

Two Approaches to Enhance the Education for ETDs: Developing Educational Modules and Migrating the ETD Guide into a Community Wiki

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Abstract

Two efforts have been made by the Digital Library (DL) Curriculum Development Project Group (<http://curric.dlib.vt.edu>) to help the ETD community. Our first activity is the preparation of multiple educational modules, which may be combined to create DL courses. In a paper presented at ETD 2007, the group identified the modules that might be most useful for scholars' research endeavors (i.e., for ETD authors). Since then, five modules from the selected module list have been developed and a formal review by subject experts has been completed for two draft modules. In this paper, the project team will present the details of the five modules. They are: 3-b: Digitization; 4-b: Metadata; 6-b: Online information seeking behaviors and search strategies; 7-e: Web publishing (e.g., wiki, RSS, blogs); and 9-e: Intellectual property.

The second portion of this paper describes the recent migration activity of the *ETD Guide* (etdguide.org), which was written by several authors, with support by UNESCO, into a local wiki server. The *ETD Guide* has been supporting scholars, who would like to know more about ETDs, and/or utilize NDLTD systems effectively. However, there were problems such as outdated information in some sections, and the lack of easy means to update the information in the *Guide*. To address those problems, a wiki-based version of *ETD Guide* has been created with updated information (http://curric.dlib.vt.edu/wiki/index.php/ETD_Guide). Our plan is to move it into wikibooks.org so that it could be exposed to an even larger community. It will allow the ETD community to update information on the *Guide* as new technologies and approaches arise related to ETDs.

It is our hope that the efforts described will help with the understanding of digital libraries and of ETDs, and will promote the use of NDLTD-related systems and services.

1. Introduction

In this paper, two efforts to enhance the scholars' understanding and use of ETD systems are introduced. The first portion of the paper is an extension of our previous ETD '07 paper [5], which listed eleven digital library educational modules that we think the most relevant to the scholars who want to prepare and utilize ETDs. At that time, two out of eleven modules were developed. Since then, three more modules have been developed, totaling five, and are being evaluated through expert review and field testing. They are: 3-b: Digitization; 4-b: Metadata; 6-b: Online information seeking behaviors and search strategies; 7-e: Web publishing (e.g., wiki, RSS, blogs); and 9-e: Intellectual property. Sections 2 and 2.1 describe the draft modules.

Section 3 describes our effort to move *The ETD Guide* (<http://etdguide.org>) to a local MediaWiki server (http://curric.dlib.vt.edu/wiki/index.php/ETD_Guide) for more manageable and participatory information update by the ETD community. In the process, we thoroughly reviewed and corrected *The ETD Guide*, originally published by UNESCO in 2001.

2. Selected DL modules for scholars

In our ETD'07 paper [5], we listed several DL modules which are likely to be the most relevant and useful to scholars who do research. By studying the materials in those modules, they might be able to more fully use ETDs and DL systems in general. The list below shows our selection. The ones marked with an asterisk (*) have now been developed and some of them can be accessed at the evaluation wiki homepage at <http://curric.dlib.vt.edu/wiki>.

- 1-a(10-c): Conceptual frameworks, theories, definitions
- 2-c(8-c): File formats, transformation, migration
- *3-b: Digitization
- 3-d: Document and e-publishing/presentation markup
- *4-b: Metadata
- 4-d: Subject description, vocabulary control, thesauri, terminologies
- 5-c: Identifiers, handles, DOI, PURL
- *6-b: Online information seeking behaviors and search strategies
- *7-e: Web publishing (e.g., wiki, RSS, blogs)
- 9-b: DL case studies
- *9-e: Intellectual property

In [5], we described how each of the eleven selected modules could be effectively used. Through 1-a (10-c), scholars will be introduced to fundamental DL concepts and frameworks. This module sets the context for the other modules in the list. 2-c(8-c) introduces the different digital formats that we face in everyday life of research. One common example would be to write a paper using MS Word and transforming it into a PDF format. 3-b: Digitization will also be one of the basic modules related to ETDs. Although ETDs are created digitally nowadays, it is also important to digitize paper-based theses and dissertations not to lose valuable paper-based resources published earlier and to make them easily accessible in a digital form. The 3-d: Document and e-publishing/presentation markup, and 7-e: Web publishing, modules have a strong relationship with each other and could be used in combination.

One of the important ETD submission steps is the preparation of metadata for searching and browsing of ETDs, covered in 4-b: Metadata. 4-d: Subject description, vocabulary control, thesauri and terminologies will assist the authors of ETDs when they select appropriate keywords. This module's 'vocabulary control' and 'thesauri' sections will be particularly useful in organizing large collections of digital objects. Assigning a unique and persistent identifier to a digital object, including an ETD, is important to distinguish it among others. This is presented in module 5-c.

The research about DL systems and the study of their users should go hand-in-hand to better support the users' needs. Module 6-b: Online information seeking behaviors and search strategies addresses this issue, explaining the theories and practices related to the users'

behaviors in online information search. 7-e: Web publishing, introduces technologies that allow easy creation (e.g., wiki's and blogs) and easy sharing (e.g., RSS) of information on the Web. A group of scholars having the same research interests can communicate and collaborate through these media. 9-b: DL case studies, presents various case studies in DL development. If a scholar would like to develop a DL, this module can be used as a reference for the project. In 9-e: Intellectual property, issues such as copyright protection and fair use, as well as the technologies to support them, such as Digital Rights Management (DRM), are discussed.

2.1. Draft DL modules for scholars

Among the eleven modules listed in section 2, five modules have been developed and external evaluation of them has begun. Table 1 provides a general idea of what each module covers. Some of the details of each module are presented in Tables 2 to 6. Since a single module can be over 20 pages long, only selected sections are shown in the tables to give the reader an idea of the content of each module. To see the list of sections in a module, please refer to the module template in Appendix A.

Table 1: Draft modules with their descriptions and evaluation status

DL Module	Description	Status
3-b:Digitization	Common approaches for selecting materials for digitization, the digitization processes, and challenges regarding digitizing and representing digital objects will be covered. This module will evaluate practical considerations adopted for digitization and representation in existing DLs.	Draft done, expert review done, field testing begun
4-b:Metadata	Intellectual, structural, administrative, and technical approaches to creating, maintaining and updating metadata will be described. It also covers the development history and issues of metadata standards. The metadata standards for DLs such as Dublin Core will be introduced and practical exercises to create metadata will be included. In terms of metadata generation methods, the challenges of automatic versus human-intermediary methods, including the ideas of author-created metadata, will be discussed.	Draft done, expert review begun
6-b:Online information seeking behaviors and search strategies	Theories, models and practices related to online information seeking behaviors in different settings of digital libraries will be covered. The typical methods of collecting user data, such as transaction log analysis, interviews, and think-aloud protocols will be practiced through exercises.	Draft done, expert review done, field testing begun
7-e:Web publishing (e.g., wiki, RSS and blogs)	Various tools/technologies that support publishing/sharing on the internet will be presented. Their features will be discussed and the design concepts will be compared.	Draft done, under internal review
9-e:Intellectual property	This module first defines the purpose of copyright and copyright protection of DL resources, and discusses the controversial issues related to privacy. It will also deal with technical methods to protect the author of resources.	Draft done, under internal review

The five sections listed in each table – Learning objectives, Level of effort required, Body of knowledge, Readings for students and Learning activities – are designed to have close relationships with one another. If a learning objective is listed, it is expected that a module will have corresponding topics in the Body of knowledge, readings and activities. These sections are supposed to be covered within the time suggested in Level of effort required.

Each module includes three to four learning objectives, which illustrate the statements of the expected performance and achievement of the students when they are instructed with the module.

The level of effort required for each module spans from 1.5 to 3 hours (one to two classes) and students also read assigned papers, do homework assignments and participate in a group activity in and out-of-class. The time required for out-of-class activity is usually more than in-class hours.

The three to five assigned readings for students are the representative papers within the scope of each module. In some modules, there is also a list of readings for instructors or advanced readings for students.

The body of knowledge lists the core topics that students need to learn from a module. It covers from the basic concepts and definitions of terms to theoretical models and practices and important issues to discuss.

Learning activities often involve group activities such as group discussions or group projects, in order to capitalize on the effectiveness of a team-based learning approach. Only brief descriptions of selected activities are presented here; the full modules typically contain multiple graded and/or ungraded activities described in detail. It is expected that more learning activities will be created in the future by the module users in the digital libraries and ETD communities, once these modules are disseminated to classrooms.

Table 2: Highlights of 3-b: Digitization

Learning objectives	Students will be able to: a. Explain the standard process of digitization projects, from initiating the project, to selecting and creating materials, making them accessible to users, and maintaining the collection of digitized materials. b. Demonstrate the critical issues and challenges of the digitization project (e.g., the potential uses, legal and financial considerations, preservation, and technical feasibility). c. Practice, by creating a small-scale collection of digital objects.
Level of effort required	a. Class time: 1 1/2 hour b. Student time outside class: 4 hours • Reading before the class starts: 2 hours • Homework assignment: 2 hours
Body of knowledge	Definitions - Digitization - Digital conversion Digitization Process - Potential and intended uses - Considering issues before digitization - Selecting materials for digitization - Actions for digitizing - Processing for use Digitization Projects - Google Book Library Projects - Open Content Alliance (OCA) - The Library of Congress: American memory
(Selected) Readings for students	Chowdhury, G.G., & Chowdhury, S. (2003). Chapter 6, Digitization. In <i>Introduction to Digital Libraries</i> . London: Facet Publishing, 103-119. Cornell University Library. (2000). Moving theory into practice: Digital imaging tutorial. Retrieved October 29, 2005, from http://www.library.cornell.edu/preservation/tutorial/contents.html

	Smith, A. (1999). <i>Why Digitize?</i> Washington, DC: Council on Library & Information Resources. Retrieved November 2, 2007, from http://www.clir.org/pubs/abstract/pub80.html
Learning activities	a. Group assignment: Building a digital image collection. This assignment provides an opportunity for the students to create digital objects and process the objects to be used as a part of an art image collection of a hypothetical digital library that the class members will build together.

Table 3: Highlights of 4-a: Metadata

Learning objectives	Students will be able to: <ul style="list-style-type: none"> a. Explain the basic principles of metadata creation. b. Explain the issues associated with the design of metadata schema for digital materials, and the assignment of metadata values for specific digital materials. c. Design a metadata schema and assign the values appropriate to materials in a particular digital library.
Level of effort required	<ul style="list-style-type: none"> a. In class: 3 hours b. Student time outside class: <ul style="list-style-type: none"> • Reading before the class starts: 2-3 hours • Homework assignment (optional): 1 hour
Body of knowledge	<p>Definitions</p> <p>Dublin Core (DC)</p> <ul style="list-style-type: none"> - DC principles - Data model - Problems with DC - DC extensions <p>Namespaces and repositories</p> <ul style="list-style-type: none"> - Types of interoperability (federation, harvesting, crosswalks) <p>Administrative metadata</p> <ul style="list-style-type: none"> - Designates information related to the administration of digital objects - Enable verification of the integrity, ownership and authorship - Examples of elements (Rights, Handling, Affiliation) <p>Preservation metadata</p> <ul style="list-style-type: none"> - Data necessary to maintain the viability, renderability and understandability of digital objects over the long term - Examples of elements (PreservationLevel, Fixity, Environment) <p>Harvesting</p> <ul style="list-style-type: none"> - Facilities (reuse, services, sharing among the community members) - Open Archive Initiative Protocol for Metadata Harvesting (OAI-PMH) <p>Educational metadata</p> <ul style="list-style-type: none"> - Sharable Content Object Reference Model (SCORM) <p>Semantic Web</p> <ul style="list-style-type: none"> - Necessitates the widespread use of ontology - Cyber-infrastructure: goal of ubiquitous information infrastructure
(Selected) Readings for students	<p>Weibel, S. (1995). Metadata: The foundations of resource description. <i>D-Lib Magazine</i>, 1(1). http://www.dlib.org/dlib/July95/07weibel.html</p> <p>Duval, E., Hodgins, W., Sutton, S., & Weibel, S. L. (2002). Metadata principles and practicalities. <i>D-Lib Magazine</i>, 8(4). http://www.dlib.org/dlib/april02/weibel/04weibel.html</p>
Learning activities	a. Group exercise (15-20 min): Invent object description The instructor provides various objects to student groups and each group describes them as much detail as possible so that a user could locate the objects in a library/archive/museum. Then discuss about the limitations and differences among the descriptions.

Table 4: Highlights of 6-b: Online information seeking behaviors and search strategies

Learning objectives	<p>Students will be able to:</p> <ol style="list-style-type: none"> a. Identify the fundamental concepts, definitions, and search strategies in online information seeking, as they apply to digital libraries b. Apply the models of information seeking behaviors to explain the user behaviors that have been identified in empirical studies of digital libraries c. Gather, analyze and interpret data using typical methods (e.g., transaction log analysis, interviews) for understanding information seeking behaviors in digital libraries
Level of effort required	<ol style="list-style-type: none"> a. In class: 3 hours <ul style="list-style-type: none"> • Session 1: Introduction to information seeking behavior models • Session 2: Empirical studies of the development of search strategies in the context of digital libraries b. Outside class: <ul style="list-style-type: none"> • Reading before the class starts: 2 hours/session • Homework assignment: 2 hours
Body of knowledge	<p>Session 1: introduction to information seeking behaviors</p> <p>Basic concepts and definitions</p> <ul style="list-style-type: none"> - Information need - Information seeking / information seeking behaviors - Information browsing, searching and seeking <p>Online information seeking behavior models</p> <ul style="list-style-type: none"> - Information seeking in online environment <ul style="list-style-type: none"> o Allen’s information tasks (1996) o Marchionini’s browsing strategies (1999) o Choo, Detlor & Turnbull’s information seeking on the Web (2000) - Search strategy development in online environment <ul style="list-style-type: none"> o Chowdhury & Chowdhury’s the four-phase framework for information search in digital libraries (2003) o Marchionini’s analytical search strategies (1999) <p>Session 2: case studies of search strategy development in digital libraries</p> <p>Info seeking behaviors in various context of digital libraries</p> <ul style="list-style-type: none"> - Info seeking behaviors in databases in DLs - Scholars and professionals’ information use in DLs
(Selected) Readings for students	<p>Session 1:</p> <p>Allen, B. L. (1996). Chapter 7, Information tasks: Interacting with information systems. In <i>Information Tasks: Toward a User-Centered Approach to Information Systems</i>. San Diego: Academic Press, 188-200.</p> <p>Choo, W. C., Deltor, B., & Turnbull, D. (2000). Information seeking on the Web: An integrated model of browsing and searching. <i>First Monday</i>, 5(2). http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/729/638.</p> <p>Chowdhury, G. G. & Chowdhury, S. (2003). Chapter 8, Information access and user interfaces, and Chapter 9, Information retrieval in digital libraries. In <i>Introduction to Digital Libraries</i>. London: Facet Publishing, 152-213.</p> <p>Marchionini, G. (1999). Chapter 6, Browsing strategies. In <i>Information Seeking in Electronic Environments</i>. New York: Cambridge University Press, 100-138.</p> <p>Session 2: (Case Studies)</p> <p>Park, S. (2000) Usability, user preferences, effectiveness, and user behaviors when searching individual and integrated full-text databases: Implications for digital libraries. <i>Journal of the American Society for Information Science</i>, 51(5), 456-468.</p> <p>Jones, S., Cunningham, S. J., McNab, R., & Boddie, S. (2000). A transaction log analysis of a digital library. <i>International Journal on Digital Libraries</i>, 3, 152-169.</p>

Learning activities	<p>a. In-class activity: a small group activity of the transaction log analysis. The purpose of this exercise is to provide opportunities in which students look at a set of transaction log data from an information searching system and practice how to interpret and analyze the raw data and make them meaningful in understanding the user behaviors in searching.</p> <p>b. Homework assignment I: user data collection practice. Students will be able to meet users of a digital library and interview them in order to find their information needs and seeking behaviors.</p> <p>c. Homework assignment II: think-aloud protocol practice. This exercise enables students to practice the think-aloud protocol method in investigating the use of a digital library.</p>
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Table 5: Highlights of 7-e: Web publishing

Learning objectives	<p>Students will be able to</p> <ol style="list-style-type: none"> Identify the fundamental concepts, theoretical models and the process of generating and maintaining of web publishing in digital libraries. Determine the criticalities of choosing the correct paradigm for web publishing over others depending upon the purpose of the digital archive. Successfully create and manage a small scale personal or collaborative online environment for publishing or sharing content over the web.
Level of effort required	<ol style="list-style-type: none"> In class: 1½ hours Student time outside class: <ul style="list-style-type: none"> • Reading before the class starts: 1-2 hours • Assignment: 2 hours
Body of knowledge	<p>Basic concepts and definitions</p> <ul style="list-style-type: none"> - What is Web publishing? - Social infrastructure of publication - Role of copyright <p>Benefits of Web publishing</p> <ul style="list-style-type: none"> - Access to a broader community of people - Easy management of the published material - Remote access available - Ease of preservation of the material published online - Save cost and effort <p>Generate, publish and maintain Web content</p> <ul style="list-style-type: none"> - Issues before publishing - Publishing procedures <ul style="list-style-type: none"> o Submission o Acquisition o Quality control o Production o Delivery <p>Web publishing paradigms</p> <ul style="list-style-type: none"> - Really Simple Syndication (RSS): it generates RSS fee, which can be viewed using an RSS reader (e.g., Google Reader) - Wiki: software that allows users to collaboratively create, edit, link and organize content online (e.g., PB Wiki, Wikipedia, MediaWiki, etc.)
(Selected) Readings for students	<p>Henry, G. (2003). Online Publishing in the 21st century – Challenges and Opportunities. <i>D-Lib Magazine</i>, 9(10). http://www.dlib.org/dlib/october03/henry/10henry.html</p> <p>Lie, H. W. and Saarela, J. 1999. Multipurpose Web publishing using HTML, XML, and CSS. <i>Commun. ACM</i> 42, 10 (Oct. 1999), 95-101. DOI= http://doi.acm.org/10.1145/317665.317681</p>
Learning activities	<ol style="list-style-type: none"> Class activity involves creation of a class wiki in the beginning of a semester. It might be used as a medium for class announcement or a platform for communication and collaboration among the instructor and students.

Table 6: Highlights of 9-e: Intellectual property

Learning objectives	<p>Students will be able to:</p> <ol style="list-style-type: none"> Analyze copyright law as it applies to collection development decisions in digital libraries Assess fair use issues in relation to digital library collections Apply public domain principles to fair use arguments Evaluate and debate issues surrounding Digital Rights Management Technologies Assess the impact of the DMCA (Digital Millennium Copyright Act) on digital libraries
Level of effort required	<ol style="list-style-type: none"> In class: 3 hours Outside class: 6-9 hours
Topics	<p>Session 1:</p> <ul style="list-style-type: none"> - Copyright <ul style="list-style-type: none"> o What is a copyright? o What does a copyright protect? o Copyright protection is broad o Copyright ownership issues o Assignment vs. license o Do publication contracts take copyrights? o Will keeping my copyright protect me? o Why should I keep my copyright? - Fair use <ul style="list-style-type: none"> o Definition and examples - The Public Domain <ul style="list-style-type: none"> o What is the public domain? o How do items get into the public domain? o Complications <p>Session 2:</p> <ul style="list-style-type: none"> - Digital Millennium Copyright Act (DMCA) <ul style="list-style-type: none"> o Introduction and background information o Circumvention of copyright protection systems comments - Digital Rights Management / Copyright Protection Technologies <ul style="list-style-type: none"> o What is Digital Rights Management (DRM)? o DRM and circumvention o DRM and mandates, privacy, technologies/security - Digital library intellectual property rights
(Selected) Readings for students	<p>17 U.S.C. § 106. Retrieved August 3, 2007, from http://www.copyright.gov/title17/chapter01.pdf</p> <p>Stim, R. 2003. The public domain. <i>Copyright & Fair Use</i>. <http://fairuse.stanford.edu/Copyright_and_Fair_Use_Overview/chapter8/index.html> (30 May 2006).</p> <p>17 U.S.C. § 109. Retrieved August 3, 2007, from http://www.copyright.gov/title17/chapter01.pdf.</p> <p>Cohen, J. 2003. DRM and privacy. <i>Communications of the ACM</i>, 46(4): 47–49.</p>
Learning activities	<ol style="list-style-type: none"> Session 1: copyright, fair use and the public domain – debate for the issues and case studies Session 2: Digital Millennium Copyright Act and Digital Rights Management / Copyright Protection Technologies – take-away group project, class discussion, policy examination and current news

3. The ETD Guide update and migration

Background

The Guide for Electronic Theses and Dissertations Web site (<http://etdguide.org>) was published online by UNESCO in 2001. It was intended to help academic researchers writing their theses or dissertations and faculty members who mentor the authors of ETDs. In addition, it provided necessary information for the graduate deans who wanted to initiate ETD programs in their schools. This web site also contained links such as *The ETD Guide* (both PDF and Word versions), ETD Resources, ETD Models and Networked Digital Library of Theses and Dissertations (NDLTD). The PDF version of *The ETD Guide*, which was authored by more than 20 authors internationally and had 420 pages in total, included instructions and detailed technical information to prepare and to publish ETDs.

Problems

There were mainly two problems which we wanted to address. The first problem was that *The Guide* was created as PDF format so it was not manageable to quickly update its content. The second problem was that *The Guide* was published in 2001 [4] and unfortunately it has not been updated since then. Therefore, it was inevitable to contain some outdated information considering the speed of technology change today. For example, it presented instructions on how to use MS Office and Word 2000 (MS Office XP or 2007 are commonly used nowadays). There were also not-working URLs, for example, The NDLTD Union web site has been moved from www.vtls.com/ndltd (this URL does not work) to www.ndltd.org but this information was not provided in the guide.

Process and timeline

To address the problems above, a project was conducted to update the outdated information in *The ETD Guide* and to transform it into more manageable format. Two undergraduate students, a graduate student and a professor were involved in this effort. Throughout the project, the team had several discussion meetings on the ideas, options and the deliverables needed to resolve the problems mentioned above and the problems we faced on the way.

Firstly, the two undergraduate students began reading the entire document of the original version of *The ETD Guide*. They flagged the sections that were out-of-date or needed some editing. Examples of edits included updating the software versions and features as well as correcting typos and grammatical errors. In this way, all 420 pages of the guide were edited.

The team next decided that a wiki would provide flexibility in future editing and updating of *The ETD Guide*. The next decision to be made was to decide which public wiki site would be the place to host the project. After considering several candidates, such as wikibooks.org, wikipedia.org, wikiversity.org, wikisource.org and the local MediaWiki server, the team selected wikibooks.org, which fit the purpose of this project and had access to a broad community. Then the team attempted to migrate the document into it. However, we faced copyright problems shortly after we started implementing to wiki because we did not provide written permissions to wikibooks.org from all of the authors involved in the original document. The team contacted UNESCO to get the appropriate permissions. Although the copyright problems were resolved, the team decided to implement the project on the local MediaWiki server at the Digital Libraries Curriculum Project Wiki (curric.dlib.vt.edu/wiki/index.php/ETD_Guide) because in this way, the team could have more control over the content by allowing only specified users to alter it while, at the same time, it could be viewed publicly.

Once the host was selected, the basic layout of the wiki was created and the content was posted going section-by-section into the wiki pages. After completion, all the pages were reviewed again for both content and format. The project report can be accessed from an ETD

repository at <http://pubs.dlib.vt.edu:9090/183/>. The main page of the wiki version of *The ETD Guide* is shown in Figure 1.

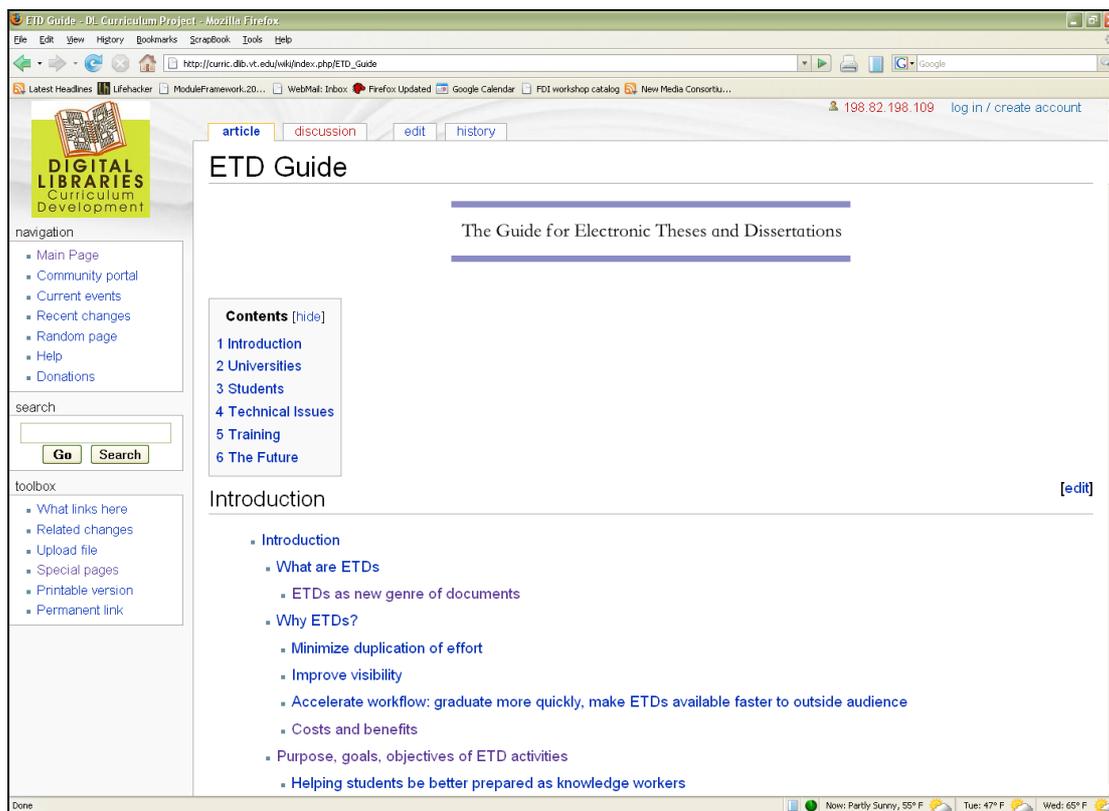


Figure 1. Wiki-based *ETD Guide* (http://curric.dlib.vt.edu/wiki/index.php/ETD_Guide)

Obstacles and solutions

The project team overcame several obstacles during the course of this project. The first obstacle was the need for manual editing of the original document, which required thorough review of 420 pages. The team spread out the work over a few weeks to improve the quality of the work and not to feel overwhelmed by the task.

Wiki was a new medium for the two undergraduate students, so they had to read the wiki programming manual and learn it. They realized that the best way to learn was to look at other people's wiki codes. In this way, they learned the details of formatting, for example, including formatting an image, table or list.

As mentioned in the 'Process and timeline' section above, we faced copyright issues when the updated document was placed in wikibooks.org. We contacted UNESCO and received the appropriate permissions. Then, since we decided to change the wiki location from wikibooks.org to the local MediaWiki server, the work had to be transferred between the two places.

Lastly, there were some dead links in the old document. Because providing the dead links in the document would degrade the quality and integrity of the revised version, we decided not to include those links, but still keep the name of the web site to which the links referred.

3.1. Contributing to *The ETD Guide*

We look forward to your contribution to the guide. You can contribute by updating information and/or adding a new content to the guide. The new wiki-based *ETD Guide* supports both regular users and super-users. Regular users can view the content and navigate through it by following the links. Super-users can modify and create content in addition to the regular user's capabilities.

To modify and create content in *The Guide*, one should acquire a super-user account by sending an email to the DL curriculum project team. The contact information is on the main page of <http://curric.dlib.vt.edu>. Once a super-user logs in using an account, a wiki page can be modified by clicking the 'edit' tab on the page you want to update. The 'edit' mode is enabled for that page. After making appropriate changes, 'Save page' button should be pressed to go back to the 'view' mode. To add new content to the guide, an internal link on the wiki page should be created first. Then, by clicking the link, a blank edit page is open and the content can be added there. Again, the 'Save page' button should be pressed to convert the page to 'view' mode. The new content will be shown to the public from then on. For more details of editing, formatting and starting a new page, please refer to:

- Project report:
http://pubs.dlib.vt.edu:9090/183/01/The_Guide_for_Electronic_Theses_and_Dissertations.pdf
- MediaWiki manual: http://www.mediawiki.org/wiki/Help:Editing_pages

4. Summary

In the previous paper [5], we selected eleven digital library educational modules, which we think the most relevant to scholars' research endeavors utilizing ETDs, in the framework of the Digital Library Curriculum [1]. In this paper, total five draft modules were introduced and important sections of each module such as Learning objectives, Level of effort required, Body of knowledge, Readings for students and the Learning activities, are elaborated in Tables 2 to 6 to deliver the details of them. More modules are being developed and evaluated by the project team and our collaborators. Our modules that are in the process of an expert evaluation can be viewed at [2].

The update and migration effort of *The ETD Guide* was also introduced in this paper. Originally published by UNESCO and written by multiple authors internationally, the guide provided background information and instructions to scholars who prepare and use ETDs. By updating and migrating it from its PDF version to wiki-based version, more flexibility in the future update is allowed. The obstacles we faced and their solutions during the process might be a guide for others who plan to do the similar migration tasks. It is our hope that this paper will provide some pointers to scholars who are searching for educational materials such as teaching modules and the guide related to ETDs.

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Appendix

Appendix A: Digital Library Educational Module Template

(http://curric.dlib.vt.edu/DLcurric_images/Template.2007-08-27.pdf)

1. Module name
2. Scope
3. Learning objectives
4. 5S characteristics of the module
5. Level of effort required (in-class and out-of-class time required for students)
6. Relationships with other modules
7. Prerequisite knowledge/skills required (completion optional)
8. Introductory remedial instruction
9. Body of knowledge
10. Resources (textbooks, required and optional readings for instructors and students)
11. Concept map (created by students)
12. Exercises / Learning activities
13. Evaluation of learning objective achievement
14. Glossary
15. Additional useful links
16. Contributors