

The New Improvements of E-learning System at Trnava University

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Abstract

Paper describes the new improvements of e-learning system at Trnava's University. These new improvements involve new assessment and questionnaire module and EKP system upgrade as well as new courses. LMS upgrade consists of version update, which includes several functionality improvements and new features. The new questionnaire and assessment module provides improved assessment functions and can be used for rating of subjects, lectors and lectures by students as the law orders.

1. Introduction

As it was described i.e. in [1], [2], [3], [4], [5] the e-learning system has been built at Trnava's University in Trnava. The realization of this learning system have been supported by several grants (e.g. development grant of Ministry of Education, IDEP program of NOS-OSF, VEGA, KEGA, State research programme etc.)

Several years experiences with utilising of our e-learning system showed us the weakness as well as high potential of the employed technology. Faculty management, on the base of good experiences with on-line system, started the project of the institutional education process evaluation according to § 70 par. 1 let. h of University act 131/2002 with support of on-line system. This is described in more detail in section 2.

The on-line system is continually improved, as it was able to cope with new situation coming out from new requirements as well as experiences with using it. How the system was improved (mainly LMS), is depicted in section 3.

During last year, also new courses were developed and deployed in on-line system. This is presented in section 4.

2. QModule Module

As it is written above, according to requirement of faculty management it was necessary to adapt on-line system to be used as tool for identification the satisfaction of the students with education process (teachers,

conditions, used equipment, etc.). The requirements for such a tool are as follows:

- must assure anonymity of respondents;
- must be available to public but only qualified person can create new records;
- must enable to statistically process inserted data;
- must be flexible and open for different evaluation projects.

After the development process, the "QModule" was prepared and integrated into on-line system. "QModule" is the name for the new assessment and questionnaire module. This module allows create various types of assessment and questionnaire units. Module is not applicable independently, only as part of a specific project. The name of current project is "Query Pdf".

The "Query Pdf" assures the anonymity of respondents because it does not offer the IP address of computer used by respondent. Students (as the biggest segment of respondents) are sure that theirs name are not recorded as they do not need to identify themselves for completing questionnaires. If this is true, then the question can occur: "How to ensure that only authorized person can create new record?" This problem is solved by organisational arrangement. The consistent group of students was given the same code for identification. It ensures that only the students (with correct access code) were able to create new records, but because only one code was given to the whole group, individual identification of the student is not possible. Although the entranceway into "Query Pdf" is reachable on the web, only person with correct code can access it and create new record(s).

As it is explained in next paragraphs, the collected data are stored in tables within database of DB system installed for these purposes. This fact demonstrates the ability of the system to process all the collected data statistically on the base of individual requirements of faculty management.

The architecture of the "QModule" was designed for wider area of use. It was designed very general to open possibilities for use in different types of questionnaires for different purposes. All questions of questionnaires are inserted into database and each question has specified its

type of answer (six possible types). The engine assures that everything is presented in the form of compendious questionnaire with selectable answers (in case of a multiple-choice question type) or empty space for the answer. Students with support of “QModule” within “Query Pdf” project evaluated summer semester of academic year 2004/2005.

As it was written above, “QModule” is implemented using web technologies and all its projects are accessible through the web browsers. To store all data, a database system is used. Technically the database consists of eleven relational database tables grouped into following five areas:

- graduation tables;
- assessment and questionnaire tables;
- response tables;
- helper tables;
- and access tables.

Graduation table is one single table determining evaluation grades used during evaluation of the tests. Access table is one single table specifying access privileges to the assessment and questionnaire units. Response table stores students’ responses for further use. Helper tables are attended to connect assessment, questionnaire and response tables, and the assessment and questionnaire tables are designated to keep questionnaires, tests, questions and they options. Database allows storing of following query types:

- single-choice – only one option is correct;
- multi-choice – multiple options can be correct;
- range – response is selected from specified scale of values;
- word – response is expected as a single word;
- essay – response is expected as an essay and is evaluated manually;
- select – response is selected from values stored in combo box.

Each question stores two strings that allow using advanced scoring techniques. Strings can contain several simple commands and formula for scoring. One string is used in case that this option is checked, another if not. For basic data types, like single-choice or multi-choice, default values are generated. This solution allows rebuild whole module to the future needs and keep backward compatibility (with old database and all tests stored inside it).

Questions are grouped into “Query Groups” that are attached to unit (test or questionnaire). Each group has defined own rules for selecting the questions and displaying them. Questions can be displayed in prearranged or random order, with or without tips, explanations or comments. Unit can be shown at the one

page as whole or each question at single page. Even query options can be randomized.

3. LMS Upgrade

The on-line education system at Trnava’s University in Trnava uses LMS EKP that employs the latest standards (AICC, SCORM) used in e-learning. This feature enables publishing the courses made according to the stated standards. The LMS EKP is fully localised into Slovak language, and is installed on DELL server, placed at the head office of Trnava’s University. The LMS EKP uses for data storing the database server with installed Oracle 9i database system. The licence was bought along with support. In praxis it means that, in the year 2005 (recent six months) five times the version of the LMS was made. The details are as follows:

- | | | | |
|----|-------------|----------|-----------------------------------|
| 1. | 2005/Feb/16 | 12:04:48 | – upgrade from 3.0 to 4.0 version |
| 2. | 2005/Feb/16 | 16:49:16 | – upgrade to 4.0.1.53 version |
| 3. | 2005/Jun/16 | 20:14:10 | – upgrade to 4.0.1.121 version |
| 4. | 2005/Jun/24 | 13:33:31 | – upgrade to 4.0.2.132 version |
| 5. | 2005/Jul/06 | 17:11:37 | – upgrade to 4.0.2.137 version |

Main upgrade of EKP system at Faculty of Education in Trnava was made in February 2005. Since then several minor version upgrades have been made, as well. These upgrades brought several improvements that enable to use in praxis the permission handling changes, miscellaneous feature enhancements, several performance improvements (for example, improved user and session caching) and general bug fixes.

Appreciable changes have been made in the permission politics. New permissions have been added and some permission handling changes have been made. Permissions control is now applied to a number of objects that previously were “public”. These changes have been applied to the neediest situations initially, with other controls to come in future releases. This guarantees more security or even more user comfort. Each news article now has a new property – “permissions” that enables the specification of read and write access to these items. Therefore, they are no longer default to public, and are not visible except system administrator and allowed users. Now we have greater control over individual news articles and users have only listed the articles that have granted relevant access privileges. In addition, each report may now have assigned permissions (organisation, role, user), thus controlling who may see or execute individual reports. An additional benefit of the permissions control is

<p>Forma vyučovania:</p> <p><vybrať> <vybrať> prednáška cvičenie (uveďte priezvisko a meno vyučujúceho bez titulov)</p> <hr/> <p>Hodnotenie predmetu</p> <p>Predmet bol zaujímavý a intelektuálne podnetný: <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> úplne súhlasím - 1 2 3 4 5 - vôbec nesúhlasím</p> <p>Predmet poskytoval nové poznatky a informácie: <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> úplne súhlasím - 1 2 3 4 5 - vôbec nesúhlasím</p> <p>Predmet bol užitočný pre moje budúce povolanie učiteľa: <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> úplne súhlasím - 1 2 3 4 5 - vôbec nesúhlasím</p> <p>Obsah predmetu bol primerane náročný univerzitnému štúdiu: <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> úplne súhlasím - 1 2 3 4 5 - vôbec nesúhlasím</p> <p>Podmienky absolvovania kurzu boli dodržané: <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>Doplňujúce hodnotenie</p> <p>Komentár: (voľne vpište celkový komentár k predmetu i k učiteľovi, využite aj svoje kritériá hodnotenia, ktoré neboli sledované vyššie)</p> <div style="border: 1px solid black; height: 60px;"></div> <hr/> <p>Údaje o hodnotiteľovi</p> <p>Odbor / kombinácia, ktorý/ú študujete: (uveďte celý názov odboru / kombinácie)</p> <div style="border: 1px solid black; height: 15px;"></div> <p>Ročník štúdia: <vybrať></p>
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Figure 1. Examples of layout of the “QModule” used as part of “Query Pdf” project

that un-needed reports may be removed from the system by removing all permissions for the report. However, only the system administrator can use the “Report Permission” function that is shown at the bottom of the “Report Manager” page.

Reports providing tabled output are excellent tool that is easy to use, so every positive change or update counts. Although EKP supports custom report creating, this is not very ease to use and customers (like we) mostly need to trust the manufacturer, therefore we miss some output in the past. Test Reports R308 and R309 have been added to enable the dumping in CSV form of all test or question instance details for subsequent manipulation in Excel. These reports allow complete test details to be downloaded in a format that facilitates editing using Excel. Reports R224 and R225 have been added to enable the identification of individuals not completing selected courses. These reports make it easier to identify individuals who have not yet met specific training/compliance requirements. In addition, new output format types are now supported. Report generation now includes “Microsoft Excel Workbook” and “Simple HTML” as well as the previously supported “CSV” and “HTML”. For smaller reports and reports with multi-national character sets, it is easier to create a report directly in “Excel” format, while “Simple HTML” and “CSV” format types are more efficient for large reports.

Two interesting changes have been made in course status handling. First: course sessions may now have a new session status of “Invitation Only”. This status allows the course to appear in the catalogue, but users may not enrol directly – an administrator action is required. Second: an AICC course that returns a “Completed” status may now result in a course being marked completed at the enrolment status level, hence making it disappear from the users active course list. This function is implemented as a daily task that scans for users who have had their course marked completed (AICC/SCORM

status), then it changes the enrolment status to completed as well. This option may be turned on or off in system customization. The default state is “off”, as this applies to all courses.

Next change involves user logging. Users may now enter their email address instead user ID to login. The system checks for the presence of “@” in the ID field, and if present, will lookup the user using the email address instead of the user ID. If multiple user IDs match, the last created active user matching the password is used. This feature provides an alternative for both administrators and users for making the system easier to use. This feature must be correctly enabled and we currently consider its use.

CSV data loader has been also updated. CSV templates make uploading huge amount of user data much easier. Since additional user attributes have been added, the format of the CSV file used for uploading user data has been changed, thus all new uploads must be modified with regard to new format. New format is published into to the on-line manual under section “CSV User Loader”. It contains new description and the template for the CSV documents. Because CSV documents are widely used at our faculty, this change has high importance.

4. New Courses

To provide courses for educational purposes to use in on-line educational system at Trnava’s University in Trnava, the following philosophy is adopted. First the possibility that appropriate course is available on the market is checked. If it is so, the course is bought, and employed in on-line system. Last year couple of courses was produced as authors’ courses. Two of them were applied for struggle within international competition e-learning 2004 in Hradec Kralove. [6] One of the courses was successful and got a “EUNIS – SK” prize. All

courses are compliant to AICC and SCORM standards, so they are portable.

Since the Faculty of Education does not possess special technical experts, which would be able to assure production of on-line courses at high technical level, it was necessary to find a software and multimedia producing company. Because of e-learning program at faculty, also good relations were established with a company that assured technical production of on-line courses. The collaboration in development process of courses turns out as useful for both partners. This time the development process is good managed and it becomes the integral part of a transforming pedagogic process of a faculty.

5. Conclusions

Five-year experience with e-learning at Faculty of Education of Trnava's University in Trnava showed us that this form of education is comparable with traditional forms of education. During the last academic year, the most courses were given in this electronic form and students used to use them. From the point of view of on-line system quality, there were some improvements made this year. One of the most important is the integration of the "QModule" into on-line system. This module ensures all requirements needed for evaluation of education process. Other improvements were made through upgrade of a LMS EKP. Some success was achieved also in developing own e-learning courses.

6. References

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