Online Tests for Applications Mechanics

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Abstract

In the e-Learning, the methods of creating the tests are included in the same category with the creation of courses. Construction is differentiation tests through the creation, support and reporting the tests. The testing will be aimed at students of the faculties of engineering technical profile, most of the tests presented containing specific elements of preparing future specialists in the field of technological equipment for construction.

Keywords: virtual learning environment, online tests, HTML (HyperText Markup Language), applications mechanics.

1. The concept of e-Learning

Usually translated e-Learning through Teaching online is synonymous with Online Learning, Web Based Learning – WBT, Internet Based Learning, Technology Based Learning, Open Distance Learning, Distributed Learning.

In defining the date European Community, e-Learning refers to the use of new technologies and the Internet to improve the quality of learning through access to resources and collaboration.

The meaning we accept for e-learning is synonymous with online education courses online, Web-Based Learning, we honor the Computer Based Learning (which we consider a one component e-Learning), which does not imply an interaction, constantly communicating with one and other students during learning.

e-Learning could be defined as:
1. process of learning is done in a virtual class;
2. course material is available on the Internet, including text, images, references to other online resources, audio presentations, video;
3. virtual class benefit from a shift teacher plan activity of the group of participants, subject to debate these issues in the course of the conference asynchronous (discussion forums) or synchronous (Chat), provides resources ancillary themes comments, indicating the subjects on which everyone must insist may;
4. learning becomes a socialization process, through interaction and collaboration, group participants and the teacher, formed during the course, often after completing the course, a community;
5. course material is a component static – Prepared by the teacher together with a team specialized in instructional design – and a dynamic, resulting from the interaction of participants, suggestions, clarifications, comments, made to their resources;
6. most media e-Learning allow monitoring activities of participants and some simulations and, working on subgroups, the interaction of audio, video.

   e-Learning is a form of distance education, whereas the participants and the teacher can be in different locations, and the interaction is more or asynchron. Unlike distance education, e-Learning is highly interactive, interaction is done on the following levels:
   
   – participant – participant,
   – participant – material,
   – participant – teacher.

   e-Learning means access to the latest information, acquire new knowledge, learning continues, new and effective methods of learning and collaboration.

   The goal of online courses is to learn how to learn, to prepare you for learning throughout life, to gain skills management knowledge, such as search, selection and synthesised information and solutions.

   Those four factors that influence the development of e-Learning to be considered are:
   
   – connectivity – the quality and expansion of Internet infrastructure;
   – the capability – the role, instead, to accept e-Learning in education and training in the country said;
   – content – the quality of materials online;
   – culture – educational policy, which supports organizations and certify this field.

   e-Learning is presenting a series of advantages: access to real-time knowledge, anywhere and anytime; are not necessary travel expenses, any interruption of current professional activity; participants collaborate and learn together; learning is a social act and learn better collaborating, communicating in a group; material is often customized knowledge and experience prior to the student; offers continuous training; monitoring progress of students, automatic testing.

2. Virtual Means of Learning

   A virtual environment is just the tool through which the access to the course material is assured, the teacher-participants’ interaction is made, as well as the management of content and of the course activities. Not even the most sophisticated environment can’t replace the teacher and his art to engage and motivate participants in a learning and collaboration process.

   In the specialized literature there are some terms that refer to the learning environments:
   
   – LMS – Learning Management System – complex system, with the above mentioned facilities, for all the four categories of users; other met denominations are Knowledge Management System, Course Management System, Academic Management Systems, Student Management Systems;
   – LCMS – Learning Management Content System – system that allows the editing, but also the access to the E-Learning materials;
   – CMS – Content Management System – system for editing materials.

3. Instructional Design

   The methodology used to develop educational programs, instructional design is called. Instructional design – ID – refers to participants’ needs analysis, planning and evaluating the effectiveness of training programme.

   ID is a systematic approach to development course to achieve the objectives.
3.1. Model ADDIE

Develop an online course materials requires that steps be taken to a design process.
The model most commonly used model is ADDIE:
– Analysis – to determine the objectives of the course, the group which is addressed, the initial competency necessary discussions with potential participants are given, they learn and analyze as many similar projects. It should be known facilities and technical particularities of the environment chosen.
– Design – is given structure and interface material, what tools will be used for the material;
– Development – the rate components are produced text, graphics, animation, sound. In parallel, and testing is done. Are set ways of interaction with the material. It creates planning activities.
– Implementation – putting material online the conduct of course, technical assistance for the smooth progress.
– Evaluate – in a course to assess the usefulness of course, the involvement of participants, measuring the course material that generates interaction. Observations resulting course, feedback from participants lead changes, adaptations of the material, facilitating improvement. ADDIE is a iterativ process, which requires a continuous evaluation and feedback.

The material of a course must fulfill requirements such as:
– contain useful information, well organized, in news, interactive, motivating;
– to constitute the support necessary to achieve the objectives of the course;
– to use previous experience of the participants;
– to be oriented practice;
– lead to reflection, searches in news;
– to provide a basis for discussion, activities, themes.

4. Tools for Evaluating Knowledge

The tests, as well as many other methods to assess the results users are used by teachers to assess the knowledge gained.
The tests represent an items of the module or course. There are many methods that simplify ways of testing online.
In the e-Learning, the methods of creating the tests are part of the same category with the creation of courses. As a result, they are created in pages made with the same Web technologies and can be added courses or any other objects e-Learning created with the LCMS or LMS.

Tools for building the tests are different in how they work, but following a course jointly creating, supporting and reporting the tests.

4.1. Generators Tests

The following are some of the most popular tools to create tests. Some are separate products, others are components of more complex systems, and some of them are based on Web services.

Hot Potatoes – was designed by the company Half-Baked Software for the purpose of creating tests to be integrated into Web pages. Among the categories of questions that can be created with Hot Potatoes, are those with special supplement response, producing pairs and mixed sentences with the...
words. The Masher is called, which automatically sets of questions grouped into units, providing a uniform appearance questions, links for navigating between them and an index page, which is home to the test.

Hot Potatoes are not facilities management too well developed, making excellent opportunity by sending e-mail results.

Using a template for questions with multiple answers, the author defines a question with the possible answers and the message displayed when selecting them. The test is saved as a Java Applet, which can be added in a web page.

Questions can be displayed on one page or all on the same page, is not mandatory their completion in a certain order, in the version with a single question on there buttons for navigation.

Questionmark Perception – is perhaps the best known program for the tests, there is in two variants. Perception for Windows allows creating, administering tests, using Windows applications and a local network. The Web server includes a component which allows creating, editing, management and use of questionnaires via a web browser.

Perception allows the creation of questions with different formats, called types of questions. They are true-false type, with multiple answers, with one possible answer, drag-and-drop, producing pairs or ordering answers.

These questions can be organized in various topic and subtopic-sites can be selected according to theme, the topic or by a combination of items discussed during the course. Also there are about choices a design for questions.

Windows applications automatically check registered tests and results in a database created specially for this purpose.

To use this soft is necessary to install Oracle or SQL Server.

CourseBuilder for Dreamweaver – is a free extension for Macromedia Dreamweaver. Immediately after installing them in Dreamweaver, you can add questions page created. Also, there are several types of questions that can be chosen CourseBuilder menu.

It can set an option whereby the results of students can be tracked and sent directly to a compatible standard LMS AICC (example: Lotus LearningSpace), or you can save the information in a database, together Microsoft Access, SQL Server or Oracle 9i.

RandomTest Builder Pro – is a Windows application that allows the creation of tests using questions selected at random from a database Microsoft Access.

There are different types allowed for questions: multiple answers, with a single response possible, a true-false, with the completion of the lack of words or essay-type answers. The questions may be used images, animations, sounds.

HostedTest.com – can edit and use tests, such questions can be reused later to the creation of other tests. And here meet various types of questions. Concentata attention has been more than other programs on how to display the test. The tests may also be a site on their own or can create links to them, these being hosted on the site hostested.com

4.2. Useful Functions for the Tests.

Options for a useful tool for testing are grouped according to the level at which occur:

Creating tests

All tests have a time limit imposed by the teacher (Fig. 1). If that time is short, being about a quick test, the student can see the precision of a few minutes elapsed time and/or the left. In some cases it may be necessary to set an item that allows the allocation of time further, if students ask him.
The number of questions for a test is a problem which depends on the complexity, but especially the type of course followed. Some tests may be made of questions selected at random from those already in the database or just displayed in different order every new call of the questionnaire. The one who completes the test to be given an opportunity to fix mistakes and in the case of a failure. Each test should be given multiple times. However, this number of attempts be limited. On display there may be test option to choose the color, size of the text.

Administration

The tests are divided on groups, as well as those studying. Such a test should be assigned to a group of people. Security will be done on several levels: for the administrator, teacher and for students (Fig. 2).
An important property must be the interoperability. The data from the database should be easily transportable in one or another LMS management system. Also the utility of creating questionnaires should be able to use communication standards SCORM and AICC to report test results to LMS, LCMS or another system.

Creation of questions

It is necessary to have the opportunity to more types of questions, such as those mentioned above, the most important being: true-false, one possible answer (Fig. 3), several possible answers.
The questions whose answer involves text to be considered all possible synonyms of response properly searched. You still held account the fact that such an evaluation is not very accurate.

Author questionnaire must be allowed to select a particular type of question that could be used throughout the test, without the choice of type is required at each step, he was elected by default.

It should be taken into account the possibility of including in question elements audio, video, display of explanations (feedback). It should be ensured how to display the results in both situations, or that the answer was correct, or that it was wrong.

It is necessary to find a way to fix errors or by their explanation, either by sending onto the course. Often, who edits the questions could provide clues in choosing response.

The completion of tests

Questionnaire should be integrated into the structure of the course, but it can be placed in and outside of it.

The tests must be corrected automatically or sent by e-mail to the professor that he was able to note, in which case it will be at which will record the results, which will then be sent to students.

The results are confidential, being sent by mail or password-protected or public. Should be considered a way to display that allows the listing.

Figure 3

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Saving the results

It is necessary to incorporate a component of the server's questions for storing, managing and analyzing the results of tests, safety is very important.

If you use an LMS, it is necessary to transfer the results. On the other hand, if the tests are used only for self, are sufficient elements for the achievement test, and evaluate its completion, without using a database.

5. Conclusions

Checking the level of understanding of information can be presented by means of self-tests or score. Depending on the results of this mechanism can clean up the courses online.

To become a solution performată, subsequent developments should consider adding features such as: diversifying the type of questions for questionnaires, including questions to which the user can reply through completion of a text field and the possibility of working jointly more teachers to achieve lists of questions.

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