Usability of Digital Libraries: An Evaluation Model

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ABSTRACT
This research proposes methods and instruments for assessing usability of academic digital libraries. Criteria in this study are effectiveness, efficiency, satisfaction, and learnability. It is found that there exist interlocking relationships among effectiveness, efficiency, and satisfaction.

Categories and Subject Descriptors
H.5.2. [Information Interfaces and Presentation]: User Interfaces – Benchmarking, evaluation/methodology.

General Terms
Measurement

Keywords
Usability, Digital Library, Evaluation, Effectiveness, Efficiency, Satisfaction, Learnability.

1. INTRODUCTION
Digital library developments, although have not reached full potential, are maturing. However, the evaluation of digital libraries has not kept pace. There has been little work on understanding the nature of usability or how digital libraries are used in a nature setting. We need further work on methods for analyzing usability, including an understanding of how to balance rigor, appropriateness of techniques, and practical limitations. We also need benchmarks for comparison between systems and services.

This research is to develop and evaluate methods and instruments for assessing usability of academic digital libraries. Two library Web sites are selected for this study: the Rutgers University Libraries Web site (http://www.libraries.rutgers.edu) and the Queens College Library Web site (http://qcpages.qc.edu/Library).

This research reviews how usability has been defined in the context of digital libraries, what methods have been applied, their applicability, and proposes an evaluation model and a suite of instruments for evaluating usability for academic digital libraries.

2. EVALUATION MODEL
Usability is a multidimensional construct and can be assessed using various criteria. This research applies the definition of ISO 9241-11 (1994) that examines effectiveness, efficiency, and satisfaction. The ISO definition, however, does not explicitly specify operational criteria on what to evaluate. This study provides operational criteria. In addition, this research also examines learnability and provides operational criteria on learnability.

In this study, effectiveness is to evaluate if the system as a whole can provide information and functionally effectively and is measured by how many answers are correct. Efficiency is likewise to evaluate if the system as a whole can be used to retrieve information efficiently and is measured by how much time it takes to complete tasks. Satisfaction looks into the areas of ease of use, organization of information, clear labeling, visual appearance, contents, and error corrections and is measured by Likert scales and questionnaires. Ease of use is to evaluate users’ perception on the ease of use of the system. Organization of information is to evaluate if the system’s structure, layout, and organization meets the users’ satisfaction. Labeling is to evaluate from users’ perception if the system provides clear labeling and if terminology used are easy to understand. Visual appearance evaluates the site’s design to see if it is visually attractive. Contents evaluate the authority and accuracy of information provided. Error is to test if users may recover from mistakes easily and if they make mistakes easily due to system’s design. Learnability is to measure learning effort and if users achieve specified level of proficiency.

3. RESULTS
It is found that there exist an interlocking relationship among effectiveness, efficiency, and satisfaction. In addition, this study contributes benchmarks of effectiveness, efficiency, and learnability for comparison with other university and college library Web sites.

The evaluation model, the suite of instruments, and the preliminary research results will be displayed in the poster.

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