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# Assessing the Usability of a Cookies-Based Access Monitoring Tool for a CMS

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## Abstract

We have developed several tools to allow instructors analyze students' interactions in a Course Management System. In this paper we describe a Systematic Usability Evaluation designed to test the usability of one of these tools. The evaluations were based on task analysis and follow-up studies. We have assessed effectiveness, efficiency, usefulness, ease of use, learnability, and user's satisfaction of the tool. In addition to regular observation and questionnaires, 3-scope video recording was used to provide the evaluator with more information about interactions. The use of this technology helped us in identifying functions and features that need improvement. We describe the three-step method that we have developed and the satisfactory results it has provided us.

## 1. Introduction

Most Course Management Systems (CMS) lack versatile tracking functions, as different studies show [1, 2]. Sometimes, they provide information but it is not as accurate as teachers demand; for instance, to use them to predict and prevent from possible students' dropping off or failings.

In this paper we focus on the Cookies Tracking Tool (CTT), a cookies-based analysis tool. The application collects data about users' interactions with the CMS and stores them in a data base. Afterwards, the tool allows teachers to display information about students' accesses in different graphical and tabular formats.

The user interface of the CTT is shown in figure 1, it was plugged-in to our CMS and has been collecting data for five months about accesses of students to web sites of different courses. We developed a Systematic Usability Evaluation (SUE, for the rest of the paper) Inspection to enhance it [3]. Our ultimate goal is to

improve the tool interface before making it available to lecturers for their daily lecturing activity.



Figure 1. Tracking tools assessing URJC CMS

The paper describes the SUE Inspection we performed in our CTT. Section 2 describes the three parts of the SUE Inspection. In the third section there is a description of the participants. Section forth contains the tasks they had to fulfill. Section 5 explains results obtained from the three parts of the SUE Inspection. Finally, we summarize our conclusions.

## 2. A Systematic Usability Evaluation: Aspects and Methods

The evaluation of interactive systems is a complex task [4], since there are many aspects to be evaluated. Nowadays, the term used to call any combination of these aspects is *usability*, although there are some different definitions that are more specific [5]. Moreover, there are many different methods that measure the mentioned aspects from different points of view; ranging from objective measurements such as task completion time or error logging, to user's

**Table 1. Usability errors**

Symptom	User Problem	F	HS	Cause
Reentering of data when sending other query (task 5-10)	Data reselected should stay when the user goes backwards	6	High	OS functionality is not part of the user model
Difficult to find the page to be tracked (task 5-7)	Site pages are not ordered alphabetically	5	High	Large amount of web pages being tracked
User does not realize at first glance which part of the tool is using (task 5-10)	The user forgets to mark the check box indicating in which part is working	5	Med	The part of the tool that is being used should be highlighted automatically
User cannot see the name of the small pie pieces in the pie chart graph (task 9)	The labels of the pie graph step one over the others when they are too little	3	Med	Pie graphs must be rethought and rebuilt to avoid this malfunction

By the observation, we have also gathered a measure of usability aspects, such as *effectiveness* and *efficiency*. The former by the fact that all the participants fulfilled satisfactorily all the tasks of the experiment, with little or no help at all, and with no mistakes. The later by time consumed in doing it, since they did it in an average time of 36 minutes.

### 5.2. Questionnaires

Immediately after fulfilling all the tasks, the user had to answer a questionnaire as explained in section 2. We have obtained important measures of usability aspects after analyzing its results, such as: *Usefulness* in question number 1 where 75% said it was very useful. *Easiness of use* in questions 2 to 5, where 57 % of participants found it very easy. *User satisfaction* assessed in questions 6 to 8, where 86 % of participants were very pleased. Finally, *learnability* in question number 9, where 86% of the users have said that they found very easy to master this tool.

### 5.3. Interviews

In the interview with the participants afterwards, commentaries were fairly positive, and complemented the information gathered by the previous two methods. All of them found the CTT very intuitive, well done and nice. Also, 62 % of participants said that the CTT offered very good statistics, information and graphics.

It is important to get this feedback from the participants out of the rigidity of a questionnaire.

### 6. Conclusions

Since this type of CTT specifically developed for e-learning CMS are not so common, they are rapidly being demanded and therefore developed. Thus, there may be the need to assess their usability. We have

found that the method we have explained in this paper fulfils all the expectations developers and persons responsible for a CMS may need.

By using our method, we have been able to test all the usability aspects required at the beginning, as well as to identify all the features that need to be improved. The first method, observation, offered us the measures of effectiveness and efficiency. The second method, fulfilling a questionnaire, provided us with the measure of usability aspects of: usefulness, easiness of use, user satisfaction, and learnability. Finally, the interviews compensated for some of the lacks the previous methods had.

We are really happy about the SUE Inspection carried out. It provided us with very useful information that it is not easy to gather any other way. All in all, we would be very pleased if more people (lecturers, professors and the students themselves) could benefit from this method we have explained in this paper.

### 7. Acknowledgments

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