

# Evaluation of the difficulties faced by users of a search engine of a medical web site : the example of Doc'CISMeF

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## Abstract

*The use of search engines and their advanced functions is often fraught with difficulty. This statement holds true for medical students searching for medical information. This problem is illustrated from a study on Doc'CISMeF, a search engine for the CISMeF (Catalogue and Indexing of the French-speaking Medical sites) web site. During an initial evaluation of the site, usability problems were identified related to the advanced search engine. We identified a superficial problem related to ergonomics and a more profound one resulting from differences in the knowledge structure of the students as compared with the terminology available within CISMeF.*

## Keywords:

Medical search engine, usability, evaluation

## Material and methods

In a first phase of the study, each subject was connected to the CISMeF site and had to carry out two successive searches, one on the etiology of hematuria and the other on the physiology of asthma. In cases subjects failed to use the advanced search engine spontaneously, they were specifically invited to do so. The search topics were selected with respect to students' level of knowledge in medicine. In the second phase of the study, each student was asked to participate in a sorting task involving 40 items noted on independent cards. Some of these items were the same as those proposed to the students during the first searching phase. They were comprised of meta-terms (allergy, etc), key words (asthma, etc), qualifiers (diagnosis, etiology, physiology, etc.) or resource-types (article in a periodical, etc). The meta-terms and key words were selected in three branches: (i) tumor of the colon; (ii) hematuria; (iii) asthma. The student was to regroup the items, give reasons for the distinctions in the groups, and further rank the items on a hierarchical basis within each group.

## Subject profiles

Thirteen students from second and third year medicine were recruited on a voluntary basis. For the first part of the study, a

mobile laboratory was used to record the entire man machine dialog as well as the students' verbalizations, which had been specifically encouraged as part of the instructions. The time spent on each element of the user interface was calculated from the video-tapings, and an analysis of the tool utilization was carried out. The verbalizations gave an insight into observed behaviors. During the sorting exercise, the subjects' actions and verbalizations were also recorded by camera, and used to analyze the sorting results.

## Results

The advanced search engine was used spontaneously by less than a quarter of the participating students. A usability evaluation revealed a lack of comprehension of the terms used. Thus, since the students were not aware that only those key words belonging to the MesH thesaurus were valid, and in the absence of any prompts to use the thesaurus, the subjects sometimes entered inappropriate expressions. When the thesaurus is used, the subjects do find the themes corresponding to the disease type being looked for, the description or the resource-types associated with their search, all of which tends to suggest that the tool is accessible. An analysis of the sorting exercise showed the students classified concepts/items in the same manner. Furthermore, the hierarchical ranking of the items within the groups seems to suggest that the underlying method of structuring this knowledge is appreciably the same as that used in the CISMeF.

These results appear to argue in favor of the hypothesis that a problem with surface ergonomics is existent, which can well be resolved by re-engineering the HCI (Human Computer Interface). The next stage of this work will be extending it to include all students in the same medical year and not simply the most competent internet surfers.

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