табылады. Біздің сайтта аралық және соңғы нәтижелерге ғана емес, барлық мұғалімдерді осындай бірыңғай орталықтандырылған жүйені қолданып, студенттердің кунделікті бағаларын қойуға мүмкіндік беретін веб сайт болғанын қаладық. Бұл тек бағалар портал емес, осы порталдың ішінде кез келген студент өзіне керек ақпаратты табуға мүмкіндік береді: студент өз бағаларымен қатар, берілген уй жұмыстарды, қай уақытқытқа дейін орындау керек екенін, сабақ кестесін білуге, мұғалім берген жарнаманы көруге, қатынасқа жазуға болады .

Кілт сөздер: *автоматтандыру, оқу жоспары, оқу процесі, білім беру және кәсіби бағдарламалары, веб технология.*

АННОТАЦИЯ

Система образования решает важные задачи культурного и социально-экономического развития общества, потому любое учебное заведение готовит человека к активной жизнедеятельности в социальной, политической, экономической сферах общества. Одним из основных условий для успешного функционирования учебного заведения является грамотная и оптимальная организация рабочего процесса деятельности вуза. Современные информационные технологии предоставляют широкие возможности в организации и управлении учебного процесса. В настоящее время автоматизация учебного процесса – неотъемлемая часть деятельности любого учебного заведения, которое хочет иметь право называться прогрессивным.

В настоящее время автоматизация учебного процесса – неотъемлемая часть деятельности любого учебного заведения, которое хочет иметь право называться прогрессивным. В нашем университете для отображения промежуточных и итоговых оценок по каждому предмету, используется портал, который является своего рода электронной версией зачетной книжки. Недостатком этого портала является то, что у нас нет возможности увидеть наши промежуточные баллы перед рубежным контролем или сессией. Такие результаты мы можем узнать непосредственно у учителя. Некоторые учителя ведут специальные журналы для оценок, другие предпочитают хранить результаты контрольных работ, экзаменов в Excel книге на своем компьютере и.т.д. Одним из решений в автоматизации учебного процесса это создать единую централизованную систему, которым будут пользоваться все учителя, чтобы не только ставить оценки, это будет портал, где студент может найти всю информацию, которая ему необходима: расписание, домашние задания со сроками сдачи, которые будут размещены учителем, транскрипт, новости и объявления от его куратора.

Ключевые слова: *автоматизация, учебный план, учебный процесс, образовательно-профессиональная программа, веб- технологии.*

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INTRODUCTION

A lot of works are devoted to the issues of automation of the management of the educational process in the university, especially a large number of developments appeared in the middle and late 70s of the last century, when in many universities in management systems began to use computers. Currently, higher education institutions have organizational and financial structures that have changed, in relation to those times, we have a new organizational and regulatory framework by introducing state educational standards of higher professional education into the system of higher education, all this does not allow in full and planned effectiveness to use these somewhat outdated developments; And taking into account the obvious tendency of the formation of an information society in our country, it is also necessary to take into account the specifics of the information environment of the university and the changed methodology for the formation of the educational process, therefore the number of works describing the management of the educational process, taking into account modern conditions and requirements, accordingly decreases. In addition, in many works devoted to the automation of the management of the educational process, certain individual issues are considered: the preparation of a schedule of lessons, the formation of curricula by the specialty, the calculation of the load, etc., without taking into account their interrelations, which does not allow to achieve an effective decision in general. Automation of any system is only expedient and gives a practical result when the most complicated and laborious processes of this system will be automated. The most complex subsystem of the university management system is the subsystem of the automated management of the educational process.

The automated control system of the educational process in the university is proposed to be composed of the following relatively independent automated subsystems [1]

- subsystems of educational process planning;
- subsystems for managing students' learning activities;
- subsystems of information support of the educational process;
- subsystems of system analysis and audit of educational process

In its turn, the most difficult, labor-intensive and get, as practice shows, to greatest number of defects is the subsystem of educational process planning. At the same time, it is the most significant component in the system of quality assurance of specialists' training and in the labor input system, and it is also necessary to consider how successful automation and optimization of other subsystems will be in the management of the educational process in the university. Therefore, the educational process planning subsystem should be developed in such a way that it ensures the following operations and functions:

- a) automated planning of curricula by specialties and faculties;

b) automated calculation of the educational work and planning of the pedagogical load of the university, departments and teachers;

c) automated distribution of the department academic load between the lecturers of the department;

d) automated formation of the schedule of lessons by taking into account the busyness of the teaching staff and the resources of the educational and laboratory base of university.

In addition, during the development of educational process planning subsystem, principles of the connection between theory and practice should be implemented, the amount of educational information coordinated with the time budget determined by the state educational standard of higher professional education, the sequence of learning subjects and their interrelations, drawn up in the form of a structural and logical scheme of specialists' preparation. Only in this case it is possible to achieve optimal planning of the educational process in the university. Optimal planning of the educational process involves the systematization of the main information flows, the development of unified forms of documents that determine the content and amount of educational information and the sequence of learning the content of the disciplines, optimizing the content of the curriculum and automating the formation and completion of these documents.

Analyzing the essential technology of educational process planning and management system, it is possible to single out a number of significant shortcomings: it is cumbersome, difficult in automation, difficult to control and laborious, inflexible and does not provide the required quality of planning. In order to eliminate these shortcomings, provide automation and reduce the complexity of planning, the following options to plan the educational process are developed:

a) without optimizing the amount of academic work in the curriculum;

b) with the optimization the amount of educational work in the curriculum.

The main factors determining the labor intensity of the training load are the composition and structure of the curriculum by specialty, as well as the size and structure of the recruitment of students; Regulation of the value of average academic load requires consideration of factors that affect the total annual amount of academic work in each curriculum. The influence of these factors is taken into account by the introduction of normative coefficients that normalize the amount of independent work of students by occupation and the amount of work of the teacher to control students' knowledge, to supervise and guide the work of students on individual assignments [2]. In addition, in the process of forming the curriculum, the procedure for the allocation of the appropriate number of hours of independent work of students to perform the corresponding individual tasks (course projects, term papers, accounting tasks, abstracts, etc.) is automatically monitored, and it is allowed not to overload students with individual tasks [3]. The second operation (the second one can be called conditional, since it is performed in parallel with the

operation of forming the curriculum) is the calculation of the academic work and the formation of the teaching load of the department. In order to improve the planning of teachers' teaching work and calculate the academic load, it is proposed to use the unified norms of study time [4] based on the differential dependency of the hours of monitoring students' knowledge on the total number of hours in the discipline, which allows you to methodically plan the control of students' knowledge in the subjects and democratically distribute the academic work of the departments.

To stimulate highly professional teachers to conduct a large amount of the most intense and responsible types of educational work, and to take into account the individual characteristics of each teacher, the optimal use of his pedagogical and scientific experience and knowledge, as well as the academic freedom of the teacher in choosing the type and form of educational activities.

Apply the methodology for calculating the teaching load of the teacher, taking into account the actual labor intensity of various types of educational work [5]. The next operation of planning the educational process is the formation of the clock grids of the departments, they are compiled in an automated mode with the use of the document supplement to the curriculum containing all the information necessary for this procedure.

The final stage of the planning of the educational process in the university is the drawing up of a schedule of lessons, it is formed on the basis of clock grids by courses and specialties, with the use of data on the auditor fund of the departments and university, the staff of the faculty, the symbols of specialties and the list of requirements for the timetable. Since the effectiveness and quality of the educational process is largely determined by the quality of the schedule of training sessions, the schedule of training sessions is formed taking into account the requirements and with the use of computers. The scheduling is carried out in two stages: at the first stage, an impersonal schedule of training sessions using the genetic algorithm is created in an automated mode [6]; At the second stage, in order to optimize the organization of teachers' work and use of the unique individual pedagogical and methodological experience of teachers, the names of disciplines and types of occupations are placed in an inscribed schedule, taking into account the wishes of the teachers. For the formation of the schedule, algorithms and software have been developed that make it possible to schedule the training sessions in the university for a semester in a standard week or a division into even and odd weeks with a given criterion of the optimality of the quality of the schedule of training sessions. The process of optimal planning of the educational process includes mandatory procedures for analysis, systematization, unification, optimization of information flows, forms of educational documents and processes for their processing with the final procedure - automation of basic operations. Such an approach in planning allowed to reduce the nomenclature of documents circulating in the educational process, to eliminate duplication of information, to increase the information capacity of documents, to free the staff of the departments, deans and the teaching staff engaged in planning the educational

process from routine technical work, to reduce the number of conditional operations in planning technology, Improve the quality of planning the educational process while reducing the complexity of the planning process.

In the process of functioning of the educational process planning subsystem in the automated mode, the following output documents are formed:

- curriculum on the specialty;
- an annex to the curriculum with a full calculation of the annual academic work on the subjects of study, the total amount of academic work per student;
- the summary schedule of educational process on faculties and as a whole on high school;
- a grid of the chair hours by semesters with the indication of the types and scope of the training work on fixed disuyples;
- documents for scheduling training sessions: a grid of hours in the specialties, summary data on the need for audiences for various purposes;
- preparation of an application for a diploma of higher education;
- schedule of training sessions and examinations.

All this allows you to reduce costs in planning and educational process, simplify the planning technology, improve the manageability of the educational process and, accordingly, improve the quality of planning the educational process in the university

1. ROLE OF AUTOMATION IN EDUCATION PROCESS

1.1 Education process in high education institutes

In different historical epochs and among different peoples the notion of "higher education institution" was given a different meaning. The prototype of the universities were the philosophical schools of the period of antiquity, in which teaching was guided by the comprehension of all theoretical knowledge known at that epoch. Classes were conducted in the form of lectures, talks, debates. Later this form of education existed also in medieval Western European universities. Over time, specialized educational institutions began to appear: legal (in the VIII century - in Beirut and Constantinople, in the tenth century - in Bologna); Medical (in the IX century - in Salerno, in the XIII century - in Montpellier). At that time, the so-called "principles of academic freedom" were laid, presupposing the student's freedom to independently build a program of studying subjects, the freedom of the teacher to independently conduct research and present their results to students, the election of governing bodies, the participation of students in self-government, etc. Gradually at universities Scientific and practical schools are born.

In the XVII-XVIII centuries the training of specialists on the basis of the latest scientific data, using laboratory experiments in the educational process, participation in various expeditions, etc., was assumed by scientific societies and academies of sciences that were supported by the state (the Royal Society of London, the Paris Academy of Sciences, the Petersburg Academy of Sciences and others). Strengthening the practical component in the content of higher education occurred in France in higher educational institutions, opened during the revolution

of 1789, for example, at the Polytechnic School. In new educational institutions, such disciplines as geometry, economics, etc. began to be taught as independent ones. Similar evolutionary changes took place in other European higher educational institutions, for example in Russia (in St. Petersburg in 1773) the Mining College was established.

At the end of XIX century in the universities began to arise research units - special laboratories, departments, research institutes, in which scientific work was conducted. One of the important problems of universities was the preservation of the unity of the scientific school and teaching. Universities set a goal for a broad humanitarian or natural-scientific education, and in branch universities a bias towards practical knowledge was made. For example, the activities of the Moscow Technical School (now the Moscow Technical University), the Petersburg Technological Institute, the St. Petersburg Medical and Surgical Academy (now the Military Medical Academy) are associated with similar experiences. In the conditions of the scientific and technological revolution from the second half of the XX century different types of higher education institutions, multi-disciplinary universities began to appear. Higher educational institutions are designed for people to receive higher education.

Higher education is the result of the assimilation of such a set of systematized knowledge and skills of activity that allows the specialist to solve research and practical tasks independently and responsibly, creatively use and develop the achievements of culture, science and technology. The specificity of higher education is that the educational process in higher education institutions is directly related to scientific activity, the teaching of the disciplines is carried out at a level as close as possible to the latest achievements of science and practice. The development of science is a decisive factor in changing the content, methodology and organization of education in higher educational institutions. Teachers of modern universities are obliged to take into account that the graduate of the university in the future will face a significant number of practical problems, which the teaching in the university could take into account due to their novelty. Thus, the main task of the higher school is the development of the creative qualities of the individual, the ability to perceive and process new scientific ideas, to analyze and apply them in conditions of independent professional activity [7].

1. Forms of organization of educational activities in the university

Throughout the history of higher education - from the time of origin to the present day - the leading organizational form of education is a lecture. From it begins the student's first acquaintance with the academic discipline, and it is the lecture that lays the foundation of scientific knowledge. The lecture appeared in ancient Greece, developed in ancient Rome, then in the Middle Ages. By their structure, lectures can differ from each other - it all depends on the content and nature of the educational material. But there is a common structural framework - a plan that must be strictly followed. Lecture, as a rule, begins with a brief reminder

of the contents of the previous lecture, in order to link it with new material. At the end of the lecture summarizes.

The main requirements for the lecture:

- scientific and informative (modern scientific level);
- evidence and reasoning, the presence of a sufficient number of vivid, convincing examples, facts, justifications, documents, scientific evidence;
- emotionality in the presentation of educational material;
- activation of students' thinking, raising questions for reflection;
- clear structure and logic of disclosure of consistently stated issues;
- methodical processing of educational material, the derivation of the main thoughts and positions, emphasizing the conclusions, repeating them in different interpretations;
- presentation in an accessible and clear language, an explanation of newly introduced or unknown terms, etc.

Types of lectures:

- Introductory - introduces students to the purpose and purpose of the course, its role and place in the system of academic disciplines; A brief historical overview of the development of this science is given, the theoretical content of the academic discipline is linked to the future practical work of the specialist, the characteristics of the teaching aids are given at the rate, a list of literature is given and examination requirements are communicated;
- Information - a traditional lecture, on which the content of the educational discipline takes place;
- Review-repeat - read at the end of the section; It reflects all the main theoretical provisions that make up the scientific and conceptual basis of this section, excluding detail and background material;

The final is not just a brief review of the material studied, but the systematization of knowledge at a higher level, with mandatory explanations on the most difficult exam questions. The process of teaching in higher education provides practical training. They are designed for in-depth study of the discipline. Their forms are diverse: seminars, laboratory works, workshops. Practical exercises play an important role in developing students' skills to apply the knowledge they have learned to solve practical problems together with the teacher.

Objectives of practical classes:

- deepen, expand, detail the knowledge gained in the lectures;
- promote the development of professional skills;
- develop scientific thinking and speech;
- control the learning process of students.

Seminars as a form of education have a long history, dating back to Antiquity. The very word "seminar" comes from the Latin seminarium - "hotbed". The seminar received this name from its function of "sowing" knowledge transferred from the teacher to the students and "sprouting" in their minds, making them capable of independent judgments, reproduction and deepening of the acquired knowledge. Seminars were held in ancient Greek and Roman schools as a combination of debates, messages of students, comments and conclusions of teachers. Since the XVII century. This form of training is used in Western Europe, and since the XIX century. - in Russian universities. Seminars were practical and represented a school of a scientist, under the guidance of which students practically mastered the theoretical course of discipline, the method of scientific research. In modern high school, the seminar is one of the main types of practical classes and is intended for in-depth study of discipline, mastering the methodology of scientific knowledge. The main goal of the seminar is to provide students with the opportunity to master the skills and skills of using theoretical knowledge in relation to the specific features of the studied industry.

At the seminar classes the following tasks are solved:

- development of creative professional thinking;
- cognitive motivation;
- mastering of professional terminology;
- acquisition of skills in operating with wording, concepts, definitions;
- mastering the skills and skills of setting and solving scientific problems and tasks;
- defending your point of view.

During the seminar, the teacher solves such training tasks as:

- repetition and consolidation of knowledge;
- knowledge control;
- pedagogical communication.

The seminar is always a direct contact of the teacher with students, the establishment of trust between them, productive pedagogical communication. In the organization of seminars, the principle of joint activity, co-creation is realized. According to research, the process of thinking and mastering knowledge is more effective if the solution of the problem is not individual, but involves collective efforts. Therefore, the seminar is especially effective, when the search for answers is implemented by the entire training group, students are given the opportunity to discover and justify different points of view. Such holding of seminars ensures control over the assimilation of knowledge and the development of scientific thinking among students. Laboratory work integrates the theoretical and methodological knowledge and practical skills of students in a single process of educational and research character. The word "laboratory" comes from the Latin labor - "work", "work". Its meaning has long been associated with the use of mental and physical efforts to solve the emerging scientific and life

problems. Laboratory work has a pronounced specificity, depending on the academic discipline. As a rule, during laboratory work the main attention is paid to the formation of specific skills, which determines the content of students' activities. Correctly put practical task activates the thinking activity of students, equips them with methods of practical work, stimulates deeper independent work. Practical classes usually take place in the study of disciplines of the natural science cycle, as well as in the process of labor and vocational training. The places of their conducting are different: laboratories, workshops, training areas, etc. The practical work performs the function of deepening knowledge, developing skills and skills, contributing to the solution of problems of correction of theoretical knowledge obtained, and stimulating cognitive activity of students [7].

There are usually five stages of the workshop:

- 1) the explanation of the teacher, during which there is a theoretical understanding of the work ahead;
- 2) safety instruction;
- 3) trial work, during which 1-2 students perform the work under the guidance of the teacher, and the remaining students observe the process;
- 4) the performance of each student's work independently;
- 5) control, during which the teacher accepts the work and evaluates it, taking into account the quality, speed and correctness of implementation.

During the workshop, the students develop such qualities as thoroughness of the organization of the labor process, economy, economics, ability to control time, etc.

2. Independent work of students

Independent work along with the classroom is one of the forms of the educational process and is an essential part of it. The effectiveness of classroom work always depends on the self-preparation of students. For its successful implementation, it is necessary to plan and monitor by the teachers, as well as planning the volume of independent work in the curricula of specialties.

Independent work is the planned work of students, performed on the instructions and with the methodical direction of the teacher, but without his direct participation. Independent work is intended not only for mastering each discipline, but also for forming the skills of independent work in general - in educational, scientific, professional activities; To acquire the ability to take responsibility, to solve the problem independently, to find constructive solutions, to exit from a crisis situation, etc. The higher school differs from the average in many parameters, including the method of teaching and the degree of independence of trainees. The teacher of the university only organizes cognitive activity of students, the student himself realizes cognition. Independent work completes the tasks of all types of academic work. In the university there are various types of individual independent work: preparation for lectures, seminars, laboratory works, tests, exams; The implementation of abstracts, assignments, coursework and projects, and at the final stage - the performance of the final qualifying work. The ratio of

time devoted to classroom work, to the time devoted to independent work, is 1: 3.5 worldwide. This ratio is based on the enormous didactic potential of this type of student learning activity. Independent work contributes to:

- deepening and expanding knowledge;
- formation of interest in cognitive activity;
- mastering the methods of cognition;
- development of cognitive abilities.

It is possible to single out the conditions that affect the successful performance of independent work:

- the motivation of the training task (for what, what helps);
- a clear statement of cognitive tasks;
- possession of the student by algorithms, methods, ways of performing the work;
- a clear definition by the teacher of the reporting forms, the amount of work, the time frame for submitting it;
- providing consulting assistance to the student;
- clear criteria for evaluation, reporting, etc;
- use of different types and forms of control (workshop, tests, tests, presentations at seminars, etc.).

Independent work includes reproductive and creative processes in the activities of the student. Depending on this, three levels of independent student learning activities are distinguished:

- 1) Reproductive (training) - self-training exercises are performed according to the pattern: solving problems, filling out tables, schemes, etc. The student's cognitive activity manifests itself in recognition, comprehension, and remembering. The purpose of this kind of work is to consolidate knowledge, form skills, skills;
- 2) Reconstructive - in the course of reconstructive independent works, decisions are being made, a plan is drawn up, theses are prepared, and annotations are made. At this level, abstracts can be performed;
- 3) Creative search - creative independent work requires an analysis of the problem situation, obtaining new information; The student should independently make a choice of means and methods of the decision (educational-research tasks, course and final qualification works).

3. Pedagogical control in higher education

Effective management of cognitive activities of students and the learning process requires an accurate knowledge of the learning outcomes.

In the field of control, there are three main interrelated functions:

- 1) diagnostic - revealing the level of knowledge, skills and skills of the student;
- 2) teaching - the activation of the work on the study and assimilation of educational material;

3) educational - the direction of the student, help in identifying gaps in knowledge, the formation of a creative attitude to the subject, stimulating the development of abilities, the development of the student's personality.

In the universities apply the following forms of pedagogical control:

Examinations, tests, oral surveys, interviews, tests, term papers, laboratory works, design works, abstracts, colloquia, observation journals, final qualification papers.

Each of these forms has its own characteristics. A skillful combination of different forms of control is an indicator of the level of the setting of the educational process in the university as a whole and one of the important indicators of the pedagogical qualification of the teacher. By the time of the pedagogical control is divided into the current, boundary, final, final. Current control helps differentiate students' knowledge, motivates learning. Border control is the verification of the educational achievements of each student in the assimilation of a certain material before the teacher moves on to the next section of the discipline. Final control - exam (offset) at the rate; This is the result of studying the passed discipline, which reveals the student's ability to further study.

Final control - state examination, protection of final qualifying work or the diploma project, assignment of qualification by the State attestation commission. Evaluation and marking are the results of pedagogical control. Evaluation is a way of expressing the result, confirming the correspondence or inconsistency of the student's knowledge, abilities and skills to the goals and objectives of the training. It involves identifying the causes of underachievement, contributing to the activation of training activities. When assessing the teacher draws the student's attention to the mistakes made, inaccuracies. A mark is a numerical analogue of the assessment according to the five-point scale adopted in the Russian education system. In this approach, there are their shortcomings, and their dignity.

Advantages of the scale is in the relative simplicity of its application, shortcomings is in the subjectivism of the teacher in determining the degree of success of the student, as well as a weak differentiating ability. The problem of assessing knowledge is very relevant. Different countries use different assessment systems. In France, for example, a 10-point scale is used. In Russia, different evaluation systems were also used at different times. At the Mariinsky Institute of Noble Ladies, before the revolution, there was a differentiation of the mark "4": "good knowledge", "very good knowledge", "very good knowledge".

In the system of higher education, the effectiveness of control depends on the degree of use of its results for the operative and future correction of the educational process, the improvement of teaching. Modern automated systems, as a rule, are created and implemented step by step. This allows you to gradually introduce the system, monitoring and correcting errors that arise, which allows you to obtain a flexible automated management system for the educational activities of teachers and students[7].

1.2 Web portal

Modern technologies allow to extend the capabilities of traditional web services and provide the widest possible range of services when working with the website content of the department. The presence of a simple administrative resource that allows one to work with information unilaterally reduces the effectiveness of the functioning of the web site.

Today, in the electronic environment, Web 2.0 technologies are actively introduced and used, which are based on the interactive principle of content replenishment in the global network. As noted in his article, Niall Sclater, one of the most popular forms of realization of interactive content of the educational web site is the technology of virtual learning environment(VLE): "There are two polar approaches to methods of e-learning: at one pole is based in the school VLE, and on the other managed by students personalized learning environment created from a variety of web 2.0 sites. Recently, however, there was also a third model, potentially able to destroy both available. Two companies Google and Microsoft has begun offering services for employees of educational institutions and students, these services replace or supplement the functions of institutional systems, such as e-mail, exchange of instant messaging, scheduling, creation and storage of personal documents, sharing with them, creating websites. "Google App services to educational institutions" and "Microsoft live@edu" includes a wide range of instrument occupies that can be customized to the user's needs and even attach to the brand of the institution. At the same time described systems are placed in an external service provider, the so-called "cloud computing" or just "the cloud."

Portal technology is one of the most advanced uses of information and communication technologies in education. Currently, the term "portal" is a popular term that is often abused, often people do not have a clear understanding of what is behind this term. There are many definitions of the portal, often in the scientific and technical literature under the portal is understood: Web sites that are targeted at specific audiences and communities that provide: the pooling of information content and the delivery of important information for a given audience; Joint work and collective services; Access to services and applications for a selected audience, provided on the basis of strict personalization[8].

A computer-based system (application, multiservice server) that provides a personalized and customizable interface, the ability for people to find and interact with other people, to find and use information in accordance with their interests; Site, organized as a systemic multilevel consolidation of various resources and services, an "electronic library", divided into different thematic departments, capable of including quantitative and qualitative data, analyzes, graphs, etc., which are updated in real time; A network telecommunications node with high-speed access, a developed user interface and a wide range of diverse content, services and links; An intelligent tool for selecting content sources, pooling resources to provide the end user with a simple navigation and configuration interface [8]; A specially designed Web page that contains a large number of hyperlinks that allow you to

call various services; Information node, a collection of thematic sites, united by a search system, whose main function is to ensure the connection of clients - visitors to the portal, to relevant sources of information, etc.

The advantages of using information portals is that they: structure the data in the database and present them in an easy-to-use form; Track, extract and filter information from the Internet, based on user requirements; Provide universal access to open information, limited only by the capabilities of the network; Use graphic, audio and video media to provide information and a single, universal program-browser - to work with all kinds of information. Thus, the total technology allows maximizing the resources to users, integrating the information essence of the organization, arranging relations within the workers and information groups, creating conditions for a single information space. Modern Internet portals provide quite large and complex network information and technology complexes, oriented to providing reference, analytical, communication, educational and other information services. Their development requires a deep and comprehensive conceptual study of the ways and possibilities of building information networks, scientific, methodological and technological justification for the methods of forming sectoral and regional information network resources for various purposes[8].

Thus, the transformation of the "site" into a "portal" is connected with the transformation of the ideology of using the Internet network, which consists in the transition from "slipping" to various network addresses in order to search for the necessary information or necessary services - to "deepen" into information, service and , Even possibly, entertaining "bowels" of one thematic site, ie it is assumed that the user (in our case, the teacher of a vocational education institution), having purposefully arrived at the portal, should find here the goal of his searches, get the whole information and services[8]. Web application (portal) where teacher can put daily grades of students (for example, for quiz, attendance etc.), their home works with deadlines, some announcements (news), can see own scheduler, also will be profile information about him. And students can see their grades, home works and news from teacher. They will give notification about changes in portal to their e-mail.

The portal solution of the university website acts as a more complex organization of the structural units entering this website, and also provides additional services to users. The possibility of an authorized login allows you to create your own account and provides advanced features when working with a resource. So, when creating a section dedicated to teachers of the department, you can give registered users the opportunity of full-text access to resources. In addition, the development of web technologies allows you to apply various interactive forms of interaction: on the site you can post a forum or blog. Teachers will have the opportunity to independently create the content of their section, add the necessary materials, as well as correspond with students, leave comments and work together with the necessary resources. With this construction, the website of the department turns into a social mini-network of scientific topics. At the same

time, the opportunity to ask a question is not limited to hours of individual teacher's consultation. The relevance of the posted information will be at the highest level. This approach to the formation of the content of the web site of the department gives the opportunity to fully use all the advantages of the electronic representation of the university on the web and makes the university web site a modern competitive resource

1.3 Automation of education process and its problems

The development of computer facilities in recent years has led to the automation of many areas of human activity, including higher education. Database of teachers, students and other employees of the university is maintained, an electronic timetable for full-time and correspondence forms of training is provided, electronic training systems are created: laboratory works, simulators, models of processes and systems. Students in full-time, distance learning and distance learning interact in different ways with teachers, however, for all forms of learning, certain interaction processes can be automated.

At present, the innovative development of Russian higher and higher professional education is taking into account the general directions of the Bologna process. A distinctive feature of the educational standards being developed today is a new approach to the formation of content and the evaluation of the results of students' training on the basis of the principle: from "I know and I can" - to "I know, I can and I can apply in practice" [9]. At the present time, there is a contradiction between the current process of studying at a university:

- Constant increase in the amount of information in combination;
- Reduction of classroom time for the learning process;

The need to comply with uniform requirements for the level of training specialists according to the educational standard with different levels of training and abilities of students. It can be solved only by actively implementing information technologies in all types of educational process of the university. In other words, the teacher needs to identify the student's personal potential, his interest and ability to gain new knowledge, and properly organize the learning processes. As you know, there are three forms of educational processes in the country's universities: full-time, part-time and distance education. The organization of interaction between the teacher and the student in full-time education is as follows: lecture, practical, seminar, laboratory classes conducted by the classroom. Consultations, most often, are also appointed and conducted in the university's classrooms. In the form of correspondence, the teacher interacts with students in classrooms only 2 times a year - during sessions. And this interaction, as a rule, is very intense, with students overloading with different information.

During the intersessional period, the student independently learns disciplines, receiving consultations on the Internet. In the remote form of training, the interaction of the teacher with students is carried out, mainly, through computer technology. For students of distance and distance learning forms, it is especially

important to receive assignments for independent execution, a set of training materials and consultations with a teacher using Internet technologies. Students of correspondence and distance education need constant interaction with the university to increase their motivation to learn and create a systematic approach to education. Students with full-time education have problems with consultations of the teacher or the head of the graduating department, but in modern conditions, when the hours of classroom classes are reduced in favor of independent work, it makes sense to automate certain processes of interaction between the teacher and the student.

We are convinced that it is very important for students of all forms of education to obtain a complete list of disciplines, their structure and content for the current and subsequent semesters. At the same time, it is necessary to provide the student with information about the interdisciplinary connections of the disciplines studied in the current semester, with methodological instructions for the connection with the disciplines of the previous and subsequent semesters in relation to the current semester. Thus, it will be easier for the student to understand the continuity of the disciplines, which will make it possible to form system knowledge, skills and skills. It is very important that the student has information about the organization of the educational process during the current semester, weekly, ie. Had a timetable for each discipline of the current semester. From the teachers involved in the educational process of the current semester, it will be necessary to harmonize the curricula of all disciplines, and from the students - the precise fulfillment of the time for carrying out the control work. The educational process organized by this method will be very easy to automate, it will be easy to manage.

On the other hand, and for the teacher of a separate discipline, it is important to understand where this discipline is in the educational program, what knowledge the student must possess at the beginning of the study of the discipline, what subjects have already been studied and what is to be studied. These indicators are formed at the stage of drawing up work programs. As a rule, the analysis of these data is a huge work, which in practice is not automated. In the context of constantly updated and revised basic educational programs, this part of the work involves a huge amount of time and effort of the teacher. Modern technologies of automation of management processes make it possible to significantly simplify the analysis of these data and shorten the time of work with them. To implement the project of automation of the educational process, it is expedient to use Internet technologies. This is due to the fact that it is the Internet technologies that satisfy the requirement of general availability. Regardless of the type of electronic device used by students to obtain information, and regardless of the operating system and applications on this device, students should not have problems obtaining information.

The use of Internet browsers meets these requirements well. Browsers provide access from any computer connected to the Internet, and provide the same interface to access data, regardless of the hardware and software platform. At the same time, the dissemination of information through the Internet is characterized

by the possibility of instant updating and unlimited time access to information. Placing all the necessary information on the server of the university allows you to timely update it in full accordance with changes in educational standards and programs. And the organization of constant access to information posted on the server of the university will allow each student to receive information at any time of the day or night, which is especially important for the formation of a personal training schedule for a working student. Thus, the Internet server should be considered the optimal architecture of the automated system of interaction between the teacher and students. Information should be stored as database records [10]. Since the department is the main educational and scientific structural unit of the university, which provides educational and scientific work, it is necessary to begin the automation of the educational process within the framework of one department.

The organization of the educational process of the department can be:

- Issuing, i.e. Fully responsible for the preparation of students in the direction or specialty;
- General education, i.e. Responsible for teaching specific disciplines;
- Graduating in relation to one specialty and general education for other specialties.

Problems in automation of education process

The demand for higher education today is higher than ever. The number of students enrolled in one course of a medium-sized institution is measured in thousands. The fact that the potential and ability of each student is different, causes great inconvenience. Among the organizational problems, the problem of the lack of audiences is also acute. Another problem is the large volume of the material being studied, so the percentage of residual knowledge in this case is low. In this situation, the following question seems logical: how can the effectiveness of the educational process be improved in the conditions of a limited proposal without losing its quality? In other words: what needs to be done to intensify the learning process while maintaining the required quality parameters? To answer this question, let's consider education as a technological process, in which various information technologies are used (technical, software, networking, etc.). It should be noted that any technological process, as a rule, aims to automate in order to improve the quality and quantity of products. In our case, the products will be the "bricks" of modern civilized society, possessing certain qualitative characteristics, and, first of all, professional competence.

Automation of the technological process, as a rule, implies the use of automation tools to improve process technology and improve process control, i.e. Compliance with this technology. It is logical to assume, proceeding from this analogy, that for the improvement of the educational process there are own means of automation. Examples of such tools are electronic materials and educational and methodological complexes, various educational information systems. However, if

you take into account all aspects of the educational process, you can see that the funds themselves are not a sufficient condition for ensuring the effectiveness of training: they must be properly applied. As we see it, the reason for this are some of the problems that will be considered below.

So, among the actual problems of automation of the educational process today, we can single out the following:

1. The role of the teacher in the educational process has changed. He still plays a key role in the learning process, but now he is not just a person who reads the material, but, in fact, the manager of the educational process, i.e. He determines how to effectively dispose of the available time, what from the difficult to study in the audience, what is easy to leave at home, how to submit the material with the greatest visibility, etc. In addition, it is necessary to allocate students with different abilities, i.e. Seek to individualize the learning process. Ideally, I would like to achieve such an organization of the process, in which the initiator of the training and, simultaneously, the performer would be a student, and the teacher would act as a consultant. This problem seems to be important, since the process of restructuring the discipline taking into account the changed role of the teacher is rather laborious.

2. The goal of the training has changed: in our opinion, now it is not the knowledge of the entire material of the discipline, but the knowledge of its fundamental principles (laws, rules) and understanding of the rest of the material. In support of what has been said, there are three weighty arguments:

- remembering all the material of the discipline for passing the exam (test) is absolutely meaningless, since it does not carry any practical benefit. This is especially true of descriptive subjects. Accordingly, the focus of control activities on such subjects should be adjusted;

- in the existing system of training after a few years after studying the discipline in the head of the average student, at best, only the basic laws and rules remain: in that case, why memorize everything?

- requirements of employers always outstrip the requirements of the curriculum to the level of graduates' preparation, in other words, the retraining of "specialists" is inevitable. Consequently, the probability that the knowledge of the discipline will be useful in full, is reduced.

The summary from the above arguments is as follows: understanding is more in demand than memorization; The study of the full scope of discipline is necessary only to broaden the horizons. Unfortunately, not all teachers accept these arguments, rather than reduce the effectiveness of teaching.

3. One of the most important problems of our time is the problem of creating high-quality electronic teaching materials or electronic educational-methodical complexes (EEMC). The difficulties in this area are due to the lack of any standard

for EEMC. Because of this, each teacher is free to invest in the content and design of the EEMC its meaning. Nevertheless, it is believed that a good EEMC should be clearly structured, equipped with hypertext and multimedia inserts; Consist of a course of lectures, a set of test tasks (questions, tasks, tests, etc.), additional materials, in a word - all the information necessary for studying the discipline. An important role is played also by the way the material is delivered (text, presentation, animation, video lecture, etc.).

The creation of EEMC involves many difficulties, among which:

- difficulties in creating EEMC by teachers of older (and most experienced) generations. Such people need an additional person to "translate" their knowledge into an electronic form;
- the lack of both copyright protection mechanisms and state regulation in this matter. Copyright protection is really a painful place not only when creating EEMC, but despite the urgency of the problem, it is very difficult to offer any specific solution (the main problem is the ease of copying electronic materials);
- insufficient qualification of teachers to create high-quality, hyperlinked and multimedia-insert materials. To solve this problem, the design of the EEMC must be entrusted to a specialist who is able to work with text, graphics, and multimedia;
- the EEMCs created often bear the "imprint" of the university, faculty, department, specialty and teachers who created them (for example, accepted terminology, style, etc.);
- the lack of generally recognized banks and centers for reviewing electronic materials, which can be trusted when choosing one or another EEMC (a kind of "certificate" for EEMC). Obviously, before creating such a center, it is necessary to determine its functions and powers, as well as tasks and objectives of functioning.

An indirect characteristic of the quality of EEMC can serve as the term of its creation. For example, in two years we only created a course of lectures (not EEMC) in higher mathematics, which indicates that the term for the creation of a good EEMC should be comparable with the date of publication of the traditional textbook.

4. One of the communication problems is the insufficient perfection of the means of remote communication between the teacher and the student. For example, at the moment there are no ready-made software tools that allow in online mode to exchange mathematical formulas written in the usual mathematician form. Actually, the task here is not to develop a mathematical language, but to integrate existing tools into an intellectual communication system, through which it would be possible to exchange text, formulas, raster and vector images, audio and video fragments and streams (conversations and video conversations) P. As in online, and in the postponed mode with the possibility of fixing each "conversation".

5. A less interesting problem is the complexity of creating models of instruments (tools) for conducting classes in virtual laboratories. To such it is possible to carry mathematical, physical, chemical, biological instruments (tools). While relative success is available in the simulation of physical and mechanical measuring

instruments using the LabVIEW system, however, these models do not cover the full range of available instruments (tools). Most likely, the creation of models must take into account the following parameters:

- degree of realism: a visual representation (for example, an image), a visual representation and a simple model, a visual representation and a complex model (with the possibility of specifying separate parameters);

- list of characteristics of the device (tool);

- classes of accuracy (error), strength, durability, etc.

Each model should contain a description of the instrument (instrument), the principles of its operation, the purpose and conditions of use. Modern tools for visual programming and animation allow you to reproduce any desired action on the screen, however, it is necessary to begin by writing some standard or a guideline document regulating the creation of virtual instruments (tools).

The considered list of problems is certainly not exhaustive in such a complex process as the automation of the educational process. However, several interesting directions have been identified, which I would like to develop in future work.

I would also like to note that the automation of the educational process assumes an active position of the students. Unfortunately, the experience of teaching information disciplines shows that because of the craving for higher education, the activity of the average student's position has been reduced, accordingly, the quality of their training has also been reduced, despite all the efforts made by the universities. Perhaps automation of the educational process will help to solve this problem, and "bricks"

2. USED TECHNOLOGIES

To create my application I use base web technologies like Html and Css, for more difficult functions I use php and sql programming languages. And for more effectiveness and completeness I used Javascript, jQuery, Ajax, Json.

2.1 HTML.

Html is base of representing web pages in the world wide web. Here is official definition of html:

Hyper Text Markup Language, commonly referred to as HTML, is the standard markup language used to create web pages.[1] It is written in the form of HTML elements consisting of tags enclosed in angle brackets (like `<html>`). HTML tags most commonly come in pairs like `<h1>` and `</h1>`, although some represent empty elements and so are unpaired, for example `<img>`. The first tag in such a pair is the start tag, and the second is the end tag (they are also called opening tags and closing tags)[11].

Web browsers can read HTML files and render them into visible or audible web pages. Browsers do not display the HTML tags and scripts, but use them to interpret the content of the page. HTML describes the structure of a website semantically along with cues for presentation, making it a markup language, rather than a programming language.

But simply to say, it's way to represent your file on wide world web browser page with special symbols and tags. In fact, every web page is a html file. For example, when you write a normal document using a word processor like Microsoft Word/Office, your text is saved in a file with a special format. It is not simply saved as the string of words you typed since the document needs to preserve things like the font you chose, the size of the text, which words are in bold, which italics, and so on. The special format includes not only your words, but all these extra information so that the next time Word opens your document, it can display the document with the exact appearance you created earlier. In the same way, web pages are simply strings of words put in a special format that web browsers are able to display. While the format of Word documents is simply called "Word format" (or "doc format"), loosely speaking, one might say that web pages are formatted using "HTML". So it's first and necessary step for creating web pages. It's first point, from which I started to learn web programming in WEB class in the university. Let's see a little example to better understanding. Below you can see basic html document, which contains all essential tags. You can copy this code and put into the some text editor and save for example like first.html, and then by opening this file you will see you own web page in browser.

```
<html>
```

```
<head>
```

```
<title> My firs web page</title>
```

```
</head>
```

```
<body>
```

Here will be everything that shows main content of page

```
</body>
```

```
</html>
```

But using html is not enough to create interesting and beautiful web page. For making html page more brighter and colorful we need CSS.

2.2 CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in markup language. While most often used to change the style of web pages and user interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications[12].

CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts.[1] This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple HTML pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content, such as semantically insignificant tables that were widely used to format pages before consistent CSS rendering was available in all major browsers. CSS makes it possible to separate presentation instructions from the HTML content in a separate file or style section of the HTML file. For each matching HTML element, it provides a list of formatting instructions. For example, a CSS rule might specify that "all heading 1 elements should be bold," leaving pure semantic HTML markup that asserts "this text is a level 1 heading" without formatting code such as a `<body>` tag indicating how such text should be displayed.

This separation of formatting and content makes it possible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices. It can also be used to display the web page differently depending on the screen size or device on which it is being

viewed. While the author of a web page typically links to a CSS file within the markup file, readers can specify a different style sheet, such as a CSS file stored on their own computer, to override the one the author has specified. If the author or the reader did not link the document to a style sheet, the default style of the browser will be applied. Another advantage of CSS is that aesthetic changes to the graphic design of a document (or hundreds of documents) can be applied quickly and easily, by editing a few lines in one file, rather than by a laborious (and thus expensive) process of crawling over every document line by line, changing markup. The CSS specification describes a priority scheme to determine which style rules apply if more than one rule matches against a particular element. In this so-called cascade, priorities or weights are calculated and assigned to rules, so that the results are predictable.

So, simply to say, CSS control layout of your web page. It allow you to specify things like the font you want on your page, the size of your text, whether the page is to have 2 columns, whether your text is to be in bold or italics, and so on. In other words, it is the part that lets you control the appearance of your web page.

You may be used to the Microsoft Word "doc" format, where everything from the text you type to the appearance of the document is specified in a single file, transparent to you. On the web, the raw information is specified in HTML and most of the appearance is determined by the CSS. Below, little example of CSS file:

```
body {  
    font: 100% Lucida Sans;  
    margin: 20px;  
    line-height: 26px;  
}
```

Cascading Stylesheets are used to control how your pages are presented, and make pages more accessible. Basic special effects and interaction is provided by JavaScript, which adds a lot of power to basic HTML. Most of this advanced stuff is for later down the road, but when using all of these technologies together, you have a lot of power at your disposal.

2.3 JavaScript

JavaScript, also known as **ECMAScript** (the untrademarked name used for the standard), is a dynamic programming language.^[5] It is most commonly used as part of web browsers, whose implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter

the document content that is displayed. It is also used in server-side network programming with runtime environments such as Node.js, game development and the creation of desktop and mobile applications. JavaScript is classified as a prototype-based scripting language with dynamic typing and first-class functions. This mix of features makes it a multi-paradigm language, supporting object-oriented, imperative, and functional programming styles. Despite some naming, syntactic, and standard library similarities, JavaScript and Java are otherwise unrelated and have very different semantics. The syntax of JavaScript is actually derived from C, while the semantics and design are influenced by the Self and Scheme programming languages[13].

JavaScript is also used in environments that aren't web-based, such as PDF documents, site-specific browsers, and desktop widgets. Newer and faster JavaScript virtual machines (VMs) and platforms built upon them have also increased the popularity of JavaScript for server-side web applications. On the client side, JavaScript has been traditionally implemented as an interpreted language, but more recent browsers perform just-in-time compilation. JavaScript has been standardized in the ECMAScript language specification.

Simply, it is programming language used to make web pages interactive. Since the HTML/CSS combination is analogous to the data found in a Word document, it is good only for displaying information. If you want your web pages to do different things depending on the situation, you will need a programming language. For example, some websites want to provide a membership facility where people can log into the site, and access certain information. Other sites provide a feedback form so that visitors can contact them. All these things require facilities that a simple document format cannot do.

jQuery is a cross-platform JavaScript library designed to simplify the client-side scripting of HTML. jQuery is the most popular JavaScript library in use today. jQuery is free, open-source software licensed under the MIT License. jQuery's syntax is designed to make it easier to navigate a document, select DOM elements, create animations, handle events, and develop Ajax applications. jQuery also provides capabilities for developers to create plug-ins on top of the JavaScript library[14]. This enables developers to create abstractions for low-level interaction and animation, advanced effects and high-level, theme-able widgets. The modular approach to the jQuery library allows the creation of powerful dynamic web pages and web applications.

jQuery is not a language, but it is a well written JavaScript code. As quoted on official jQuery website, "it is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development."

In order to work with jQuery, you should be aware of the basics of JavaScript, HTML and CSS.

Why jQuery? jQuery is very compact and well written JavaScript code that increases the productivity of the developer by enabling them to achieve critical UI functionality by writing very small amount of code.

- It helps to improve the performance of the application
- It helps to develop most browser compatible web page
- It helps to implement UI related critical functionality without writing hundreds of lines of codes
- It is fast
- It is extensible – jQuery can be extended to implement customized behavior

Other advantages of jQuery are:

- No need to learn fresh new syntaxes to use jQuery, knowing simple JavaScript syntax is enough
- Simple and cleaner code, no need to write several lines of codes to achieve complex functionality

Have you ever walked down a hallway in the dark and found yourself lost? JavaScript and JQuery create the same sense of loss and confusion. When discussing JavaScript and JQuery people will say the funniest things about the two, one quote I heard a long time ago on the subject:

“JavaScript I hate, what we should do is get rid of it. But JQuery I love!”

What is so funny about the above statement is without JavaScript there would be no JQuery. All good tools have a foundation and without a doubt JavaScript has created a lot of modern day tools that assist in building features into our website and online application experience. Why the confusion around this subject of JavaScript?, that is what is being discussed in this article.

AJAX stands for Asynchronous JavaScript and XML. AJAX is a new technique for creating better, faster, and more interactive web applications with the help of XML, HTML, CSS, and Java Script. Ajax uses XHTML for content, CSS for presentation, along with Document Object Model and JavaScript for dynamic content display[15].

Conventional web applications transmit information to and from the sever using synchronous requests. It means you fill out a form, hit submit, and get directed to a new page with new information from the server. With AJAX, when you hit submit, JavaScript will make a request to the server, interpret the results, and update the current screen. In the purest sense, the user would never know that anything was even transmitted to the server. XML is commonly used as the format for receiving server data, although any format, including plain text, can be used. AJAX is a web browser technology independent of web server software. A user can continue to use the application while the client program requests information from the server in the background[15].

-Intuitive and natural user interaction. Clicking is not required, mouse movement is a sufficient event trigger.

-Data-driven as opposed to page-driven.

-Rich Internet Application (RIA) technology.

AJAX is the most viable Rich Internet Application (RIA) technology so far. It is getting tremendous industry momentum and several tool kit and frameworks are emerging. But at the same time, AJAX has browser incompatibility and it is supported by JavaScript, which is hard to maintain and debug.

-AJAX is Based on Open Standards

AJAX is based on the following open standards:

- Browser-based presentation using HTML and Cascading Style Sheets (CSS).
- Data is stored in XML format and fetched from the server.
- Behind-the-scenes data fetches using XMLHttpRequest objects in the browser.
- JavaScript to make everything happen.

In other words, AJAX is not programming language, it's server-side script, which we need to communicate with database or server without refreshing web page or postback. Simply it's method to exchange data with server and to update some parts of page without reloading entire web page.

2.4 Server side

Generally, we have two sides, on which web scripts run, client side and server side. Client side often is called front-end while server side back-end. The client of website refers to the browser, which is viewing it. And the server of website is a server that hosts it.

Most web programming languages are made to run either on client and server sides. For example, if JavaScript is a client side coding language, and php belongs to server side coding language.

Most websites make use of both a client side and a server side language. Although there are things both can do, there are some things which can only be done server side, and there are some things which can only be done client side. Front-end scripting is good for anything that requires user interaction, such as a simple game. Back-end scripting is good for anything that requires dynamic data to be loaded, such as a notice that tells the user they're logged in.

PHP

PHP is one of the most popular coding language of server side as well as Ruby on Rails, ASP.NET and others.

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. As of January 2013, PHP was installed on more than 240 million websites (39% of those sampled) and 2.1 million web servers. Originally created by Rasmus Lerdorf in 1994, the reference implementation of PHP (powered by the Zend Engine) is now produced by The PHP Group. While PHP originally stood for Personal Home Page, it now stands for PHP: Hypertext Preprocessor, which is a recursive backronym. PHP code can be simply mixed with HTML code, or it can be used in combination with

various templating engines and web frameworks. PHP code is usually processed by a PHP interpreter, which is usually implemented as a web server's native module or a Common Gateway Interface (CGI) executable. After the PHP code is interpreted and executed, the web server sends resulting output to its client, usually in form of a part of the generated web page; for example, PHP code can generate a web page's HTML code, an image, or some other data. PHP has also evolved to include a command-line interface (CLI) capability and can be used instandalone graphical applications[16].

Simply, PHP is open source, widely-used scripting language, that is specially suited for web programming and can be embedded into the html file.

```
<html>
  <head>
    <title>Example</title>
  </head>
  <body>

    <?php
      echo "Hi, I'm a PHP script!";
    ?>

  </body>
</html>
```

Instead of lots of commands to output HTML (as seen in C or Perl), PHP pages contain HTML with embedded code that does "something" (in this case, output "Hi, I'm a PHP script!"). The PHP code is enclosed in special start and end processing instructions `<?php` and `?>` that allow you to jump into and out of "PHP mode". What distinguishes PHP from something like client-side JavaScript is that the code is executed on the server, generating HTML which is then sent to the client. The client would receive the results of running that script, but would not know what the underlying code was. You can even configure your web server to process all your HTML files with PHP, and then there's really no way that users can tell what you have up your sleeve. The best things in using PHP are that it is extremely simple for a newcomer, but offers many advanced features for a professional programmer. Don't be afraid reading the long list of PHP's features. You can jump in, in a short time, and start writing simple scripts in a few hours. Although PHP's development is focused on server-side scripting, you can do much more with it. Read on, and see more in the What can PHP do? section, or go right to the introductory tutorial if you are only interested in web programming. PHP is mainly focused on server-side scripting, so you can do anything any other CGI program can do, such as collect form data, generate dynamic page content, or send and receive cookies. But PHP can do much more.

There are three main areas where PHP scripts are used:

Server-side scripting. This is the most traditional and main target field for PHP. You need three things to make this work. The PHP parser (CGI or server module), a web server and a web browser. You need to run the web server, with a connected PHP installation. You can access the PHP program output with a web browser, viewing the PHP page through the server. All these can run on your home machine if you are just experimenting with PHP programming. See the installation instructions section for more information[17].

Command line scripting. You can make a PHP script to run it without any server or browser. You only need the PHP parser to use it this way. This type of usage is ideal for scripts regularly executed using cron (on *nix or Linux) or Task Scheduler (on Windows). These scripts can also be used for simple text processing tasks. See the section about Command line usage of PHP for more information.

Writing desktop applications. PHP is probably not the very best language to create a desktop application with a graphical user interface, but if you know PHP very well, and would like to use some advanced PHP features in your client-side applications you can also use PHP-GTK to write such programs. You also have the ability to write cross-platform applications this way. PHP-GTK is an extension to PHP, not available in the main distribution. If you are interested in PHP-GTK, visit » its own website.

PHP can be used on all major operating systems, including Linux, many Unix variants (including HP-UX, Solaris and OpenBSD), Microsoft Windows, Mac OS X, RISC OS, and probably others. PHP has also support for most of the web servers today. This includes Apache, IIS, and many others. And this includes any web server that can utilize the FastCGI PHP binary, like lighttpd and nginx. PHP works as either a module, or as a CGI processor.

So with PHP, you have the freedom of choosing an operating system and a web server. Furthermore, you also have the choice of using procedural programming or object oriented programming (OOP), or a mixture of them both. With PHP you are not limited to output HTML. PHP's abilities includes outputting images, PDF files and even Flash movies (using libswf and Ming) generated on the fly. You can also output easily any text, such as XHTML and any other XML file. PHP can autogenerate these files, and save them in the file system, instead of printing it out, forming a server-side cache for your dynamic content.

One of the strongest and most significant features in PHP is its support for a wide range of databases. Writing a database-enabled web page is incredibly simple using one of the database specific extensions (e.g., for mysql), or using an abstraction layer like PDO, or connect to any database supporting the Open Database Connection standard via the ODBC extension. Other databases may utilize cURL or sockets, like CouchDB. PHP also has support for talking to other services using protocols such as LDAP, IMAP, SNMP, NNTP, POP3, HTTP, COM (on Windows) and countless others. You can also open raw network sockets

and interact using any other protocol. PHP has support for the WDDX complex data exchange between virtually all Web programming languages. Talking about interconnection, PHP has support for instantiation of Java objects and using them transparently as PHP objects. PHP has useful text processing features, which includes the Perl compatible regular expressions (PCRE), and many extensions and tools to parse and access XML documents. PHP standardizes all of the XML extensions on the solid base of libxml2, and extends the feature set adding SimpleXML, XMLReader and XMLWriter support. And many other interesting extensions exist, which are categorized both alphabetically and by category. And there are additional PECL extensions that may or may not be documented within the PHP manual itself, like » XDebug.

SQL

Before I can answer what MySQL means, I have to explain what a computer "database" means. Essentially, where computers are concerned, a database is a just collection of data. Specialised (or "specialized" in US English) database software, like MySQL, are just programs that lets you store and retrieve that data as efficiently as possible. A little analogy may help make it clearer why we use specialized database software. Think about the documents stored on your computer. If you were to save all your documents using a (brain-dead) file naming scheme like "1.doc", "2.doc", "3.doc", ... "9,999,999.doc" (etc), you will eventually face a problem of finding the right file if you're looking for a specific document. For example, if you're looking for a business proposal you made some time ago to XYZ Company, which file should you open? One way is to sequentially check every single file, starting from "1.doc", till you get the right data. But this is obviously a highly inefficient method of getting the right file. And it's primarily the result of an inefficient method of storing your data (ie, saving your files) in the first place.

Now, this is of course a ridiculous example. I mean, no one I know saves files with names like these, and even if so, there are many search software that can help you locate the correct file without your having to manually open every single one in sequence. But it serves to make the point that once you have a lot of data, if you don't have a good system of organizing it, finding the correct piece of data is a very time consuming operation. And it becomes more time consuming as the amount of data grows.

A database program is a type of computer software that is designed to handle lots of data, but to store them in such a way that finding (and thus retrieving) any snippet of data is more efficient than it would have been if you simply dumped them willy nilly all over the place. With such database software, if you (say) keep a list of customers and their shipping addresses, entering and retrieving information about your one millionth customer will not take much longer (if at all) than entering and retrieving information about your 1st customer.

Many computer programs, including web-based programs like blogs, photo galleries and content management systems need to store and retrieve data. For example, blog software need to store the posts (ie, articles) you write, and retrieve

them when a visitor goes to your site. Similarly, photo galleries store information about their pictures (for example, for sites that allow users to rate the photos, the numerical rating for each picture is stored in a database). Instead of reinventing the wheel and implementing their own system of storing and retrieving data, these software simply use the specialised database programs I mentioned earlier. To make it easy for other programs to access data through them, many database software support a computer language called "SQL" (often pronounced as "sequel"). SQL was specially designed for such a purpose. Programs that want the database software to handle the low-level work of managing data simply use that language to send it instructions.

Stages of creating a website

1. Defining the objectives of the website and its positioning

At this stage, it is necessary to determine what the site is for, ie. What tasks should he solve: to provide a general idea of the company, or to multilaterally highlight any aspect of human activity, increase sales through traditional channels or organize a web-based trade, conduct an advertising or marketing campaign. The goals of the website, in most cases, should be set by the customer, and then, together with the contractor, they are specified and adjusted. This is one of the most important steps, not only the creation of a website as such, but the most important stage of Internet marketing.

2. Creation of a Technical Assignment (TOR) for the development of a website. In the ToR it is necessary to describe in as much detail as possible: TK is the main document on the basis of which all subsequent stages of the website development are carried out.

3. Creation of a design layout of a website.

At this stage, the designer in a special graphic program creates the design of the pages of the future web site with the drawing of all graphic (banners, buttons, photos) and text elements. The designer creates the design of web pages taking into account the wishes of the customer and the task prescribed in the ToR.

4. Website layout.

After the Customer has approved the design layout (in writing or by e-mail), the layout is accepted for the work - this is the person who translates the design layout into a language that is understandable to a computer using the HTML language.

5. Programming the site.

Very often the stage of programming and layout is combined into one. On small and medium projects, both actions are able to perform one person. On major projects, due to the specifics of the work, these stages are shared.

6. Filling the site with information.

At this stage, the information provided by the Customer is posted on the site, i.e. By translating into a special format text and graphics are placed on the site on certain pages, and this information becomes available for viewing.

7. Location of the site on the Internet.

This step is not necessarily performed after all the above works. It can be conducted in parallel with any of the stages. It consists in that the site files are located on the hosting.

8. Testing the site.

This stage can be implemented both before and after placing the site at its "native" address. At this stage, all errors and shortcomings in programming and writing texts are identified. The testing period depends on the complexity of the project, but, as a rule, does not exceed 1 month.

3 IMPLEMENTATION

3.1 Actors

There are two main actors: Students and Instructors. Depending on type of user they will login into two different systems, that have same main page while other parts are totally different from each other, because each of them carry different purpose and function. Before to log into the system we should in checkbox choose type of user as it is shown below in Fig.3

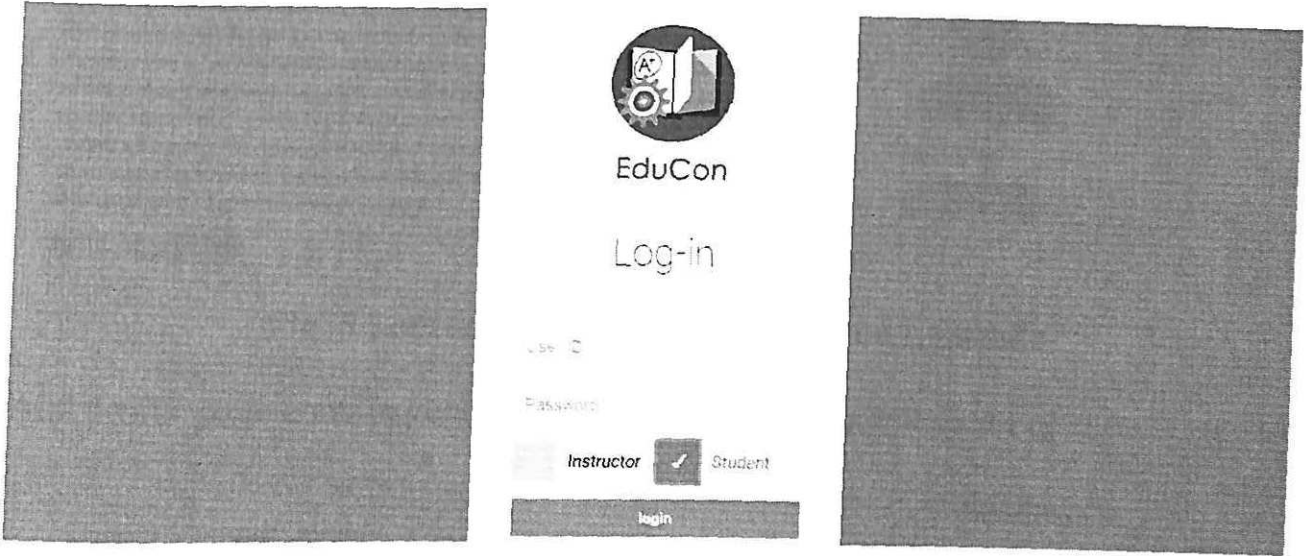


Fig. 3 Login page to log into system for users

3.1.1 Student

Comparatively, this type of user is easier. Because in general he can see all posted information. And in his case, he does action just in beginning, when he log in. One more action he can do on website is that he can post comment under the news or announcements like an advisor, who posted it. Student after that he logged into the system, there will appear main page, which is same in instructor part. See Fig.4

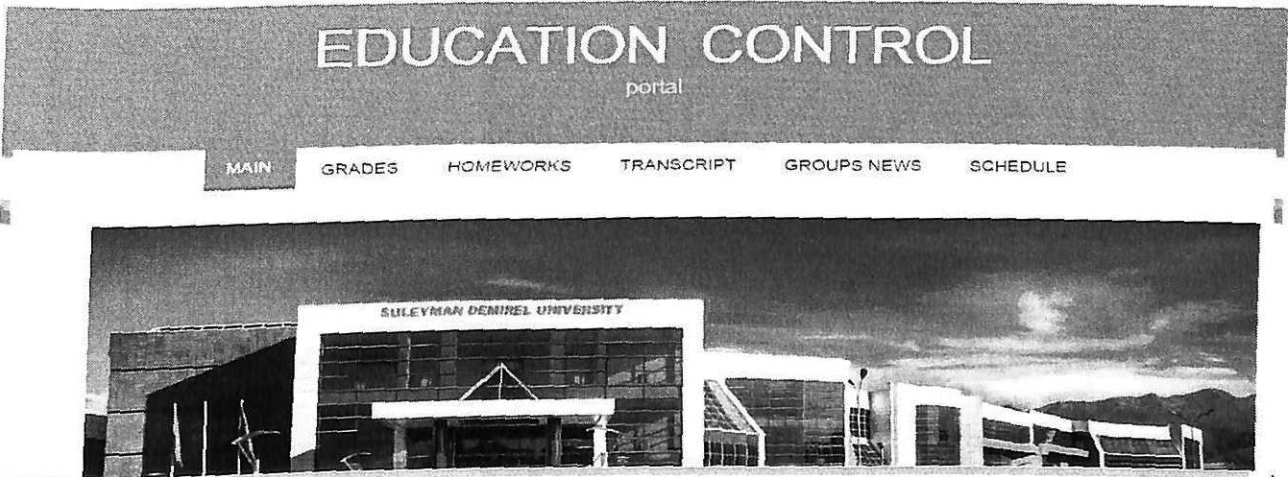


Fig. 4 Main page of portal after logging in

On the right side will be profile of the user, in that case, it is student's photo with link to his profile information. Under the link there is log out button. See Fig. 5

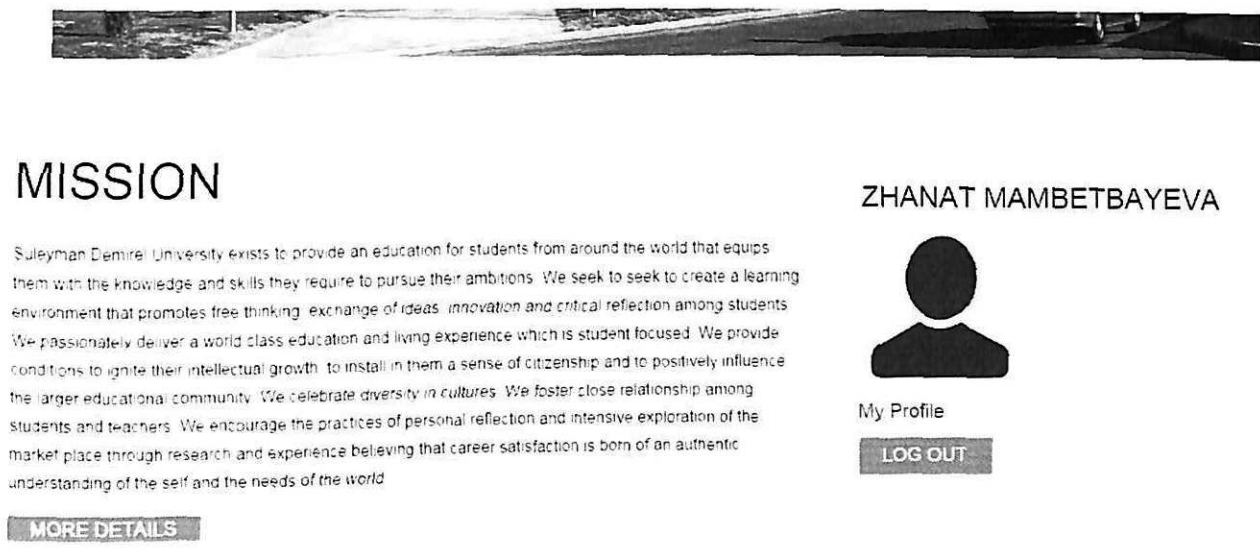


Fig. 5 Location of user who logged in on right side

And profile page contain general information about student. See Fig. 6



Fig. 6 Profile information about user

As we see, student can upload and change photo of profile.

Next after the main pages goes Grades part, where student can see his daily grades by each subject in this semester. See Fig.7



Fig. 6 Grades page of student

When student click on Grades menu, there is a list of subjects, registered in this semester. By choosing subject, clicking on link, he will go to this page as it's shown on fig.6. Here is name of teacher, who leads this subject and then will be list of grades activity. All grades, that teacher put by defined time. On right top corner there is total grades link, which will show in modal window. This window will summarize all grades, shown on page in fig.6. Below you can see modal view of total grades(see Fig.8).

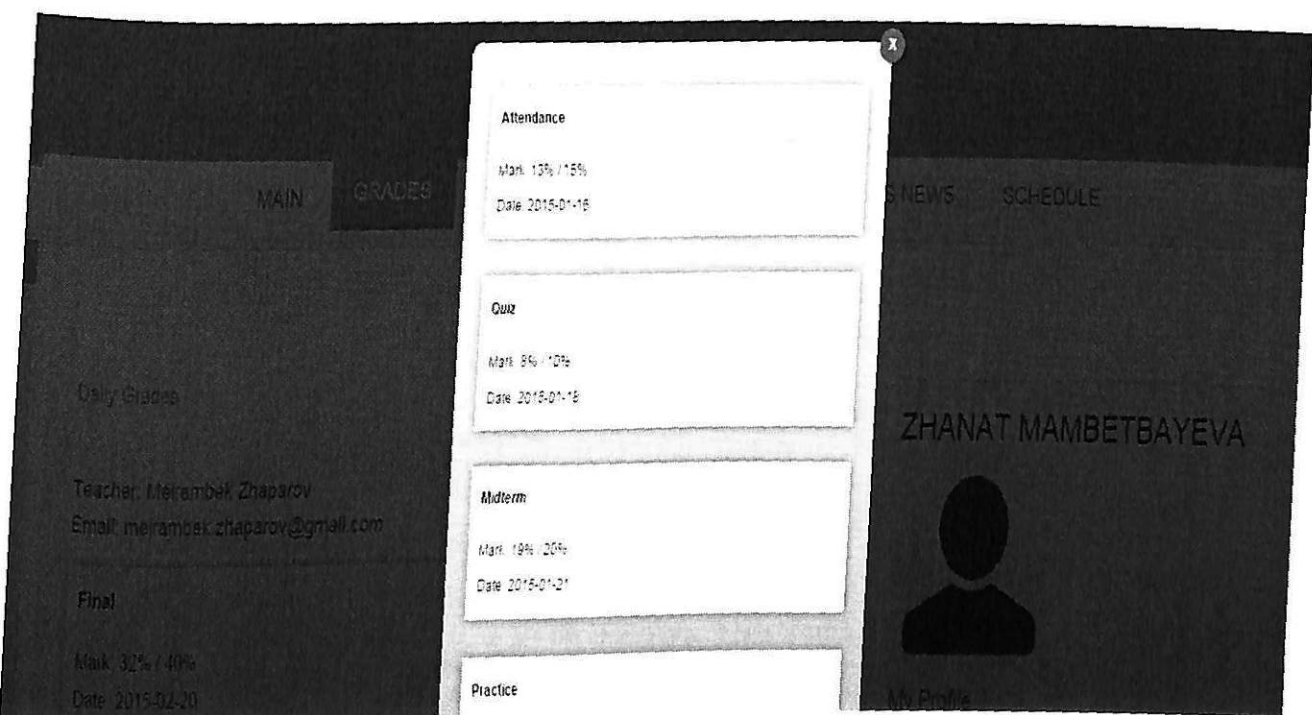


Fig.8 Modal view of student's total grades on Grades page

Then goes Home works part, where student can see home works with deadlines and attached files, posted by teacher. First, like in Grades part, will be list of subjects. Then clicking by defined subject we will go on home works main page like it is shown on Fig.9



Fig.9. Home works page for user Student

Next part is Transcript, where you student can see his transcript with total grades and GPA. See Fig.10.

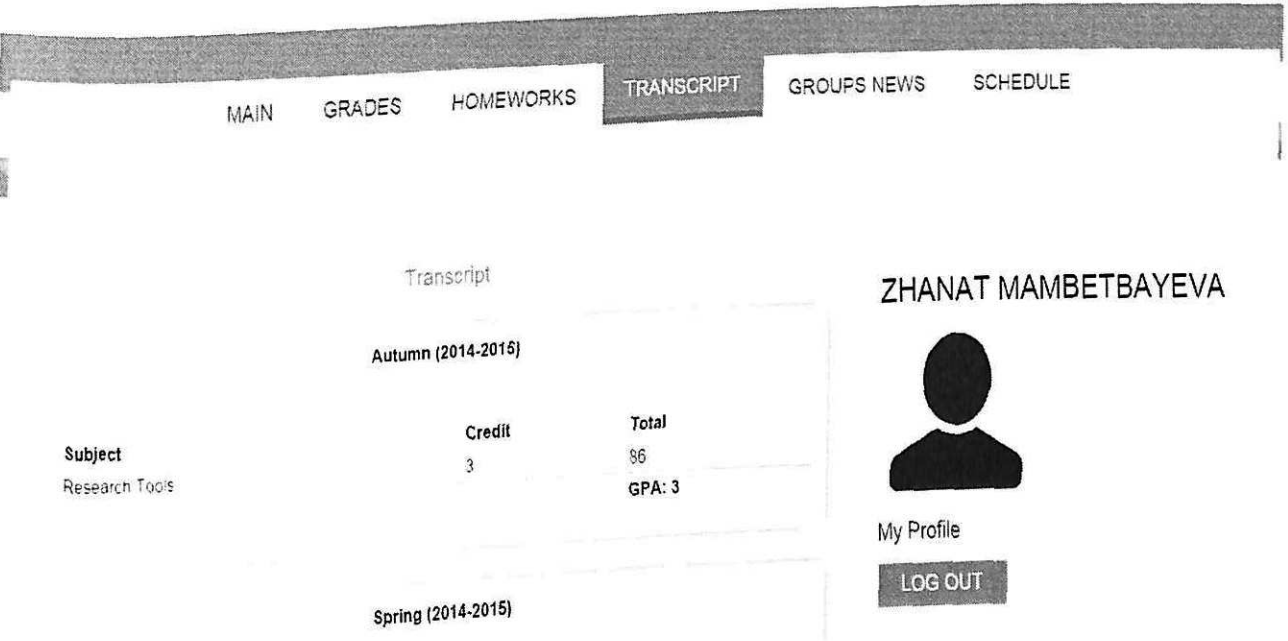


Fig.10. Transcript page of student

After this in News part, student can see posted by his advisor news or announcements. Also can leave comment as other students of his group and advisor. See Fig. 11.

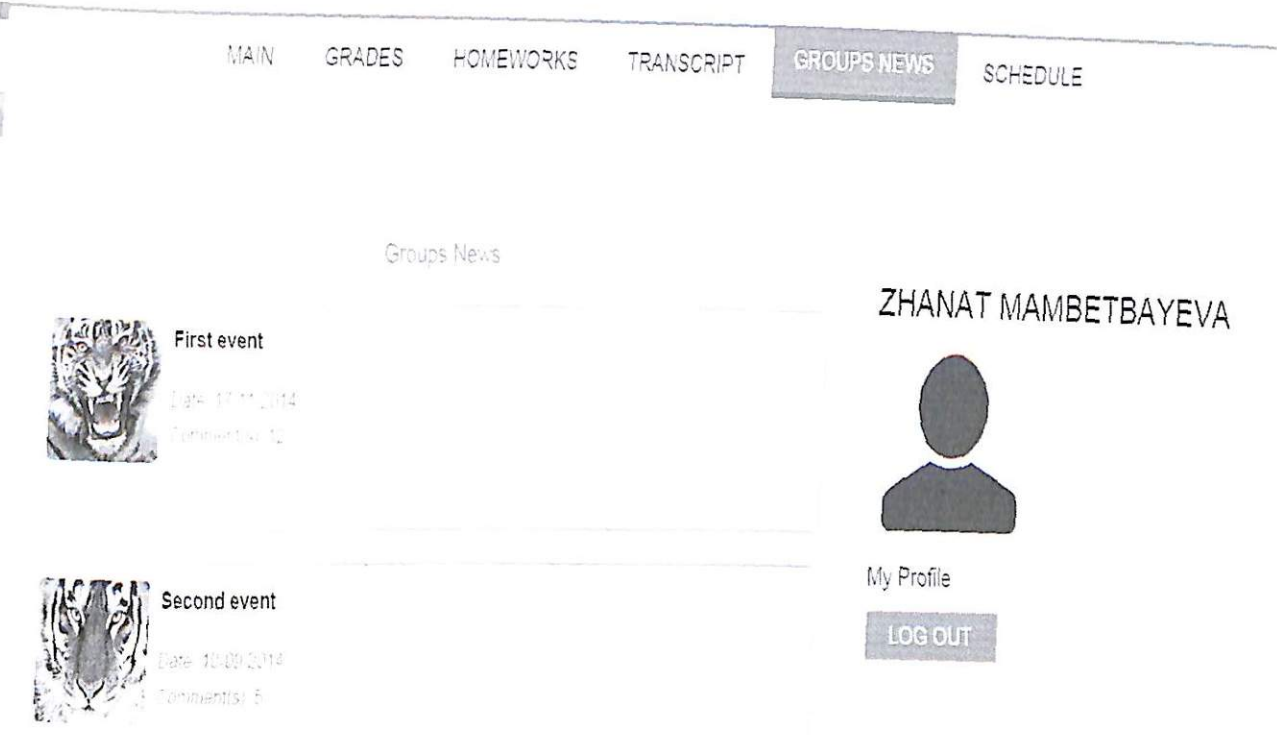


Fig.11. News page of student

Here we can see a list of events or news, posted by advisor. Clicking on defined event, we go to this event page like on Fig.12.



Fig.12. Defined event page with comments.

You can see a description of the event, date and under this comments, leaved by students and advisor who is in this group and logged into the system by own login.

Last part is schedule, where student's timetable, his group's timetable is available. See Fig.13.

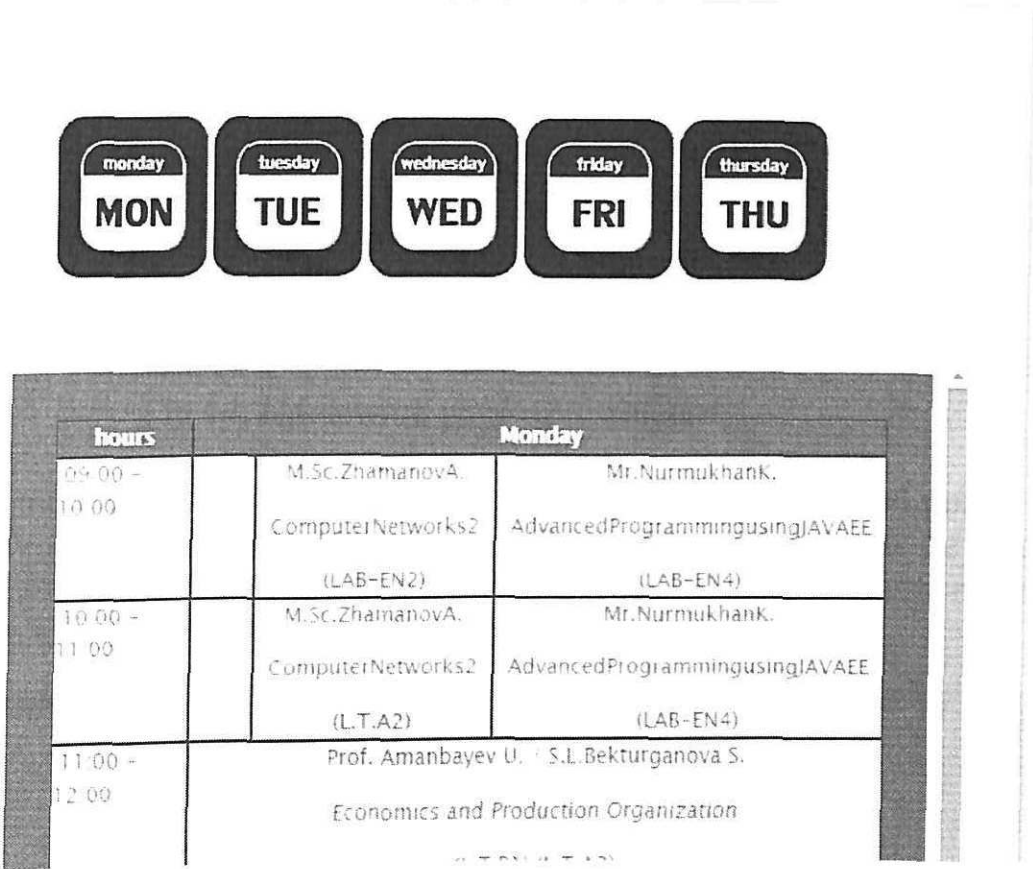


Fig.13. Schedule page of student

There are all pages of student part. And as you see, students part is more informative while teacher's part more active, more operations, that is done by instructor.

3.1.2 Instructor

Second type of user is instructor. To log in instructor put a tick in checkbox and fill his login and password as it was shown on Fig.2. After he logged into the system, there will appear main page, same as student has. Homework part will show homework posting function by teacher. If student just see it, on teacher's side on right top corner will appear button Add homework. As in grades part, first, there will be list of subjects and then goes to homework page. See Fig.14.

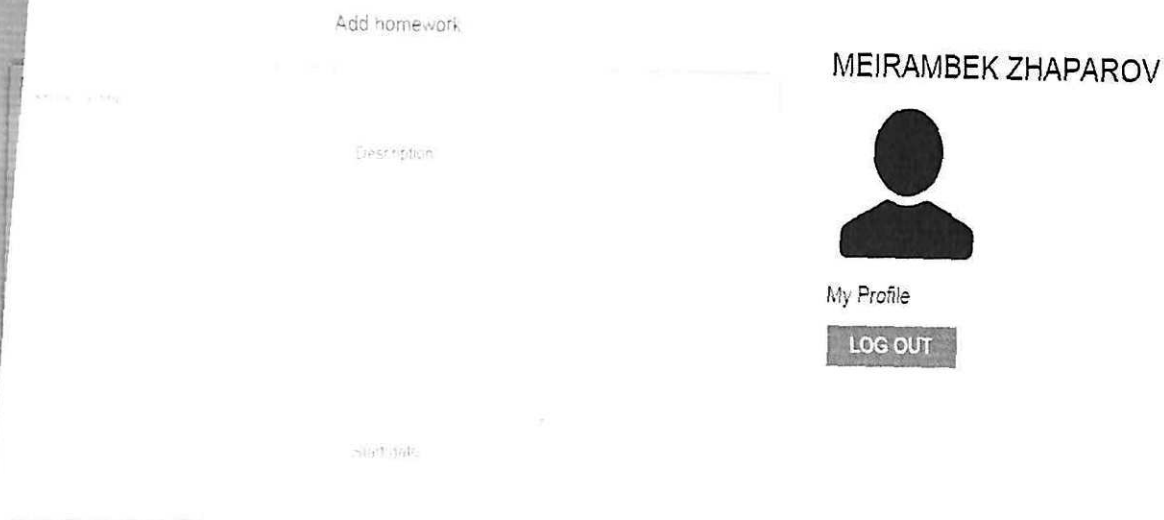


Fig.14. Homework page of instructor

Grades part is more difficult, because in this part teacher put grades and points of each student. When instructors goes to Grades, there are list of subjects, he leads. And then by clicking grading policy he will write down own policy, and then these changes will be saved and then he puts students' grades. See Fig.15.



Fig.15. Grades page of instructor

Before if teacher doesn't choose grading policy, then first he should choose grading policy and then he will able to add students' grades.

EDUCATION CONTROL

portal

MAIN

HOMEWORKS

GRADES

MY GROUPS

SCHEDULE

Subject: Internet Technologies

Please, choose grade type of lesson and enter grade range.

Total range for now: 0 % - 100 %

Attendance ▾

Save

MEIRAMBEK ZHAPAROV



My Profile

LOG OUT

Fig.16.Choosing grading policy page of instructor

Next part is My groups menu. Where teacher can see list of groups, where he is an advisor. By choosing group, he will see list of events or news, posted by him earlier and create new one. Difference from student part is that on right top corner there are button Add New Event. See Fig.17

MAIN

HOMEWORKS

GRADES

MY GROUPS

SCHEDULE

Groups News

Add New Event



First event

Date: 17-11-2014

Comments: 12



Second event

Date: 10-09-2014

ASKAR SATABALDIYEV



My Profile

LOG OUT

Fig.17. News page of instructor

Last menu is schedule. Like a student, all instructors have their own scheduler. This part is informative like for a student. And interface is same. All data will be generated from database and displayed here. See Fig.18.

monday
MON

tuesday
TUE

wednesday
WED

friday
FRI

thursday
THU

hours	Monday
08:00 - 10:00	08:00 - 10:00 Introduction to Data Research in IT (Dr. J. T. K.)
10:00 - 12:00	10:00 - 12:00 English (Dr. J. T. K.)
12:00 - 14:00	12:00 - 14:00 Introduction to Data Research in IT (Dr. J. T. K.)
14:00 - 16:00	14:00 - 16:00 English (Dr. J. T. K.)
16:00 - 18:00	16:00 - 18:00 English (Dr. J. T. K.)
18:00 - 20:00	18:00 - 20:00 English (Dr. J. T. K.)
20:00 - 22:00	20:00 - 22:00 English (Dr. J. T. K.)
22:00 - 24:00	22:00 - 24:00 English (Dr. J. T. K.)



My Profile

LOG OUT

Some field

Some field

Fig.18. Schedule page of instructor

3.2 Database architecture

Database totally contains 16 tables. Some of the tables are used as data for settings, but major part is used for storing real data, that is used by users of portal. Since data can be in different language, text fields are encoded in UTF-8. Tables in database are sorted by first letter. See Fig. 19

phpMyAdmin

Недавнее Избранное

- educon
- Новая
- events
- events_comments
- grades
- grade_types
- groups
- homeworks
- instructors
- lessons
- lessons_students
- schedule_data
- schedule_data_teachers
- schedule_hours
- schedule_weeks
- students
- terms
- information_schema

Сервер: 127.0.0.1 • База данных: educon

Структура SQL Поиск Запрос по шаблону Экспорт Импорт Операции Привилегии Ещё

Таблица	Действие	Строки	Тип	Сравнение	Размер Ф
events	Обзор Структура Поиск Вставить Очистить Удалить	4	InnoDB	latin1_swedish_ci	16 Кб
events_comments	Обзор Структура Поиск Вставить Очистить Удалить	24	InnoDB	latin1_swedish_ci	16 Кб
grades	Обзор Структура Поиск Вставить Очистить Удалить	15	InnoDB	latin1_swedish_ci	16 Кб
grade_types	Обзор Структура Поиск Вставить Очистить Удалить	5	InnoDB	latin1_swedish_ci	16 Кб
groups	Обзор Структура Поиск Вставить Очистить Удалить	7	InnoDB	latin1_swedish_ci	16 Кб
homeworks	Обзор Структура Поиск Вставить Очистить Удалить	8	InnoDB	latin1_swedish_ci	16 Кб
instructors	Обзор Структура Поиск Вставить Очистить Удалить	3	InnoDB	latin1_swedish_ci	16 Кб
lessons	Обзор Структура Поиск Вставить Очистить Удалить	2	InnoDB	latin1_swedish_ci	16 Кб
lessons_students	Обзор Структура Поиск Вставить Очистить Удалить	4	InnoDB	latin1_swedish_ci	16 Кб
schedule_data	Обзор Структура Поиск Вставить Очистить Удалить	45	InnoDB	utf8_general_ci	16 Кб
schedule_data_teachers	Обзор Структура Поиск Вставить Очистить Удалить	45	InnoDB	utf8_general_ci	16 Кб
schedule_hours	Обзор Структура Поиск Вставить Очистить Удалить	9	InnoDB	utf8_general_ci	16 Кб
schedule_weeks	Обзор Структура Поиск Вставить Очистить Удалить	5	InnoDB	utf8_general_ci	16 Кб
students	Обзор Структура Поиск Вставить Очистить Удалить	7	InnoDB	latin1_swedish_ci	16 Кб
terms	Обзор Структура Поиск Вставить Очистить Удалить	2	InnoDB	latin1_swedish_ci	16 Кб
15 таблиц	Всего	177	InnoDB	latin1_swedish_ci	140 Кб

Fig.19. Database architecture

3.2.1 Students

In structure of table students we can see login and password, by which student can log into portal. Also this table contains students' profile information. From this table we check authentication of user with comparing of existing such login and password in database. Also information from this table will be inserted into profile page of every user. See Fig.20.

student_id	name	surname	login	password	email	photo	gender	group_id	spec_name	ent
1	Meruert	Zhenal	11111	qwerty	meruert.zhenal@gmail.com	images/students/1433164562.jpg	female	1	Information Systems	
2	Zhanat	Mambetbayeva	11450	qwerty	zhanat.mambetbayeva@gmail.com	images/students/student2.jpg	female	1	Information Systems	
3	Botagoz	Madiyeva	11345	qwerty	botagoz.madiyeva@gmail.com	images/students/student3.jpg	female	2	Computer Systems & Software	

Fig.20. Structure of students table

3.2.2 Instructors

Instructor table contain similar information as students table and do same functions.

instructor_id	name	surname	login	password	email	photo	gender
1	Askar	Satabaldiyev	11111	qwerty	askar_agay@gmail.com	images/instructors/1424428684.jpg	male
2	Rasim	Suliyev	5555	qwerty	rasim.suliev@gmail.com	images/instructors/1423243311.jpg	male
3	Meirambek	Zhaparov	66666	qwerty	meirambek.zhaparov@gmail.com	images/instructors/instructor3.jpg	male

Считать все Сортировать по Изменить Удалить Экспорт

Fig.21. Structure of instructors table

By code bellow we will check authentication of user:
This request was taken from api, where with json I connected my application with android application.

```
private function authentication() {  
    if($this->get_request_method() != "POST"){  
        $this->response("", 406);  
    }  
}
```

```

        if(isset($this->_request['login']) && isset($this->_request['password']) && isset($this->_request['type'])) {

            $login = $this->_request['login'];

            $password = $this->_request['password'];

            $type = $this->_request['type'];

            if(!empty($login) and !empty($password) and
!empty($type)){

                if($type == "student"){

                    $sql = mysql_query("SELECT * FROM
students WHERE login='$login' AND password='$password' LIMIT 1", $this->db);

                    if(mysql_num_rows($sql) > 0){

                        $result["status"] = 200;

                        $result["message"] = "Success";

                        $result["data"] = array();

                        $resQ = mysql_fetch_array($sql,
MYSQL_ASSOC);

                        $group_id = $resQ['group_id'];

                        $sqlGroup = mysql_query("SELECT *
FROM groups WHERE group_id='$group_id'");

                        $resGroup =
mysql_fetch_array($sqlGroup, MYSQL_ASSOC);

                        $records = $resQ;

                        $records["group"] = $resGroup;

                        array_push($result["data"], $records);

                    }else{

                        $result["status"] = 201;

                        $result["message"] = "Information not
found (Login or Password incorrect)";

                    }

```


manager directly into the database.

← Т →

homework_id	lesson_id	start_date	end_date	start_time	end_time	homework_title	homework_text	homework_file	can_submit
1	1	2015-01-06	2015-01-11	16:33	13:00	Diploma Thesis	They have their origin in the natural sciences wh	homework_files/hw1.pdf	true
2	1	2015-01-08	2015-01-13	10:30	15:00	Research methods	Many different methods can be adopted within diffe	homework_files/hw2.pdf	true
3	1	2015-02-14	2015-02-24	20:34	20:34	over	zxcv	homework_files/1423924497.pdf	true
4	1	14-2-2015	22-2-2015	20:47	3:44	gjdqtu	dgjxgjx,odaf dihd gid8,ych,jlf	homework_files/1423925119.pdf	true
5	2	14-2-2015	16-2-2015	20:47	21:47	java hw title	r,sfuxr,	homework_files/1423925242.pdf	true
6	2	15-2-2015	22-2-2015	21:37	21:37	yeaap	finde iejs	homework_files/1423928276.pdf	false
7	2	15-2-2015	22-2-2015	21:37	21:37	From Site Title	From Site Description	homework_files/1424593183.pdf	false
8	2	15-2-2015	22-2-2015	21:37	21:37	Hw 12	Hw 12 description	homework_files/1424600762.pdf	false
9	2	15-02-2015	23-02-2015	10:00	23:00	wecaw	dsd	homework_files/1421681036.pdf	false

↑

Оформить БСР Оценить работу Изменить Удалить Экспорт

Fig.22. Structure of home works table

To get home works we use next request:

```
private function getHomeworks(){
    if($this->get_request_method() != "GET"){
        $this->response("", 406);
    }
    if(isset($this->_request['lesson_id'])){
        $lesson_id = $this->_request['lesson_id'];
        if(!empty($lesson_id)){
            $sql = mysql_query ("SELECT * FROM homeworks
WHERE lesson_id='$lesson_id' AND can_submit='true' ORDER BY homework_id",
$this->db);
            if(mysql_num_rows($sql) > 0){
                $result["status"] = 200;
                $result["message"] = "Success";
                $result["data"] = array()
```


3.2.5 Lessons

By lessons table we can know which group and in which term have defined subject. And who holds this subject.

← Параметры:

	lesson_id	subject_name	group_id	instructor_id	term_id	credit
	1	Research Tools	1	3	1	3
	2	Java	1	1	1	3
	3	Doing Research	4	3	1	3
	4	Internet Technologies	4	3	1	3
	5	Digital Design	4	2	1	3
	6	Algorithms	4	1	1	3

↑ Отметить все С отмеченными: Изменить Удалить Экспорт

Fig.24. Structure of table lessons

3.2.6 Grades

Grades table related with two tables: grade_types and grade_types_name. In grades table we see records of grades sorted by day. Everyday teacher have opportunity to put every day grades of student and all this information will be inserted into this table.

← Параметры:

	grade_id	grade_type_id	lesson_id	student_id	value	date
	1	1	1	1	3%	2015-01-01
	2	1	1	1	6%	2015-01-04
	3	1	1	1	9%	2015-01-11
	4	1	1	1	12%	2015-01-14
	5	1	1	1	13%	2015-01-16
	6	2	1	1	4%	2015-01-07
	7	2	1	1	8%	2015-01-18
	8	3	1	1	9%	2015-01-01
	9	3	1	1	19%	2015-01-21
	10	4	1	1	2%	2015-01-02
	11	4	1	1	5%	2015-01-09
	12	4	1	1	7%	2015-01-11
	13	4	1	1	10%	2015-01-13
	14	4	1	1	14%	2015-01-18
	15	5	1	1	32%	2015-02-20
	16	1	1	3	2%	2015-05-01
	17	2	1	3	8%	2015-05-06

Fig.25. Structure of grades table

This table contain information about which grading policy have defined teacher. When he go to grades page in his account, he will first choose grading policy and then he will able to put students' grades.

+ Параметры:

← T →	▼	grade_type_id	grade_type name	grade_range	lesson_id
		1	Attendance	15%	1
		2	Quiz	10%	1
		3	Midterm	20%	1
		4	Practice	15%	1
		5	Final	40%	1
		6	Attendance	15%	2
		7	Quiz	25%	2
		8	Midterm	20%	2
		9	Final	40%	2
		10	Attendance	10%	3
		11	Quiz	25%	3
		12	Midterm	30%	3
		13	Final	35%	3
		14	Attendance	10%	5
		15	Quiz	20%	5
		16	Final	40%	5
		17	Midterm	20%	5
		18	Practice	10%	5

Fig.26. Structure of grade_types table.

In grade_types_name table we can see type of grades. It have 8 defined type, which will be used by different teacher according to his grade policy.


```

    }

    if(isset($this->_request['title']) && isset($this->_request['text']) &&
isset($this->_request['group_id'])) {

        $title = $this->_request['title'];
        $text = $this->_request['text'];
        $group_id = $this->_request['group_id'];

        $seventImg = $_FILES['image_file']['name'];
        if(!empty($title) and !empty($text) and !empty($group_id)) {
            if (isset($_FILES['image_file']['type'])) {
                if(is_uploaded_file($_FILES['image_file']['tmp_name'])) {
                    $t = time();
                    $path = "images/events/" . $t . ".jpg";
                    $date = date("d-m-Y");

                    move_uploaded_file($_FILES['image_file']['tmp_name'], $path);

                    $res = null;

                    $resImg = mysql_query("INSERT INTO events (group_id, title, text,
date, img_file) VALUES
                        ('$group_id', '$title', '$text', '$date', '$path')");

                    if(isset($this->_request['fromSite'])) {
                        echo "<html>
                                <head>
                                    <meta http-
equiv='Refresh' content='0'; URL=teach_groups_news.php?group_id=" . $group_id . ">
                                </head>
                                </html>";
                        exit();
                    }
                }
            }
        }
    }
}

```

```

    }

    $result["status"] = 200;

    $result["message"] = "Success";
    $result["data"] = array();
    array_push($result["data"], $resImg);

    }else{
        $result["status"] = 201;

        $result["message"] = "Image not uploaded.
Please, try again later!";
    }
    }else{
        $result["status"] = 202;

        $result["message"] = "File not selected!";
    }

    }else{
        $result["status"] = 203;

        $result["message"] = "All fields required";
    }

    }else{
        $result["status"] = 204;

        $result["message"] = "Error with arguments";
    }

    $this->response($this->json($result), 200);
}

```

Events_commnets table contain all comments, posted by studetns and instructors.

- Параметр

← T →	▼	comments_id	event_id	text	user_id	type	date
1		1	1	Comment for First event	1	student	17-11-2014
2		2	1	Comment Two for First event	2	student	17-11-2014
3		3	1	Comment Three for First event	1	instructor	01-01-2015
6		6	1	Yeaaaaah	1	student	09-01-2015
8		8	3	comment with device	1	student	09-01-2015
9		9	3	Check again	1	student	09-01-2015
11		11	3	woow!	1	student	12-01-2015
12		12	1	yes, its done))	1	student	13-01-2015
16		16	1	check teachers part	1	instructor	05-02-2015
18		18	6	good	1	instructor	06-02-2015
20		20	1	Check again from site	1	student	21-02-2015

Fig.29. Structure of events_comments table

To add commnets we have next request:

```
private function addComments() {
    if($this->get_request_method() != "POST"){
        $this->response("", 406);
    }
    if(isset($this->_request['text']) && isset($this->_request['event_id'])
    &&      isset($this->_request['type'])      &&      isset($this->_request['user_id'])) {
        $text = $this->_request['text'];
        $event_id = $this->_request['event_id'];
        $type = $this->_request['type'];
        $user_id = $this->_request['user_id'];
        if(!empty($text) and !empty($event_id) and !empty($type)
        and !empty($user_id)) {
            $date = date("d-m-Y");
```

```

        $sql = mysql_query("INSERT INTO events_comments
(event_id, text, user_id, type, date)
                                VALUES ('$event_id', 'text',
'$user_id', '$type', '$date')");

        if($sql == true){
            $result["status"] = 200;
            $result["message"] = "Success";
        }else{
            $result["status"] = 204;
            $result["message"] = "Something went wrong,
commend not added";
        }
    }else{
        $result["status"] = 203;
        $result["message"] = "All fields required";
    }
}
$this->response($this->json($result), 200);
}

```

3.2.8 Schedule

Schedule table related with schedule_data, schedule_data_teachers, schedule_hours, schedule_weeks. These table we need to insert information from these tables and put into the on table, which will displayed in Schedule page of user.

+ Параметры							
←T→	▼	id	group_id	subject	place	instructor	hours_id weeks_id subjects_count
☐	☒	1	3	null Computer Networks 2 Advanced Programming...	null (LAB-EN2) (LAB-EN4)	null M.Sc.Zhamanov A. Mr. Numukhan K.	1 1 3
☐	☒	2	3	null Computer Networks 2 Advanced Programming...	null (L.T.A2) (LAB-EN4)	null M.Sc.Zhamanov A. Mr. Numukhan K.	2 1 3
☐	☒	3	3	Economics and Production Organization	(L.T.B1) (L.T.A2)	Prof. Amanbayev U. / S.L.Bekturganova S.	3 1 1
☐	☒	4	3	Economics and Production Organization	(L.T.B1) (L.T.A2)	Prof. Amanbayev U. / S.L.Bekturganova S.	4 1 1

Fig.30. Structure of schedule_data table

While schedule_data contain information about lessons, which have each group, schedule_data_teachers contain information about lessons, which defined teacher have in own schedule.

+ Параметры						
←T→	▼	id	instructor_id	subject	place	groups hours_id weeks_id
☐	☒	1	3	CSS402 Introduction to Doing Research in IT - 2cr	(L.T.A2)	EN4_A_04/EN4_B_04 1 1
☐	☒	2	3	CSS402 Introduction to Doing Research in IT - 2cr	(L.T.A2)	EN4_A_04/EN4_B_04 2 1

Fig.31. Structure of schedule_data_teachers table

In schedule_weeks we have 5 days of week, because Saturday and Sunday we don't study and teacher doesn't have a lessons.

Параметры:

← T →	▼ id weeks
☐ ☐ ☐ ☐	1 Monday
☐ ☐ ☐ ☐	2 Tuesday
☐ ☐ ☐ ☐	3 Wednesday
☐ ☐ ☐ ☐	4 Thursday
☐ ☐ ☐ ☐	5 Friday

☐ Отметить все С отмеченными: ☐ Изменить ☐ Удалить ☐ Экспорт

Fig.32. Structure of schedule_weeks table

Schedule_hours table conatin information about duration of subjects. Normally it is hour with 10 min break included.

Параметры:

← T →	▼ id	start_time	end_time
☐ ☐ ☐ ☐	1	09:00	10:00
☐ ☐ ☐ ☐	2	10:00	11:00
☐ ☐ ☐ ☐	3	11:00	12:00
☐ ☐ ☐ ☐	4	12:00	13:00
☐ ☐ ☐ ☐	5	13:00	14:00
☐ ☐ ☐ ☐	6	14:00	15:00
☐ ☐ ☐ ☐	7	15:00	16:00
☐ ☐ ☐ ☐	8	16:00	17:00
☐ ☐ ☐ ☐	9	17:00	18:00

☐ Отметить все С отмеченными: ☐ Изменить ☐ Удалить ☐ Экспорт

Fig.33. Structure of schedule_hours table

One more part is a transcript part, data for which will be inserted from students, lessons, grades and terms tables. To make transcript we need total grades of defined student, and then by total grades will be calculated gpa of this student

CONCLUSION

The global Internet network, created in the 70s of the last century, has become one of the main sources of information transmission nowadays. Initially, this network was developed due to the activities of educational institutions. The US Department of Defense attracted the best minds of science to form content and develop the technical potential of the World Wide Web. It was the higher educational institutions that were at the origin of the birth of the global network. Today, educational institutions are not the only providers of network content, but universities play an important role in the development of the information space of the World Wide Web. At the very beginning of the 21st century, Russian educational portals began to be created in the domestic segment of the Internet (Runet), and a targeted program to develop a unified educational environment was launched.

The term unified information educational environment is ambiguously interpreted by the authors, many researchers reduce this concept to active introduction and wide use in the educational process of information and communication technologies. The analysis made it possible to propose the definition of a single information educational environment as a complex, system-structured set of interacting elements: educational information resources (both traditional and electronic) and services based on the integration of automated tools and the active use of information and communication technologies in the learning process.

During the research, the structure of a single information educational environment was identified. It includes many elements, including traditional and electronic sources of information, which include resources of various types, both primary and secondary. The basis of a single information educational environment is educational Internet resources, which include web sites of higher education institutions.

The conducted research allows to draw a conclusion that the website of the university today can not be limited to the framework of a regular website. For a multidimensional disclosure of all spheres of the educational institution, for effective work in the Internet and full interaction with other educational Internet resources, the university website should be implemented in the form of a portal. A well-designed portal of the university is a full-fledged information resource located on the Internet, performs many tasks, providing users with relevant and necessary information. Designing the structure of the university portal should be based on certain standards.

In the course of the study, standards were identified in the field of information and communication technologies, in which there are a number of requirements for developing a quality information product. The identified standards are given in Appendix 2. The basis for the development of these standards was primarily two international standards: ISO 9126-4. Software Development, Quality of the Software Product, Part 4: Quality in the metrics used;

ISO 9241-11. Ergonomic requirements for office work with visual display terminals (VDTs), part 11: Usability guidelines. Based on these standards, other standards are being developed in the field of information and communication technologies, the requirements to the quality of the information products being created are formulated in more detail. In addition, the World Wide Web Consortium (W3C) is developing and creating web standards. The main document developed by this consortium is the technical standard Web Content Accessibility Guidelines (WCAG). Standards are the basis for the creation and development of software products, including Web sites.

In order to change the current situation, the university web site must be filled with current content, useful for all categories of users. A website is an information product that has its own life cycle, the process of functioning of this information resource can not be limited only by the process of its creation. The website of any organization should be constantly developed by updating existing information and restructuring the information structure. Therefore, it is necessary to know what kind of information is in demand, and which remains unnoticed by users. To do this, you must use the tools of web analytics - a set of software tools that allow monitoring user activity. In addition, the published information should be logically structured. As a portal structure, you can use the 3-level scheme, which includes the university's website, the faculty's website and the department's website. To ensure that the portal of the university is not overloaded with unnecessary information, it is necessary to clearly structure the content of all web sites or sections included in the portal of the university. Analyzing the printed sources and in the course of conducting their own analysis, we can conclude that the key element of the university portal is the website of the department. It is on the pages of the cathedral web site that you need to publish information for mastering the learning process.

The main function of this information resource is educational. The content of the website of the department should be formed, primarily based on the information needs of the main groups of users - students. Construction of the information architecture of the website of the department of the university, taking into account the criteria for assessing quality, will lead to a significant increase in the efficiency of using the university website in the educational process. Placement on the site of information characterizing the educational and scientific areas of the department (educational and methodical complexes, full texts of lectures and scientific publications, open archives, information not only on the topic of protected dissertations, but also scientific leaders, opponents) allows conducting research studies, Communication within the department and beyond.

Thus, since the automation of the work of the university, as a rule, occurs simultaneously in different directions, this must be taken into account when creating automated systems for organizing educational processes at each department.

REFERENCES

- 1 Don McIntosh. Vendors of Learning Management and E-learning Products.[Electronic resource] // Trimeritus eLearning Solutions Inc. – URL: <http://www.trimeritus.com/vendors.pdf>
- 2 Barajas, Mario and Gannaway, Gloria J. Implementing E-Learning in the Traditional Higher Education Institutions. - Higher Education in Europe, Vol.32, Issue 2-3, pages 111-119. –Routledge, 2007.
- 3 Automated control system of high school Galaxy [Electronic resource]. Moscow, 2014. - URL: <http://www.galaktika.ru/vuz>.
- 4 Unified information management system of the educational process Tandem University [Electronic resource]. - Ekaterinburg, 2014. - URL: <http://tandemservice.ru/products/tandem-university>.
- 5 Zaitseva T.V. The use of the semiotic approach to the representation of knowledge for constructing a model of the logical structure of the educational material
- 6 Reznik S.D. Management of a higher educational institution: Textbook..
- 7 Lukovceva A. K “Psychology and Pedagogy”. Lectures course.
- 8 Educational portal [Electronic resource]. - URL: <http://tm.ifmo.ru/db/doc/presentation>
- 9 Novgorodova N.G. Increase students' motivation for learning by introducing 3D visualization into the learning process (chapter 3, section 3.4).
- 10 Vinogradova M.V. Use of Internet technologies to automate the learning process in full-time universities. [Electronic resource]. - URL: http://it-claim.ru/Library/Books/ITS/wwwbook/3_sb/vinogradova.htm
- 11 https://www.w3schools.com/html/html_intro.asp
- 12 <http://html.net/tutorials/css/lesson1.php>
- 13 <https://www.thoughtco.com/what-is-javascript-2037921>
- 14 <https://jquery.com/introduction>
- 15 <http://en.wikipedia.org/wiki/ajax>
- 16 <http://en.wikipedia.org/wiki/php>
- 17 <http://www.php.net/manual/en/intro-what-is.php>