# DEVELOPMENT AND IMPLEMENTATION A PLATFORM FOR E-LEARNING WITH MULTIMEDIA TECHNOLOGY

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*The e-learning system provides the development of the learning process by organizing and correlating the following: general managerial activities, organizing activities of the learning process, sustaining activities of the learning process. This article contents a detailed analysis of the application conception way for the management of the students' activity in a faculty(data structures, functionalities, projecting and realizing the application). E-learning platform implemented(which allows the student to access the didactic material anytime and anywhere, this way developing mobility and easiness in the theoretical activity) offers a support for teaching and learning, for testing and evaluation, for administrate the curriculum area and for monitoring the whole learning process The platform has four types of users, of which three of them playing administrative roles (administrator, secretary, professor) and one of them is for the students.*

The present quality of education needs improvement, and the education institutions should be receptive to the economic and social realities and exigencies, the european problems, the labour market requirements.

One should not omit the fact that the education institutions in Romania has to run on a competition education market and this requires a higher managerial autonomy of each institution, a flexible normative background and a proper financing, in order to face competition. To be competitive means more opening, transparency and competition, a revision of services and marketing culture according to the realities and values of the European education system (as the cultural diversity, the research orientation).

As the information technologies are widely used, the actual problems in Romania referring to e-learning are technology development and joining the educational standards on Internet, and on the other hand, their proper application by as many users as possible. The user of the present society (based on knowledge) is any person willing to be trained in a certain field, according to his/ her knowledge degree and cognitive need in a certain context.

This article provides a solution to improve and make efficient the management of students from a faculty, using the Web technologies. The application is divided into 5 modules:

- the public module provides a series of information regarding the distance learning (the profiles of each faculty, how to register, the admittance methodology, the educational offer);

- the administrator module provides the necessary functions to manage the organizational chart of the university and the account management;

- the secretariat module provides the necessary functions to manage the organizational chart of the profiles, as well as the necessary functions to manage students' activities;

- the teacher module provides the necessary functions to manage the organizational chart of courses, laboratories and examinations, as well as the necessary functions to manage students' activities;

- the student module offer the students the possibilities to get note books and courses, information regarding the activity during the courses, or to discuss with their colleagues and tutors through chat or e-mail.

The main aim of this system is the development of a medium easy to be used both by the students and the teachers. The success of the application depends on the teacher's availability to make known this system provided with a qualitative educational content and with a questions set relevant in number and content[1]. By means of this system, the teachers may offer the students learning unities in digital format as well as questions for self-evaluating. The created e-learning platform is developed on the Microsoft  Active Server Pages  technology and can be used in any network  based on a Windows server. The database is created with Microsoft Access Aplication and contains 30 tables and in 16 of them there are different types of relations.

**1. The public module** provides information regarding the educational, the admittance methodology and the user's guide. The model also provides information regarding the faculties that run within the university, the profiles of each faculty and the number of positions, the tuition and what to do to become a student.

This module offers information regarding the education plan of each profile for each university year, the students registered for distance learning and their school records. All events of the university the students and teachers may participate in (conferences, seminars) may be found here. If a student does not access the pages of educational resources for 30 consecutive days, then he/ she will receive an e-mail that he/ she has to participate in the educational process, when a user of the public module access it.

**2. The administrator module.** The functions offered by the administration module are very important, because the other modules and functions depend on them. The functions of the administration module may be grouped into the following categories: functions necessary to the organizational chart of the university: faculty updates, profile updates, teacher update; functions necessary to account management: updating the administrator's personal account, updating the teachers' and secretaries' accounts; functions necessary to communicate: forum administration. The administration panel of the forum is the place where most configurations are made. The administrator controls here the forum and category organization, and may configure the forum names and self cleaning settings.



*Figure 1 Administrator Module – Listing the existing specialization*

The administrator having an account for the application may introduce in a form the account name and password, and when clicking OK the application will check if there is such an account and password. According to the testing results made by the application, the administrator will be allowed to access the functions of the respective module corresponding to his/ her account, otherwise an error message will be displayed.
I will choose the operation of profile update to exemplify this. The administrator is allowed to do the following operations(see figure 1):
        - list the existing specialization;
        - add new specialization;
        - change a specialization;
        - delete a specialization;
        - update secretary account.


**3. The secretary module** provides functionalities necessary for the administration of the organizing structure of specializations as well as functionalities necessary for the administration of the students' activity(updating of university and learning years, of students and studying plan).
The data is organized on calendaristic years. There are links to the study years for every calendaristic year. On the first adding of a calendar year the Ist study year is created automatically.
Since there are no major structural changes from one year to the next one, all the data from the past year is transfered to the newly created year in order to help the secretary. This data is about the curricular areas copied for the first year, the eventual differences are to be manually operated by the secretary later on. Even more, the students which accumulated a certain amount of credit points established by the secretary, are going to be automatically transfered to the new study year. This is the reason why the operation of adding a new study year is possible only from the moment of finalizing the previous calendar year. The students in the final years are going to be transfered to the next year wich does not exist in the educational system so for these students is going to be automatically generated the registration certificate after the graduation of the licence(degree) exam.
The creation of a curricular area involves establishing the study subjects for every study year, the specific credit points, the manner of evaluation(exam or preliminary examination), the universitary term of study for each subject, the teacher in charge of the course and the tutor. The actualization of teachers is made by the administrator, the secretary being able to choose from a given list  the teacher and the tutor in charge of every course. The secretary can display all the existing subjects in the curricular area, each being provided with modify and erase/delete options.
The secretary can display all the students taking the specialization he is in charge of, as well as the data containing the registration number, student's class, e-mail address, acount username and password. The acount username and the password are given to the student in the moment of registration. These fields are automatically generated by the application and are no subject of alteration by the student or the secretary.

*a). Academic status (situation).* Always, before passing to a new calendaristic year, in order to execute the right data transfer, the secretary has to access the „Academic situation" page. When this page is accessed, the data of each student are updated in the tbl_calculstud table as follows:

      - the number of passed (taken) exams is calculated;

      - establishing the number of the not passed exams;

      - establishing the number of credit points acumulated;

      - the calculation of the year's graduation average mean

      There are two information cathegories offered:

- a statistical situation concerning the number of passed exams, the number of not passed exams, the graduation mean of the previous study year, the total amount of credit points acumulated by the students registered for the distance education. The data can be displayed using the following selection cathegories:

      - students in alphabetic order

      - students in decreasing mean order

      - students grouped in classes (study groups)

      - searching students by their names (this option is particulary useful for the people knowing students registered to the distance education such as parents, mates, friends)

- the academic situation of a student in a specific universitary study year and the graduation mean for the year. Here are also availeble the credit points obtained for for each subject in the curricular area, the university term of study and the manner of evaluation. This information is available in a printed version as well. (as seen in figure 4)

*b). Registration certificates.* For the graduates, the academic situation for all the study years is contained in the diploma/certificate supplement. The secretary is filling data in this supplement only in some specified fields, the rest being automatically generated according to student's academic results. The supplement may be filled on line and printed or saved as a Word document, saved completely and printed eventually. In order to save it as a document, the secretary has to choose the "Save As" option from the "File" menu, to choose the position on disk to keep the file, to name the document and use the .doc extension. This second option is recommended, this way the data is going to be saved and easily used at a later time.

To generate the registration certificates the annual mean was calculated using two exact decimal places without rounding up, the annual sum of credit points, the general mean of all the study years, the total of credit points, the position of the graduate out of the total of graduates.

*c). Centralizing records.* This option is usefull for the secretary to display the students' results both for printing as well as keeping them in the registration certificates. Using the centralizing records, the secretary is able to provide more and quicker information for the students concerning their academic situation. The students are displayed by classes. For every student is displayed the academic situation as follows:

      - the marks/grades of passed exams in black;

      - the not passed exams in red;

      - missing/absence of an exam in green

      We choose this manner of displaying data in order to assist the secretary in producing various statistics about passing exams, absences or not passing exams.



*Figure 2. Centralizing records*

**4. The teacher module** provides functionalities necessary to administrate the course organizational structure( the materials divided in chapters), the examination schedule, evaluation forms and students'activity. This module includes the students'communication by chat or mail.. Functionalities offered by the teacher module are grouped in the following categories:

- functionalities necessary to the administration of the organizing structure of the courses: the transmission of the course materials, presentations of the chapters from the material

- functionalities necessary to the examination of the students: the establishing of the evaluating form, of the on-line tests of the chapters which come across in the examination

- functionalities necessary to the administration of the students' activity during the courses: pointing the students' activity at the examinations

*a). The hand filling in of the catalogues.* Taking into account the groups of students, the teacher can complete the catalogues by introducing the marks in a form. First of all, each student has 5 spaces for marks ( the student can repeat the examination 5 times). The teacher must first choose the date for the examination and the number of marks of which the final mark is formed (a mark if the teacher chooses only one summative evaluation or more if more examinations are wished).

For each student in a group there are three columns representing the obtained mark, date of examination as well as the possibility of improving the mark. This last column after the first passed examination, appears a cassette of validation. If the student asks for improving the mark, the teacher fills this cassette of the respective student, giving him this possibility(see figure 3). This is an important aspect because after the first exam session, the teacher can mark only those students who haven't passed the exam or who have chosen to improve the mark.

At a new examination, the teacher has the possibility to mark only those students who haven't passed the examination or who wanted to improve the mark, if the validation cassette was filled, the teacher having thus a clear situation of the passed examinations and of the re-examinations. After each exam session, the teacher has the possibility to list the catalogues and to save them in a file on PC.



**Figure 3. Filled in rolls**

*b). The automatic filling of the catalogues.* The teacher has the possibility to complete the catalogues in accordance with the obtained grade sat the on-line tests at the first exam session or at the re-examination sessions. Thus, after filling in the date of the examination and the number of marks, the teacher must fill in the dates when the examinations took place and the percentage of each mark(see figure 4). At the first examination, all students will be listed who didn't pass the on-line examination or the missing students, and at a new examination all will be generated automatically in the catalogue only for those students who haven't passed the examination or asked the improving of the grade.



**Figure. 4. The form for filling in rolls with many marks**

If the student tries to sustain the examination for several times at the established date because he is not satisfied with the grade, all his marks are saved in a table in the data base, and when the catalogue is generated, the obtained mark of the first testing is taken into consideration.

**5. The student module** offers the students the possibility to acquire note books and courses, information regarding the activity during the present courses, self evaluating tests for each chapter of the course, or to discuss with their

colleagues and tutors through chat or e-mail and see the project topic they have to do, as well as the structure of the group they are part of. The student module offers to a student (who has an account for the application) the following functions:

- the possibility to access all course materials for all the subjects studied in the respective semester;
- chapter presentations for each subject;
- the possibility to access the virtual an online laboratories (for certain subjects);
- online testing and self testing for each chapter;
- listing the final marks for each subject of the current semester;
- communicating with their colleagues and subject tutor.

**Conclusions**

The Web application aims the improving of the teacher's work in administrating the students' activity at the courses which these attend in the present semester. By the means of the web application, the students have access anytime at the information referring to their activity at a certain course, and the natural errors and the losses which could appear because of the human mistakes, are completely eliminated.

The most important functionalities which are available for the administrator, the secretary, the tutors or the students of this application are:

- the possibility of saving and updating the specializations in a faculty, as well as the disciplines of each specialization (year and semester organized courses – the school program) – administrator account
- administration of the teacher's and students' accounts – by means of the administrator account
- the possibility to set each course, the list of teachers and tutors as well as the of students attending the courses – the secretary account
- the possibility to save the information offered by the teachers about the students during the semester (partial marks, final examination mark) – teacher and secretary account
- the automatic calculation in accordance with the established settings, final marks of the student sat each course in the semester
- the possibility to access in real time the information about the students activity at a certain course – student account

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