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Evaluation of a Teachers' Training Web Site Based on Inspection and Log Analysis

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SUMMARY

The evaluation focuses on a Web site dedicated to an academic trainers community at the University of Macedonia. Our main goal is to provide a thorough evaluation of the EP.E.N.DY.S.H. Website, authored for the needs of the homonymous project on in-service teacher training that runs for two years at the University of Macedonia. Our second objective is to show the site's log analysis results as presented by WebTrends.

KEYWORDS: *Web site evaluation methods, content, visual design, usability, searchability.*

INTRODUCTION

A two-year project (P) runs at the University of Macedonia (UM), regarding the training of trainers in the Modern Network and Information Systems. For the needs of the project, the EWS (EP.E.N.DY.S.H. Web site, <http://www.ithaca.uom.gr/>) has been created and serves a number of purposes. Firstly, it aims to present the P and its rationale to the outside world. EWS has also evolved into an Intranet for the inner operation of the P. Thirdly, it provides basic web-based teaching in the form of lecture notes, reading materials, and assignments delivery.

The predetermined need of critical Web site (WS) evaluation (EV) has led scientists, researchers and Web site analysts into the initiation of WS EV methods and EV criteria. EV methods are separated into five categories: competitive analysis, scenarios, inspection – including Heuristic EV –, log analysis, and questionnaires. Finally, the Cognitive Walkthroughs method is based on the psychology of inexperienced users (Baecker et al. 1995).

The review of EWS is based on log analysis executed by WebTrends solutions and inspection methods, based on established guidelines regarding four major areas of WS design: content, visual design, usability and searchability. The inspection of established guidelines has a high degree of success, it can be undertaken by a single individual and requires less formal training. One branch of this method is the Heuristic EV, a “usability engineering method” (Nielsen, 1994) that, needs to be carried out by a number of evaluators in order to avoid subjectivity in the selection and application of heuristics and involves “discount” user testing. This EV does not use heuristics and it is carried out by an individual scientist.

THE EP.E.N.DY.S.H. WEB SITE

The basic structural points of EWS, which is an Intranet, consist of a large database system, the user groups and their degree of freedom in accordance with the server security systems of the Intranet and the asp Web site technology that has been implemented with Visual Basic programming tool. Its operation requires the Internet Information Server 4.0, the SQL Server 7.0 and the Index Server. The developer has not designed the site with the safest HTML standard

(HTML 3.2) but only with “the most current version of the popular browsers” (Niederst, 1999) in mind, Explorer and Navigator edition 4.0 and above. The log on security system is implemented with the Windows NT Challenge/Response system, with coded user password.

EV RESULTS (INSPECTION)

CONTENT

Content EV is affected by a number of parameters, such as the authority, the audience, the context, its accuracy and its currency. Authority measures the suitability of a WS’s publisher, developer(s) and author(s). On the whole, EWS is the WS of a university P established under the provision of a reputable academic institution. As far as developers are concerned, EWS had a small-scale professional Web development environment. EWS was developed by a single expert with professional experience in Web authoring. The development of the site lasted three months and its conversion into an Intranet happened during the following months. Even though the developer is considered to be an authority in this field, the fact that a WS’s development period consists of various sub-areas of importance demands the collaboration of people with a wide range of backgrounds (Cunliffe, 2000). Therefore, content authoring was distributed to individuals from different fields of expertise. We therefore deduct that the authors of the content were also authorities on the subjects they covered.

The contents of the site are categorized in “Hybrid Organization Schemes” (Rosenfeld and Morville, 1998) that include audience-specific, topical, and task-oriented categories. Therefore, users cannot easily construct a mental model, but they need to access each menu item in order to find the desired option. EWS is primarily developed for the P needs and its trainers and secondarily for the wide audience. It offers various services to the trainers. However, a valuable service that is not provided is trainer-to-tutor communication. There is therefore a passive learning paradigm, inferior to its active counterpart.

The content of an academic WS depends strongly on quality, quantity, and its readability (McMullen, 2001). Regarding content quality, all sources of information are carefully selected and implemented in terms of subject relevance and authorship. The external links lead to sites developed by prominent academic institutions, organizations, international companies or individuals who are considered to be authorities. Therefore, there is accuracy in both primary and secondary data, with clearly cited sources. In terms of content quantity, a quick inspection of EWS will prove that only some of the learning materials and link categories are rich in quantity. The site has over 100 pages, which justifies the existence of plenty information. Yet, some topics are analyzed in depth while others are superficially treated. This situation is viewable in the EV sector where there are 168 entries for Foreign Languages, 139 entries for Informatics, 125 entries for Mathematics, 33 entries for Economics, 15 entries for Social Sciences and 6 entries for Music.

While the overall impression of EWS is good, its English version contains only half of the contents and it is poorly maintained. Bearing in mind the fact that the global nature of English language facilitates the dissemination of knowledge worldwide, the poor authorship of the English version may impede the P’s appreciation, gratitude and recognition by worldwide academic institutions, affiliate organizations, and individuals.

VISUAL APPEARANCE

A usable WS needs to focus on an aesthetically pleasant interface design (Batteson et al. 2001). The format and appearance of a WS adds to its general attractiveness and communicating nature and depends on principles of design. The effectiveness of a design depends upon the basic Principles of Design, which are balance, harmony, contrast, variety, and action. EWS, though simple in layout, has incorporated a number of these principles. The simplicity of the site layout

facilitates all users, even those who are not accustomed to view Web sites, to find their way through quickly and easily.

There is no overuse of color, as the background is white, and there are no more than four basic colors. Yet, emphasis is not clearly stated, as there are no clear text rules that differentiate links from texts. Links are immediately recognisable, as they do not differ from pure text and do not change color when viewed. There is hardly any feature of variety on EWS. The principle of action directs the eye from one part of a design to another and guides it to the important elements of the site. On the whole, EWS is so simple in design that principles such as variety and action are not exploited.

USABILITY, INTERACTIVITY, SEARCHABILITY

Usability is a branch of ergonomics and refers to the WS's functionality, its appropriateness to the searcher needs (EETAP, 1999) the degree to which it is considered simple, reusable, participatory and effective. The EV of usability also measures the degree of compatibility of the system with the users' cognitive characteristics and the easiness of user-interface communication. The importance of adapting the interface into the end users' needs is also recognized by the academic community (Abels et al. 1999). The hypertext should be easy to learn, efficient to use, easy to remember, pleasant to use, and error-free (Nielsen, 1995). EWS meets the needs of its users, as it is simple in layout and rich in content. Experienced and novice users can easily navigate without getting lost due to the presence of clearly identifiable navigation buttons on the banner. Easy move is also enhanced by the speed of loading which is very high, due to the fact that no page contains graphics or multimedia applications (Terplan, 1999). The direct links to the communication area enhance interactivity and human computer interaction, constituting the exchange of messages a user-friendly activity.

EWS can be immediately viewed by most browsers such as text-based browsers or screen readers as the speed of loading is high and there is no overuse of graphics, dynamic HTML or multimedia presentation. It can also be displayed on monitors of various types and resolutions as the page width fits without horizontal scrolling on small, low-resolution monitors. Though multimedia denote the free-form expression of ideas and relationships (Balasubramanian, et al. 2001), they are not incorporated into EWS.

The increasing amount of information available on a WS renders obligatory the existence of an information retrieval search engine (Savoy and Picard, 2001). The degree of the EWS searchability is very low. The search engine cannot detect key words that relate to the EWS contents or subject area, rendering it totally useless and therefore redundant. However, this misfortune is neatly balanced with the simplicity of the page layout.

EV RESULTS (LOG ANALYSIS)

It is very important to view the statistics of a WS, as developers may track how many visitors go on a WS and what they have the tendency to look at the most in order to develop a better understanding for their target group's needs. A WS can then be adjusted and adapted to these needs accordingly. EWS traffic analysis has been executed with WebTrends Log Analyser, a web traffic analysis software package, configured for single-server web sites. WebTrends executed a three month traffic analysis (March, 2000 – June, 2000) for EWS logs from the computers of the UM and of the Lab where the 20 trainers had their personal computers. During that time, EWS was accessed by 20 different IP addresses at the UM with a total number of 4,478 hits and a total number of 284 visitor sessions that is the total hits for one visitor of a WS. Accordingly, the trainers' Lab, with 20 IP addresses, noted 1,154 hits and 341 visit sessions. The results show a qualitative and quantitative difference. There was a site overuse in the trainers' lab regarding the visit sessions compared to the visit sessions noted by the university. Yet, the trainers did not note

many hits per session. Instead, they made more frequent use of EWS. In terms of reliability, only the 0,13% of the total hits from the UM's IP addresses failed. In the trainers' lab a server or client error occurred in the 0,25% of the total hits. The percentages regarding server and client errors are very low and confirm the reliability and adequate maintainance of the site.

The second log analysis of the site lasted for a year (3/2000 – 3/2001) and measured the site traffic from IP addresses out of the UM. In one year, EWS had 895 visitor sessions with 1,427 hits. Therefore, the avarage number of hits per visitor session is 1 to 2. Users visiting EWS outside of the UM did not dedicate much time in viewing its pages. It is important to remind the fact that most of the pages are password protected for a limited number of end users. Secondly, the English version is underdeveloped and cannot easily persuade foreign visitors. Concerning reliability and maintenance, only 2,39% of the total hits failed, the majority of which were 404 Page or File Not Found client errors.

OVERALL EXPERIENCE AND CONCLUSION

The overall impression of EWS is good. The content is carefully selected and authored by a team of experts. Yet some topics are underdeveloped, while others are better analyzed. The interface is simple and plain in color while the degree of usability is also high both for novice and experienced users. Yet, the search engine and the English version lack in effectiveness. Though the site is an Intranet that mainly serves the needs of the P, it is very important for a P to "show a good face" worldwide. Therefore, it is better to use two different styles and two different sets of templates for the Intranet and the external WS (Nielsen, 2000). Log analysis proves that the site is not thoroughly accessed by external IP addresses, and when accessed, the sessions were very short. To conclude, EWS is an easy-to-read profit-free WS that aims to inform rather than to persuade.

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