

Designing Self-Test Exercises in WebCT

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WebCT is a tool which enables the distribution, development and control of distance learning courses via the Internet. It has a range of uses from the publication and management of education material to the monitoring of activities and student evaluation. In this article we concentrate our study on the Self Test WebCT tool: We describe how it works, we analyse its main problems, particularly those related to the design of the self-test exercises and we put forward solutions to improve its performance.

1 Introduction

The rapid growth of the Internet has led to new developments in the area of education given that the use of the Web as a didactic tool allows for a wide selection, quality and access to education and training. The education services by distance learning that can be obtained in this way allows it to manage to a great degree the same services that are offered by conventional education. (Cloete, E., 2001). The eLearning Management Systems (LMS), also known as Virtual Learning Environments (VLE) are programmes which allow both the implementation of distance learning courses as the back-up of conventional lessons through the systematic use of the Internet (Harasim, 1993).

One of the most popular LMS to facilitate the development of on-line education is WebCT-*Web Course Tools* -(Clark, 2002). It is a tool for the publication of educational material and course management on-line (Morley & LaMaster, 1999). It contains a tree-shaped interface which can be used by means of a navigator without the need for additional programmes, connectors or plug-in although to be able to use chat and blackboard Java is needed. The publication, management and following the understanding of educational material can be done easily.

In distance learning the monitoring and evaluation of material studied is very important, is necessary to provide self-test systems that allow the student to check the standard of learning achieved and the objectives that are established at the beginning of each subject. It is thus necessary to create exercises designed in such a way that they are understandable, educational and interactive. To this end, WebCT has a self-test tool (Self Test), allows the designer to create self-test exercises in two possible ways: i) writing the questions and answers one by one, or ii) to create the exercises in an external text file using a text editor, subsequently, this file is imported to WebCT.

The Self- Test tool presents different problems for the design of self-test exercises. The problems in the design that directly affect the designer of self-test exercises are as follows:

1. *Time consuming*: The manual design of questions and answers one by one, is a process that takes up a lot of time.
2. *Repetitive process*: The creation of exercises one by one is a repetitive process (write-publish) and monotonous which does not stimulate the creative facets of the designer in any way.
3. *It requires basic computer programming knowledge*: To create questions and answer externally using an editor, the file should have a set of key labels so that the Self Test tool recognises and correctly imports the text.
4. *The types of exercises are limited*: The Self Test tool only allows for one type of self-test exercise, Multiple Choice tests.
5. *Subject classification*: a classification between different self-test exercises can not be carried out in the Self Test tool of the platform WebCT, thus limiting the designer on the one hand and on the other jeopardising the student in their self-test.
6. *Order of questions and answers*: The order of the questions and answers in Self Test tool is fixed, in other words, it never changes.

The main of this paper is to make a proposal from to solve the problems presented when is used the Self Test tool of WebCT to create self-test exercises. In particular we propose a solution for the design of self-test exercises to facilitate the creation of the exercises for the designers. With this proposal we will be able to improve the performance of the Self Test tool and consequently, the performance of WebCT .

This article is set out as follows. In Section 2 we present a technological proposal to solve the different problems for the design of self-test exercises. In Section 3 we describe the process of application of the technological proposal, and finally, in Section 4 we present our conclusions.

2 Technological Proposal To Solve the Design Problems of Self-Test Exercise in WebCT

The proposal to solve the problems of the self- test exercises in WebCT is to make use of some kind of auxiliary software to create the exercises. This software should include the following criteria: easy to use, fast when creating the exercises, random ordering, that does not limit the creative capabilities of the designers and that is able to incorporate different types of exercises as required by the designer.

In (STAD, 2002) a study was carried out on some software programmes that were compatible with WebCT. Out of all of these the one which most meet our needs was Hot Potatoes. Hot Potatoes presents other advantages such as: It is one of the most used in the world and therefore we can use the development and experience of other users, it facilitates to export the self-test exercises to the WebCT, it is a programme created to design interactive exercises based on web pages, and it uses a set of 6 author tools which allow it to develop different types of exercises to create multiple choice exercises, to create open question exercises, to create sentence ordering exercises, to create crossword exercises, to create exercises of association and to create filling in the gaps exercises. Furthermore, with Hot Potatoes, when the exercises with the questions and respective answers have been created, the presentation of these can be improved with functions which allow: a) the incorporation of clues which guide the student in their answers, b) *feedback*, c) the incorporation of links to other Web pages, d) adding a brief introduction before starting the exercises, e) to change the presentation of the icons, f) to include in the exercises the percentage of correct answers, g) to change the order of the questions and answers through a process of random ordering.

On the other hand, WebCT has a tool called “Single Page”. This tool allows additional or optional course material to be presented although it is not included in the module of contents.

Then, our technological proposal to solve design problems of self-test exercises in WebCT consists in to link the file with the self-test exercises created in Hot Potatoes to WebCT through “Single Page” tool. In such a way the usual WebCT self-test tool is simulated using a web page with the self-test exercises.

3 Applying the Technological Proposal to Generate Self-Test Exercises in WebCT.

The application process of the above technological proposal consists in writing the questions with their respective answers marking which one of them is the correct. This process is continuous until all the questions of one exercise, subject or module are done in one self-test exercise. When this process is carried out the system of Hot Potatoes allows the possibility to export to WebCT “Export for WebCT”, creating automatically a text file with a format equal to that which can be create manually by a designer.

The steps of the process to create self-test exercises in WebCT using Hot Potatoes are the following:

1. *Creation of self-test exercises with the tool Hot Potatoes*: Creating the exercises with any one of the Hot Potatoes tools which are compatible with WebCT.
2. *Export the self-test files to text files*: To store the exercises with the option ‘Export for WebCT’ in a text file that is created automatically in the required format for WebCT.
3. *Import the self-test files from Self Test tool*: From the Self Test tool in WebCT to import such text file using the option “Import questions from file”.

With this process the file with the exercises is not created by the designer manually, but that Hot Potatoes automatically creates it and solves the main problems that WebCT presents in the design of self-test exercises. A extension of this process consists in to create with Hot Potatoes Web pages in the HTML format containing the self-test exercises and then linking them from WebCT using the tool Single Page.

All this process is transparent for the user; in other words, when the self-test exercises are published in WebCT the user keeps seeing the questions as if they were in the tool Self Test of WebCT. The user does not see that on accessing Self Test the system internally links to a Web page outside of the programme, which contains the self-test exercises required by the user.

In the following, we explain in detail the steps to follow to create the self-test exercises using web pages:

1. *Creation of the exercises of self-test exercise with the tool Hot Potatoes* (see Fig. 1).
2. *Export the files of self-test exercise to Web pages in HTML* (see Fig. 2). In the menu “File” of Hot Potatoes the option “Create Web page” is chosen, a screen is seen where the name is written with which the imported questions are identified obtaining as a result not a file with a text format, but a file with a HTML format, and therefore, a web page.
3. *Publish the web page with the self-test exercises in WebCT*. The programme WebCT is accessed. Under “Designer Option” there are a series of design tools which allow the designer to add pages where hended. In the menu “Pages” there is a tool called “Single Page” (see Fig. 3). To link it to the Web page that contains the self-test exercises the procedure is as follows (see Fig. 4 and Fig. 5):
 - a. Selecting “Single Page” a new window is opened, and then you can write the name that you wish to give to the pages, for example “Self-Test.”
 - b. The web page is attached to which this tool will link. Using the “Browse” button the previously created web page is located, in this case, Self_Test1.html.
 - c. The designer decides where to put this web page, selecting in “Organizer Page” between a series of options (Home Page, Contents, Communication, Assessment) the one which most fits the created web page. In this case, as we have created a web page with self-test exercises the best option is to put it in “Assessment”.



Figure 1. Putting in the questions and answers in Hot Potatoes

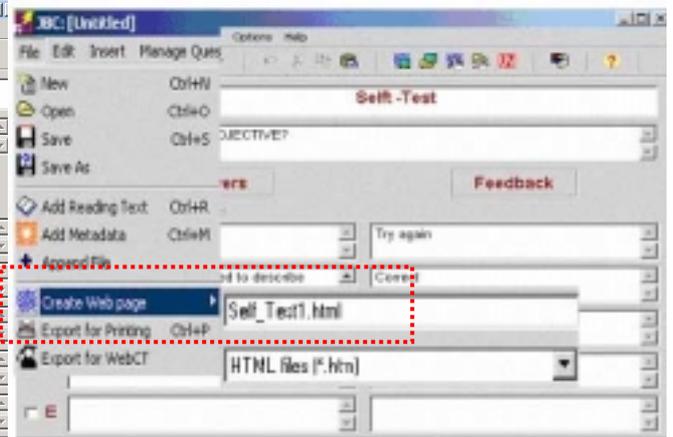


Figure 2. Exporting to WebCT from Hot Potatoes

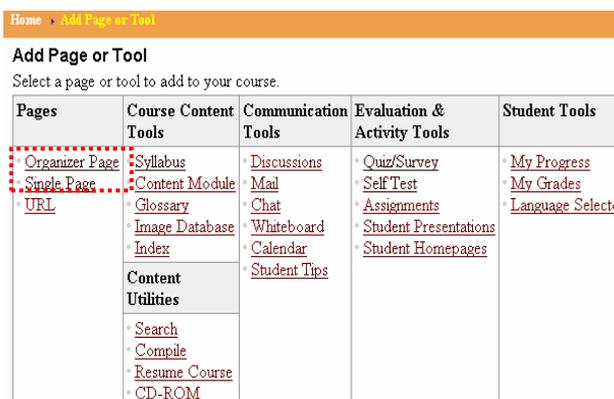


Figure 3. Single Page tool of WebCT

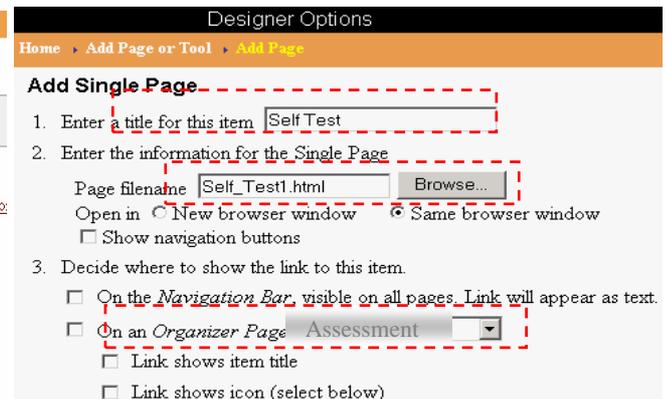


Figure 4. Adding Self Test in WebCT

Applying this process we have created a self-test exercise using a Web page and link using the tool Single Page of WebCT platform. In such a way, the usual WebCT self-test is simulated using a web page with de exercises created. When the web page is published, what is seen in the Assessment Menu of the programme WebCT is the name that has been given to the Single Page “Self-Test”. When a user accesses this section he observes that the self-test tool is activated as the usual Self-Test tool in WebCT, but however, this option has the web page associated to it that has been imported from Single Page and not from the usual Self Test tool in WebCT.

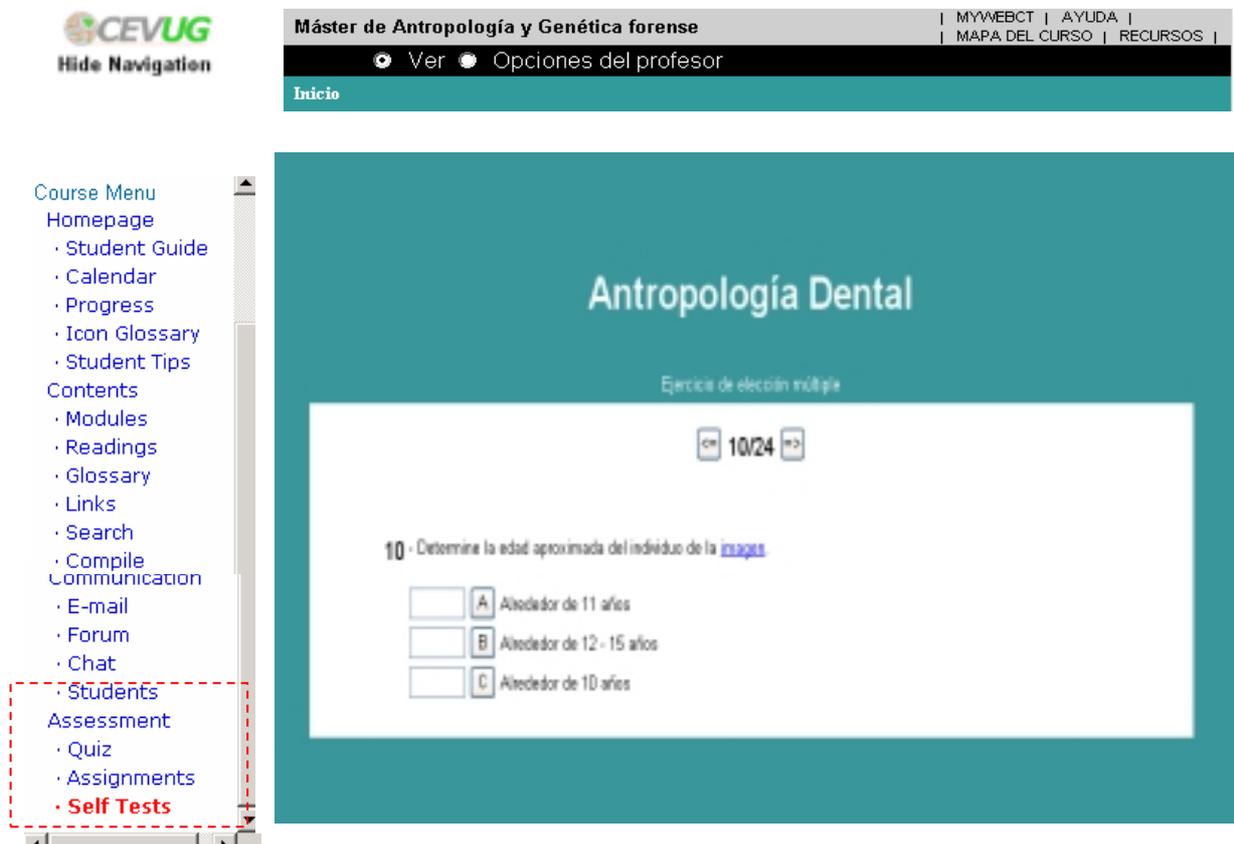


Figure 5 Self-test exercises created with Hot Potatoes and presented with the Single Page tool

With the use of web pages for the creating of the self-test exercises the main design problems of self-test exercises in WebCT are solved:

1. Using Hot Potatoes for the automatic creation of a self-test exercises file the first three problems (time consuming, repetitive process, basic computer programming knowledge) in the exercises design are easily solved.
2. Using the different types of exercises that Hot Potatoes allows to create the fourth problem of the restrictions of the types of exercises that the Self Test tool in WebCT presents is easily solved.
3. The problem of subject classification can solve because we use independent web pages to store self-test exercise and they can classify easily in any way, by module, subject, level, etc.
4. The problem of order of questions and answers can also solve because Hot Potatoes allows that each time that a web page is accessed the order of the questions and answers can appear are randomly, that is, it is never the same.

We should point out that other problems can also be solved, as for example:

i) *Poor design of Self-Test tool in WebCT*: As it is a web page the possibility of parameterisation are vast. We can modify the colours, text format, as well as insert pictures, videos, new links to other exercises or support material, highlight important areas etc.

ii) *Percentage of correct answers*: Hot Potatoes allows to include information about situation of the self-test. In the web page it is possible to show information about the correct or incorrect answers that users gets. In such a way, a user can control his situation in the self-test process.

4 Conclusions

In this article we have presented a method for the design of self-test exercises that allows the improvement of performance of the module of self-test in the education software WebCT. This method has been applied to the virtual courses that are taught by the Virtual Learning Centre of the University of Granada in Spain (www.cevug.ugr.es) with notable success and acceptance by both students and designers.

In WebCT the evaluations of students is represented using numeric values. However, it is well known that marks are normally given linguistically. In the future, we propose to incorporate in WebCT the possibility of giving the marks linguistically (Herrera, Herrera-Viedma, 1997; 2000) as a way of improving the system-user interaction.

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