

WEB-BASED LEARNING MATERIALS FOR HIGHER EDUCATION: THE MERLOT REPOSITORY

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ABSTRACT

MERLOT (Multimedia Educational Resource for Learning and Online Teaching) is a web-based open resource designed primarily for faculty and students in higher education. The resources in MERLOT include over 8,000 learning materials and support materials from a wide variety of disciplines that can be integrated within the context of a larger course. Support resources attached to materials include sample assignments and evaluations of the learning materials, and help faculty members identify learning materials that are high quality and pedagogically appropriate for their courses. Evaluation materials include discipline panel peer reviews and individual user reviews. MERLOT is also a community of people who strive to enrich teaching and learning by connecting systems, consortiums, and institutions of higher education, professional organizations of academic disciplines, and individual members. The number of registered individual members who can add materials, comments, and assignments to the MERLOT collection has currently exceeded 11,000. This paper presents examples of learning materials included in the repository and discusses some of the issues in the use of web-based materials in teaching in higher education.

Keywords: Web-based learning, Online teaching, Evaluation of learning materials, Open educational resources.

INTRODUCTION

There are two aspects of using web-based teaching and learning materials to enhance student learning. The first aspect is the availability of materials in the chosen field of study. Since high quality learning materials are costly to produce, sharing of teaching/learning resources among institutions is needed. Online resources shared over the World Wide Web include complete courses as well as smaller materials. For example, the Massachusetts Institute of Technology is making the materials for nearly all its courses freely available on the web as part of the program, known as MIT OpenCourseWare (2003). The second aspect of using web-based teaching and learning materials concerns finding relevant materials and assessing their quality. Finding resources with standard web search engines is usually inefficient. Search for relevant information on the web can benefit from the availability of portals, websites that are entry points to other websites. Educational portals (e.g. University of Texas World Lecture Hall) provide systems of categorization and searching that allow users access to learning and teaching resources linked to the portal. Such portals may also offer services that support communication and collaboration among the educators and learners.

MERLOT (Multimedia Educational Resource for Learning and Online Teaching) is a portal designed primarily for faculty and students in higher education. The resources in the MERLOT repository include over 8,000 free learning materials and support materials from a wide variety of disciplines that can be integrated within the context of a larger course (“MERLOT Tasting Room”, 2002). Support resources attached to materials include sample assignments and evaluations of the learning materials and help faculty members identify high-quality learning materials that are pedagogically appropriate for their courses. Evaluation materials include discipline panel peer reviews and individual user reviews.

MERLOT was created by the California State University-Center for Distributed Learning in 1997. Since then MERLOT has grown into an international cooperative project with 23 partner institutions serving over 1,400 campuses which serve over 350,000 faculty and about 8 million students (“A Brief and Simplified History of MERLOT”, 2002). Troy State University has been an institutional partner of MERLOT since 2000 with the author serving on the Information Technology Discipline Team. MERLOT also aims at building “a community of people who strive to enrich the teaching and learning experience” by connecting “systems, consortiums, and institutions of higher education, professional organizations of academic disciplines, and individual members” (“MERLOT Tasting Room”, 2002). The number of registered individual members who can add materials, comments, and assignments to the MERLOT collection has currently exceeded 13,000.

LEARNING AND TEACHING MATERIALS IN THE MERLOT COLLECTION

Searching and Browsing in MERLOT

The resources in the MERLOT repository include teaching-learning modules (called “learning objects”) that can be re-used in different contexts, and support materials, which include sample assignments, formal peer reviews and

user comments. MERLOT's advanced searching and sorting features allow faculty and students to search materials by title, description, author, subject category, material type, primary audience, technical format or language of material. Other search options include author's e-mail, author's organization, source code availability, cost, copyright restrictions, content URL, availability of peer reviews, availability of member comments, availability of assignments, minimum panel rating and minimum user rating. The material types include simulation, animation, tutorial, drill and practice, quiz/test, lecture/presentation, case study, collection, and reference material. The search results can be sorted according to title, author, date entered, rating or material type. The users can also conduct searches for MERLOT members by name, organization, address, phone, e-mail and associations.

The collection can be browsed by subject area, which includes Arts, Business, Education, Humanities, Mathematics, Science and Technology, and Social Sciences. The subjects are organized in a three-level hierarchy. For example, the Science and Technology category currently has over three thousand entries which are organized in eleven sub-categories including Agriculture, Information Technology, etc. The Information Technology subcategory in turn has twelve sub/subcategories, which include E-commerce, Networking, Security and others. The "browse members" link on the Browse the MERLOT Library screen allows the user to browse the MERLOT members by subject area/skill or interest. Figure 1 shows the expansion of the Database sub/subcategory under Information Technology. Two tutorials and a drill-and-practice are displayed in the partial listing. Each material has a peer review and one or more user ("Member") comments. The ratings are indicated by the number of stars on a scale of 1 to 5, 5 being the highest. Figure 2 shows Detail View of the third material *Creating Databases and Tables In SQL*.



Figure 1. Entries in the Database sub/subcategory of Information Technology subcategory under Science and Technology category

Peer Reviews

The quality of the learning materials in the MERLOT collection is ensured by the peer review process. MERLOT has established discipline communities of reviewers to conduct peer reviews of learning materials within the discipline for the following thirteen subject areas: biology, business, chemistry, engineering, health sciences, history, information technology, mathematics, music, physics, psychology, teacher education, and world languages. In the peer review process, each learning material is evaluated by at least two team members who have relevant expertise.

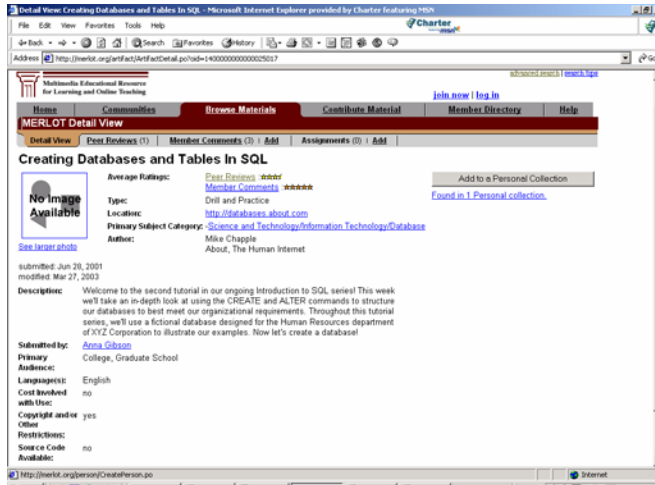


Figure 2. Detail View of *Creating Databases and Tables In SQL*

The resulting peer review report posted to MERLOT contains a description of the learning material and the evaluation. The description includes “learning goals, targeted student population(s), prerequisite knowledge/skills, type of learning material, summary of procedures for using the software and technical requirements” (Hanley and Thomas, 2000). The evaluation is divided into three dimensions: quality of content, potential effectiveness as a teaching tool, and ease of use. Each of these dimensions is evaluated separately (on a scale of 1-5 stars, 5 being the highest), and an overall rating is computed (“Peer Review of MERLOT Materials”, 2002). A review must average three stars in order to be posted to the site. Figure 3 shows how a review report is displayed on the MERLOT web site.

Member Contributions to MERLOT

Individual members can submit learning materials, assignments and user comments (called Member Comments) to MERLOT. The entries in the MERLOT repository are listed with the numbers of and average ratings for Peer Reviews and Member Comments as shown in Figure 1. A sample user comment is given in Figure 4.

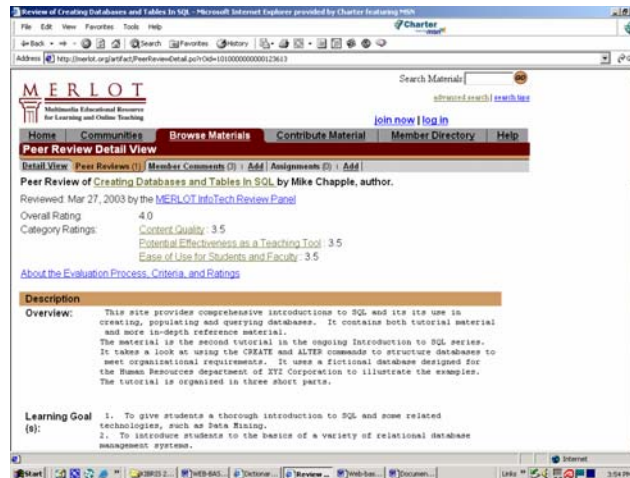


Figure 3(a). Peer Review of *Creating Databases and Tables In SQL* (Part a)

Assignments

An Assignment is an example that explains how an instructor has used a particular learning material in a specific context. Assignments “help create understanding of how particular learning materials might be used in a course” (“MERLOT Introduction: Assignments”, 2002). Search for learning materials indicates whether any assignments exist for the materials listed, as Figure 1 illustrates. Search options for assignments include: subject category, sub-category, assignment title, description, author's name, topics, course, education level, learning objectives, technical notes, and assessment. Search results are listed with category, title, date, course, by, and education level.

Current State of MERLOT

MERLOT is steadily growing as indicated in Table 1. As of April 25, 2003, MERLOT indexes 8580 learning materials of which 2457 have been added during the last 365 days, representing a 40.1% increase. However, only 881 (10.3%) of the materials have been peer reviewed. The number of materials with member comments has reached 1,831, representing 21.3% of the materials, and assignments have totaled 352, representing 4.1%. The number of registered members has almost reached 13,700, representing an increase of 72.8% during the last year.

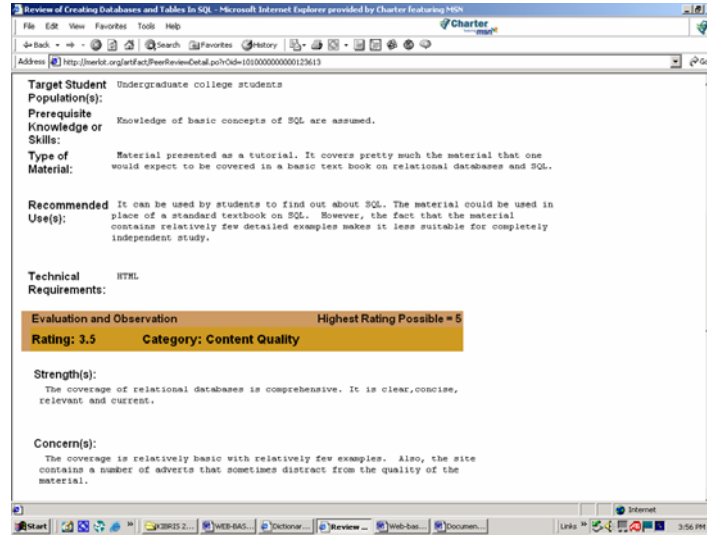


Figure 3(b). Peer Review of *Creating Databases and Tables In SQL* (Part b)

Table 1. Growth of MERLOT materials, members, and peer reviews (April 25, 2003)

	Total	Added during last 365 days
Materials	8580	2457
Members	13688	5766
Peer Reviews	881	113
Member Comments	1831	296
Assignments	352	74

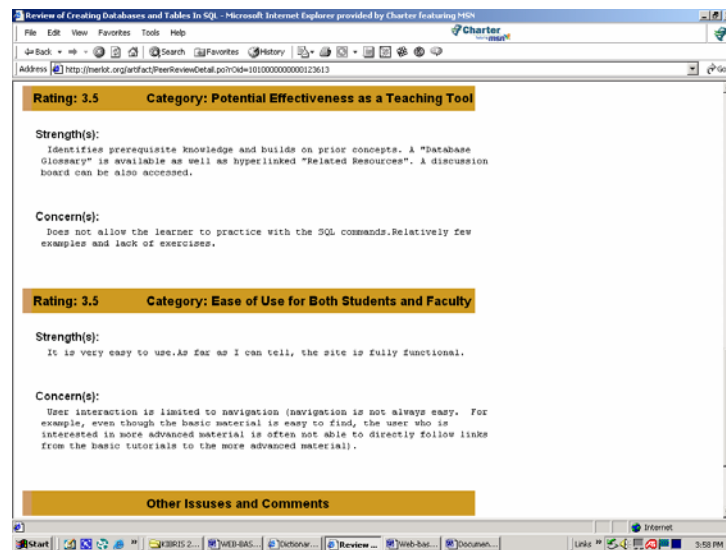


Figure 3(c). Peer Review of *Creating Databases and Tables In SQL* (Part c)

CONCLUSIONS

MERLOT aspires to be not only a repository of web learning materials, but also evaluations and “guidance for use” (Hanley & Thomas, 2000). The MERLOT project has made significant progress towards its goal of providing a free and open collection of high quality Web-based learning materials to improve learning and teaching within higher education. Knauff (2001) discusses some of the strengths and weaknesses of MERLOT. Two limitations of MERLOT are the small ratio of the materials that are peer reviewed and scarcity of assignments. The labor-intensive peer review process carried out by 150 discipline team members is obviously too slow in spite of recent improvements in productivity. The scarcity of assignments does not currently get as much attention as peer reviews in MERLOT. Although we might expect continuing increases in the number of peer reviews, learning assignments, and user reviews in MERLOT, successful integration of learning materials into teaching may require additional initiatives, such as MERLOT TWO (“ABOUT MERLOT-Teaching Well Online”, 2001), which focuses on successful integration of online resources in teaching and learning. Evaluation and usability improvement of MERLOT educational resources are being carried out at several institutions. An ongoing study at Troy State University is aimed at exploring the potential of web-based learning and teaching materials to enhance student learning in Computer and Information Science (CIS). The goal of the study is to find out to what extent MERLOT provides relevant and quality materials for the CIS courses. The preliminary results indicate that the quality and quantity of learning materials in the MERLOT collection is sufficient to satisfy the majority of CIS students’ knowledge/learning needs in specific courses. The ongoing study is also trying to evaluate the usability of the MERLOT collection.

A more important issue concerning the future of MERLOT and sharing of web-based resources in general is economical. How non-profit cooperatives such as MERLOT can be sustained in an era of continuing financial cuts for education institutions is a major challenge.

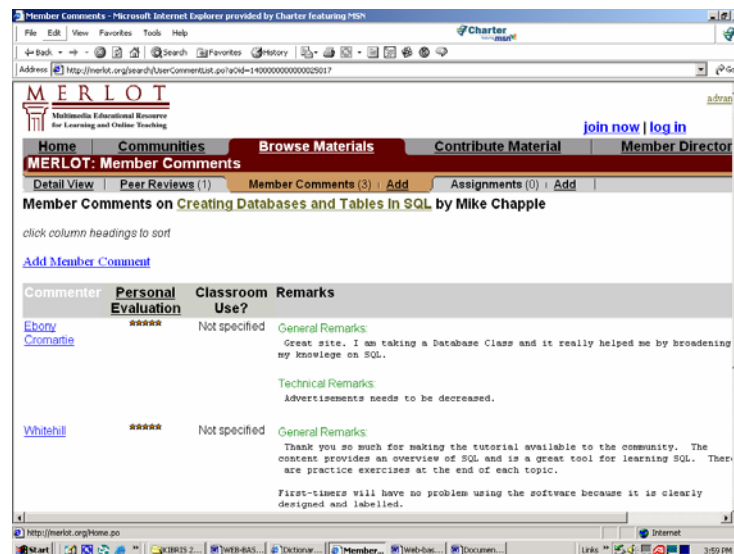


Figure 4. Member Comments for *Creating Databases and Tables In SQL*

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