Help features in digital libraries: types, formats, presentation styles, and problems

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Abstract

Purpose – The purpose of this paper is to evaluate Help features in digital libraries and identify problems related to their design.

Design/methodology/approach – This study selects six digital libraries to represent a variety of digital libraries developed or sponsored by different types of organisations. The Help features of these selected digital libraries are examined by their types (explicit versus implicit), formats (texts, images, screenshots, multimedia materials, and interactive formats), and presentation styles (descriptive, guided, procedural, and exemplary).

Findings – This study presents the types of Help features available in the selected digital libraries, and further characterises the formats and presentation styles of these Help features. In the process of analysis, the author also identifies six types of problems: lack of standards; tradeoff between using explicit Help and implicit help; tradeoff between using general Help versus specific Help; lack of interactive Help features; lack of dynamic presentation styles; and lack of Help features for advanced users and users who do not understand English.

Research limitations/implications – In order to design Help features that facilitate users to effectively use digital libraries, further research needs to extend studies to what types of help-seeking situations users generally encounter and the corresponding support they need.

Originality/value – This study provides insightful information regarding the current status and problems of the Help features in existing digital libraries.

Keywords Digital libraries, Information retrieval, Problem solving

Paper type Research paper

Introduction and related literature

There is no standard definition of a digital library. Digital libraries collect and store materials in different electronic formats and organise them for effective access and dissemination. Millions of dollars have been invested in the research and development of a variety of digital libraries. In recent years, many organisations have started to develop their own digital library or digital collections. Universal access is the objective for digital libraries. The question is how to design these digital libraries for effective use by different types of users. One constructive approach is to design useful Help features to assist users when they encounter problems in accessing and interacting with digital libraries.

Even though it is not the focus of information retrieval (IR) research, researchers have recognised the importance of the Help features in IR systems. At the 2005 annual meeting of the American Society for Information Science and Technology (ASIST), panellists of "Toward an enriched (and revitalised) sense of Help" discussed the challenges involved in offering effective help from different aspects: users, information, and interface design (Haas *et al.*, 2006). However, although the focus of research in this area has been to develop intelligent interfaces that offer automatic Help, there has been very little evaluation of these mechanisms (Jansen, 2005). After reviewing online searching aids, Efthimiadis (1990) pointed out that all users might experience problems in their interaction with IR systems, and they need assistance. In particular, novice and infrequent users normally benefit the most from the Help features. An online search aid should serve as an intermediary mechanism. He also noted that Help appears in different forms depending on the actual system.

Trenner (1989) examined the Help facilities of 16 interactive IR systems, and concluded that "Help" in IR systems is often inadequate. Echoing Trenner's results, Slack (1991) found, after investigating the effectiveness and use of online Help features in five different online public access catalogues (OPACs), that even though the Help feature was utilised by one-third of the novice users, it did not assist the users in their help-seeking situations. These studies might offer some explanation about why Help systems are not helpful to users, which leads to infrequent use of Help systems, even though people frequently report that they believe Help mechanisms to be important components of IR systems (Cool and Xie, 2004). Dworman and Rosenbaum (2004) argued that the ways in which users notice and access the Help functionalities are the main reasons for their failed use of Help functions. They identified five reasons for users' inability to use Help: users cannot see the Help mechanisms available to them; users are unwilling to leave their current searching to start help-seeking; users fear of leaving their current search task; users do not want to admit defeat, or falsely believe that they can figure out a solution by themselves; and, users are more willing to access implicit help such as search tips or quick reference guides instead of explicit help.

Very few studies have investigated the use of Help in digital libraries. In some of the studies, Help functions were evaluated as part of the digital libraries. For example, Monopoli *et al.* (2002) evaluated users' use of a digital library, including its online Help. Among 246 respondents, only 34.6 per cent of them used online help. Of the respondents, 20 per cent preferred human support. While half the respondents did not feel the need to use Help, about 5.1 per cent of them did not know the availability of online Help. To make things worse, 22.5 per cent respondents did not understand what online help was. That confirmed Connell's (1995) finding that inexperienced users do not use Help because they do not understand how Help can be helpful to them. The majority of the respondents (61.2 per cent) who used online Help implied that it was a useful service and easy to use. This study indicates that it is important to create a new image of online help in digital libraries.

When users use different types of IR systems, they do not change their requirements for the ease-of-use of Help features in these systems, including digital libraries. Hill *et al.* (2000) tested the user interfaces of the Alexandria Digital Library through a series of studies and collected feedback from users regarding their interaction with the interfaces of the digital library, the problems of the interfaces, the requirements of system functionality, and the collection of the digital library. Based on these user evaluation studies, they found that users require the following Help functions:

- creation of search examples to assist user query formulation;
- offering context-sensitive Help; and
- provision of tutorials and Frequently Asked Questions (FAQs).

Xie and Cool's (2006) research yielded similar results. They investigated users' evaluation of Help mechanisms of one digital library and one image retrieval system to understand user preferences. The results show that users prefer specific help, visual help, and help with demos instead of general help, text help, and help with description. More important, users need interactive help to guide them in solving their problems during the information retrieval process.

In order to design effective Help functions, it is not enough to just evaluate the Help features of digital libraries. It is also important to examine the types of help-seeking situations that lead users to look for help. Based on the analysis of pre and post questionnaires, protocol analysis, and transaction logs, Xie and Cool (2007) presented nine types of help-seeking situations related to problems in the area of domain knowledge, system knowledge, information retrieval knowledge, evaluation of results, and collections of digital libraries. At the same time, the results of this study also showed that the existing Help features of digital libraries are not adequate to support these help-seeking situations. Another issue related to Help design is how to organise help topics. By employing the card sort technique, Faiks and Hyland (2000) explored how users organised a set of concepts in a digital library Help system. Based on this study, a visual cluster map was created to represent users' groupings, which offers valuable information for Help system design.

Not much research has been done in evaluating the Help features of IR systems, in particular, of digital libraries. In many studies, use of Help functions is only one part of the usability study. In order to design digital libraries that facilitate users' effective retrieval of information, we need to conduct more research on the evaluation of the Help features of digital libraries.

Research questions

Digital library research has primarily focused on usability studies of existing digital libraries. Very few studies have concentrated on the Help features of digital libraries. The value of digital libraries cannot be realised unless people can effectively use them. This study intends to evaluate existing Help features in selected digital libraries. To be more specific, this study intends to answer the following research questions:

- What types of Help features are available in digital libraries? How can their formats and presentation styles be characterised?
- What are the problems with the current Help features of digital libraries?

Methodology

Based on the broad definition of digital libraries stated in the introduction, six digital libraries were selected to represent the variety of digital libraries sponsored or developed by different types of organisations: a national library, public library, foundation, university, museum, and special library. Corporate digital libraries were not chosen because they were in general available only on an intranet, not on the internet. The data of this study were collected and analysed from March 2006 to March 2007. Here is a list of the selected digital library projects with their URLs, their parent organisations, and their sponsors (if there are any):

(1) *American Memory*:
  - URL: http://memory.loc.gov/ammem/index.html.
  - Parent organisation: United States Library of Congress.

(2) *New York Public Library (NYPL) Digital*:
  - URL: www.nypl.org/digital/.
  - Parent organisation: NYPL.

(3) *International Children's Digital Library (ICDL)*:
  - URL: www.icdlbooks.org/.
  - Parent organisation: International Children's Digital Library Foundation.
  - Sponsors: University of Maryland, National Science Foundation, Institute for Museum and Library Services, Microsoft Research.

(4) *Perseus Digital Library*:
  - URL: www.perseus.tufts.edu/.
  - Parent organisation: Department of the Classics, Tufts University.
  - Sponsors: Digital Libraries Initiative Phase 2, the National Endowment for the Humanities, the National Science Foundation, the Institute of Museum and Library Services, private donations, Tufts University.

(5) *American Museum of Natural History Digital Library Project*:
  - URL: http://library.amnh.org/diglib/index.html.
  - Parent organisation: American Museum of Natural History.
  - Sponsor: Andrew W. Mellon Foundation.

(6) *Medline Plus*:
  - URL: http://medlineplus.gov/.
  - Parent organisation: National Library of Medicine.
  - Sponsors: National Institutes of Health, Department of Health and Human Services.

The author decided to select these digital libraries from the USA mainly because it is easy to characterise Help features in digital libraries regarding their types, formats, presentation styles, and problems within one country. That also leads to one limitation of the study that this study only investigated the help features of English-language based digital libraries. Further research will be extended to examine Help features in non-English-language based digital libraries available in different parts of the world.

For each selected digital library, both explicit and implicit Help features were examined. Here "explicit Help features" refers to any features with "help" or "?" as part of the label. "Implicit Help features" refers to any features that assist users in using digital libraries effectively but not having "help" as part of the name. Although any features that assist users to search are considered implicit Help, such as search tips, advanced search, etc., general browse and search features themselves are not regarded as Help features in this study.

For each selected digital library, general Help features that can be applied for all the collections within the digital library were examined. In some of the digital libraries, each of the digital collections has its own Help features. For these digital libraries, only

Help features in typical or selected collections were selected for analysis. Table I presents a list of collections selected for the assessment of Help features.

These collections are selected based on the types of help features available in these digital libraries. The detailed explanation or justification of how collections are chosen from the selected digital libraries is as follows:

· American Memory: An American Time Capsule – Broadsides and Printed Ephemera ∼ ca. 1600-2000 was randomly chosen for this study considering a large number of collections contained in American Memory.

· New York Public Library Digital – The Digital Gallery was selected as it is the main digital collection of the New York Public Library.

· American Museum of Natural History – Congo Expedition was selected as it is currently the only collection available, although it appears other collections will be added in the future.

· All other digital libraries only had general collections.

The analysis has concentrated on the type, format, and presentation style of Help features in digital libraries. Here is the analysis scheme:

· Type refers to whether a Help feature is implicit or explicit. The implicit Help features are further categorised based on their functions.

· Format refers to whether a Help feature contains text, images, screenshots, multimedia materials, or interactive materials.

· Presentation style refers to whether a Help feature presents information in descriptive, guided, procedural, and exemplary styles.

Definitions of specific categories are discussed in detail in the Results section.

The researcher and a research assistant reviewed the Help features in the selected digital libraries based on the analysis scheme discussed above. In addition, potential problems in using these Help features were also identified in terms of types, formats, and presentation styles.

Results
The results of this study are reported to answer the two proposed research questions.

Types of Help features
Table II lists specific implicit and explicit Help features in the six selected digital libraries. Explicit Help features are self-explanatory, with Help as part of the name. Implicit Help consists of a variety of features, such as FAQs, Contact Us, Advanced Search, About, Collection Descriptions, Site Map, Glossary, My Digital, How to View, etc. Some of the features can be under both explicit and implicit Help. For example, FAQs itself is an implicit Help feature. If FAQs is under the name of Help, then it is part of the explicit Help. For example, In American Memory Help (see Figure 1), the explicit Help consists of implicit Help features, such as How to View, Search Help, FAQs, and Contact Us. These explicit and implicit Help features identified from the selected digital libraries can be classified into the following categories:

· general Help;
· search-related Help;

Types of collection	Name of DL					
	American Memory	New York Public Library Digital Library	International Children's Digital Library	Perseus Digital Library	American Museum of Natural History Digital Library	MedlinePlus
General collection			General collection	General collection		General collection
Main collection	American Memory	NYPL Digital Gallery				
Specific collection	American Time Capsule – Broadsides and Printed Ephemera ~ ca. 1600-2000				American Museum Congo Expedition	

Types	American Memory	New York Public Library Digital Library	International Children's Digital Library	Perseus Digital Library	American Museum of Natural History	MedlinePlus
Implicit	About/general: Mission and History About the Collection Technical Information FAQs	About NYPL Digital	About Library	Configure Display	Introduction	About MedlinePlus: FAQ MedlinePlus Tour Training Materials Site Map
	Contact/general	FAQ/general	Read Books: Books by Country Advanced Search Full Books Lists Author and Illustrator Lists Featured Books	Tools	Readings	
	Glossary/An American Time Capsule	Collection descriptions/general	FAQs	FAQ	Advanced Search Advanced Search Advanced Search Guidelines Browse Field Notes Search History	FAQ
	About the Collection/An American Time Capsule Building the Digital Collection/An American Time Capsule	Advanced Search/NYPL Digital Gallery My Digital NYPL Digital Gallery: Search History Selections	Site Map		Advanced Search: GIS Search	
	How to View/An American Time Capsule					

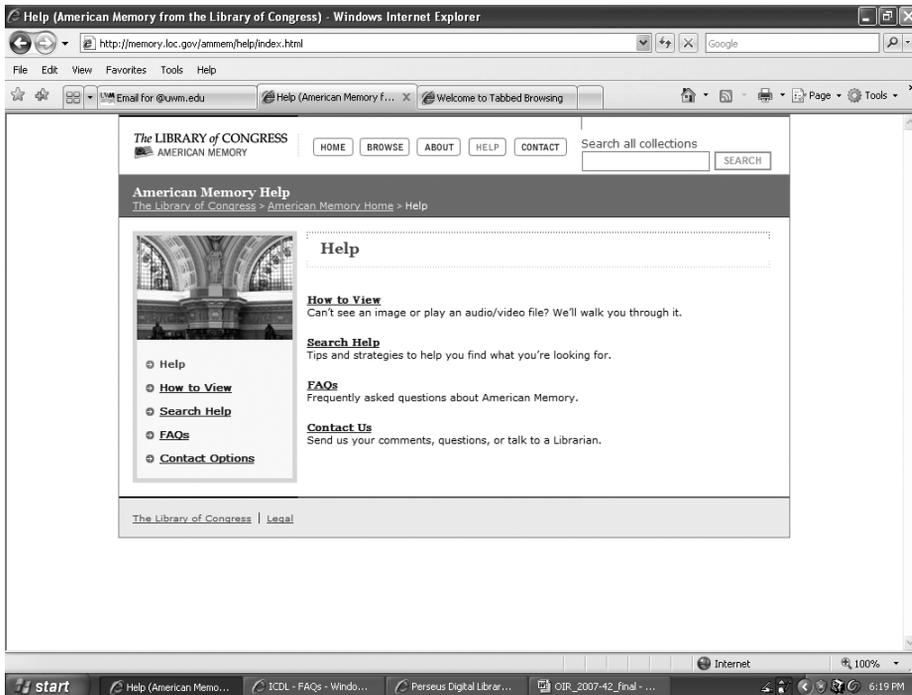| Types	American Memory	New York Public Library Digital Library	International Children's Digital Library	Perseus Digital Library	American Museum of Natural History	MedlinePlus
	How to Order Reproductions/An American Time Capsule					
	Copyright and Other Restrictions/An American Time Capsule					
Explicit	FAQ/general	Help/NYPL Digital Gallery	Help	Help Library		
	Help/general:	Tips for Searching and Browsing	FAQ	FAQ		
	How to View	User's Guide	Search	Help for Online Perseus		
	Search Help	FAQ	Library Help	Information on Perseus Collection		
	FAQs	About	Site Map	General and Contact Information		
	Contact Us	Contact	Contact Us			

Figure 1.
American Memory Help

- collection-related Help;
- navigation Help;
- terminology Help;
- personalised and customised Help; and
- view-and-use-related Help.

These seven categories of Help features were derived from the data of this study.

General Help provides comprehensive information regarding a digital library, its collections, search and browse tips, and other information. Frequently asked questions (FAQs) is an effective approach to present users with answers to the most frequently occurring problems. The majority of FAQs covers questions related to the creation, view, and use of digital collections. It is interesting to note that FAQs is a key component under explicit Help. In four of the five digital libraries that contain explicit Help, FAQs is the main component. Contact Us is another type of general Help. Here, Contact Us features refer to those features that enable users to interact with librarians synchronously or asynchronously rather than just providing a contact e-mail for feedback. For example, in American Memory, users can either ask a librarian or chat with a librarian for their problems. Finally About also offers comprehensive Help; for example, in American Memory, its About includes Mission and History, About the Collection, Technical Information, and FAQs. In About MedlinePLus, the MedlinePlus tour illustrates the overview the collection and how to use or search these materials.

Search-related Help is mainly supported by Advanced Search and Search and Browse tips. Advanced Search provides different fields for users to specify or limit their searches. This helps users who are unable to construct specified or complicated queries. Advanced Search can also be used for searches in specific domains, such as Geographic Information System (GIS) Search in the American Museum of Natural History Digital Library Project, by allowing users to specify layers to display, mode, view, and zoom factor. Search and Browse Tips offer suggestions for users to effectively formulate and reformulate queries and browse information. These tips are generally included in FAQs, and in some of the digital libraries, such as American Memory, the NYPL Digital Gallery, and the International Children's Digital Library, they are presented as a separate element under explicit Help. These features enhance users' system knowledge, information retrieval knowledge, and domain knowledge.

In order to effectively retrieve information, users have to obtain knowledge of the content of the digital collections. Every selected digital library contains collection-related Help. Some of the digital libraries offer the collection information as part of the About, e.g. About in MedlinePlus or Introduction, such as Introduction in the AMNH Digital Library, while others have specific collection descriptions, such as Collection Description in the NYPL digital library, About the Collection in An American Time Capsule of American Memory, etc. These features offer brief information regarding the content and coverage of the digital collections that assist users in selecting appropriate collections for finding useful information.

It is essential for users to be able to easily navigate through each of the digital libraries. Navigation Help is needed in their interactions with digital libraries. A Site Map is a useful tool for users to quickly understand the structure of the interface of a digital library. It normally lists all the major elements of a digital library; moreover, it facilitates users in quickly linking to all the access points of the digital library. The International Children's Digital Library and MedlinePlus offer Site Maps for their users; the only difference is that the Site Map is embedded in its Help as well as appearing as a separate icon in the first digital library, while the Site Map is only a separate icon in the latter one. In addition, the tutorial materials in MedlinePlus also offer detailed instructions about how to navigate the site.

Users do not always have enough domain knowledge of the content and format of the information they are looking for, therefore they need to access terminology Help. Under these circumstances, a Glossary enables users to check for terminologies that they are not familiar with. It is not only a Help feature but a learning tool for users to understand the domain of the collection. One potential problem is that the Glossary is related to a specific collection; therefore, it is only available within that collection. For example, in An American Time Capsule of American Memory, its Glossary helps users understand the definitions of important terms.

Not all users share the same requirements. They need different types of personalised and customised Help. In these selected digital libraries, personalised and customised Help features are identified. In the NYPL Digital Gallery, My Digital allows users to monitor a search history and keep selections of the items they saved. In the AMNH Digital Library, Search History is part of the Advanced Search. In the Perseus Digital Library, Configure Display permits users to customise the way they like the results to be displayed. In addition, the tools available in the Perseus Digital Library enable users with different level of domain, system, and information retrieval knowledge to use them.

View- and use-related help is available not only in general Help, but also in specific Help, labelled How to View, How to Order Reproductions, and Technical Information in American Memory, and User's Guide in the NYPL Digital Library. These Help features illustrate technique requirements and how users can view and use different formats of digital information in the collections. In addition, copyright information and how-to-order digital information is also provided.

Formats of Help features

Table III presents the Help features in the selected digital libraries in different formats. These formats can be classified into texts, images, screenshots, multimedia materials, and interactive formats. In this study, "images" refers to any pictures or illustrations. "Screenshots" refers to actual images of screens derived from a digital library. "Interactive formats" refers to those Help features that allow users to communicate with digital libraries or librarians. Here, images, screenshots, multimedia materials, and interactive formats are considered only if they are used to illustrate information and assist users in understanding different types of knowledge in Help features.

No doubt, texts appear in all the Help features. It is also interesting to note that Help is also presented in tables and hyperlinks for users to easily grasp the essential information and connect different types of information together.

Images are the perfect choice for collection descriptions. One image is better than a thousand words. An image can quickly tell users what a collection is about. Of course, texts are still needed to provide more detailed information about a collection. In the NYPL Digital Library, images and texts are presented in Collection Description. In the AMNH Digital Library, images assist users to understand the collection, the biography, the anthropology, and the historical context related to the digital collection. While screenshots are ideal for search tips, sometimes, images are used to illustrate search tips, such as the basic search examples illustrated in Tips for Searching and Browsing in the NYPL Digital Gallery.

Screenshots are mainly used in search-related Help features to illustrate how users can browse and search effectively, such as Search Help in American Memory and Tips for Searching and Browsing in the NYPL Digital Gallery. The uniqueness of the latter is that it is not just static screenshots; users can actually manipulate their selections. In that way, users can practice their searches within the Help feature. In Help Library of the International Children's Digital Library, screenshots are applied not only in how to search but also how to read books with different types of readers. Screenshots themselves sometimes cannot clearly indicate different features of icons. They can be highlighted and annotated to tell users how to get started and provide an overview of how to use the Perseus Digital Library in its "Help Library". In that sense, they are in the formats of screenshots as well as images.

Multimedia presentations are also employed in digital libraries to make these Help features more dynamic and attractive to users. In this study, multimedia materials are introduced to give users an overview of a digital library or a digital collection. In the American Museum of Natural History Digital Library, a multimedia presentation illustrates the Lang Chapin Congo Expedition. In MedlinePlus, the MedlinePlus tour is a multimedia tutorial of its collections plus how to navigate the site and how to quickly find needed information. The difference between the two is that the AMNL Digital Library one mainly concentrates on the collection and the presentation consisting of the items derived from the collection, while the MedlinePlus one focuses on how to use it, and the presentation is mainly based on the interface of the digital library.

Formats	American Memory	New York Public Library Digital Library	International Children's Digital Library	Perseus Digital Library	American Museum of Natural History	Medline Plus
Text	All Help features	All Help features	All Help features	All Help features	All Help features	All Help features
Images		Collection Description/general About NYPL Digital/general	Read Books: Full books lists Author and illustrator lists Featured Books Read Books Advanced Search	Help Library Help for Online Perseus Information on Perseus Collection FAQ	Introduction Readings	
Screenshots	Help/general: Search Help	Tips for Searching and Browsing/NYPL Digital Gallery Tips for Searching and Browsing/NYPL Digital Gallery	Help Library: Library Help	Help Library: Help for Online Perseus Information on Perseus Collection FAQ		
Multimedia materials					Introduction Multimedia presentation	About MedlinePlus MedlinePlus Tour
Interactive format	Contact/general: Ask a Librarian Chat with a Librarian	Advanced search/NYPL Digital Gallery My Digital/NYPL Digital Gallery: Search History Selections		Tools Configure display	Advanced Search: Advanced Search Advanced Search Guidelines Browse Field Notes Search History Advanced Search: GIS search	About MedlinePlus Training materials

Table III.
Formats of help features

The most outstanding interactive format of Help features in these selected digital libraries is the interaction between users and librarians regarding the use of digital libraries. Synchronous and asynchronous communication channels are the two typical ways for interactions to occur between users and librarians. For example, Chat with a Librarian and Ask a Librarian in American Memory represent the two types of communication, respectively. At the same time, advanced searches in several digital libraries require users to interact with the digital libraries to further specify and limit their searches even though users only interact with a predetermined form. In addition, different types of Tools in the Perseus Digital Library enable users to interact with digital libraries by enabling them to browse, search, and view a variety of collections and texts in different languages. Search histories in the NYPL Digital Library and the AMNH Digital Library provide an opportunity for users to monitor their search process and revisit their previous searches if needed. Ideally, tutorials in digital libraries should be interactive so users can have a hands-on learning experience. However, only MedlinePlus offers training materials for users, and user involvement is limited to selecting "Next" and scrolling down the page as instructed.

Presentation styles of Help features
Four types of presentation styles were identified from the Help features of the selected digital libraries:

(1) descriptive;

(2) guided;

(3) procedural; and

(4) exemplary styles.

Here, descriptive styles are the default ones. They refer to descriptions of how to understand a collection or, a search feature, or how to deal with different problems that users might encounter in using a digital library. Guided styles present users tables or forms to guide them to fill in the blanks or choose from drop-down boxes. Guided styles may also provide quick links for users to directly access information. Procedural styles offer users step-by-step procedures or different ways to achieve a task. Exemplary styles provide users with examples of how to fulfil a task, in particular, how to construct queries for them so they quickly learn how to construct their own queries. Table IV shows presentation styles of the help features.

Descriptive styles in general are applied in presenting information about digital libraries or digital collections. Narrative description of a digital library, a collection, and related information is necessary for users to understand that digital library or collection. Some of the FAQs in digital libraries are also presented in narrative format. Each digital library determines its own content of FAQs. The nature of the FAQs to some extent decides their styles. For example, the International Children's Digital Library's FAQs are more related to general, language, and book contributions instead of search tips. That is perhaps why descriptive style is used. If descriptive styles are applied, they need to be short, because users normally are not willing to spend too much time reading through long paragraphs.

Guided styles are generally employed in advanced searches and some of the search-related Help features. Advanced searches are the typical Help features that guide users to conduct more complicated or specific searches. In the AMNH Congo Expedition, its Advanced Search and GIS Search assist users to effectively specify

Presentation styles	American Memory	New York Public Library	International Children's Digital Library	Perseus	American Museum of Natural History	MedlinePlus
Descriptive	About/general Glossary/An American Time Capsule About the Collection/An American Time Capsule Copyright and Other Restrictions/An American Time Capsule	FAQ/general Collection descriptions/general About NYPL Digital/general Help/NYPL Digital Gallery FAQ	About Library FAQs	Help Library: Information on Perseus Collections Help Library: General and contact information	Readings	
Guided	Contact/general Help: Search Help/general	Advanced Search/NYPL Digital Gallery My Digital/NYPL Digital Gallery: Search History Selections Help/NYPL Digital Gallery: User's Guide	Read Books Books by Country Advanced Search Full books lists Author and illustrator lists Featured books Site Map	Configure Display Tools	Introduction Advanced Search: Advanced Search Advanced Search Guidelines Browse Field Notes Search History GIS Search	About MedlinePlus: MedlinePlus Tour Training Materials Site Map

(continued)

Table IV.
Presentation styles of
help features

Presentation styles	American Memory	New York Public Library	International Children's Digital Library	Perseus	American Museum of Natural History	MedlinePlus
Procedural	FAQ/general Building the Digital Collection/An American Time Capsule	Help: Tips for Searching and Browsing/NYPL Digital Gallery	Help: Library Help	FAQ		FAQ
Exemplary	Help: How to View/General, An American Time Capsule How to Order Reproductions/American Time Capsule	Help: Tips for Searching and Browsing/NYPL Digital Gallery	Help: Library Help	Help Library: Help for Online Perseus Help Library: Help for Online Perseus		

Table IV.

different fields for their searches. Moreover, Search History in the same digital library also offers users opportunities to monitor their search process. Not all advanced searches are same. The Advanced Search in the International Children's Digital Library has it own uniqueness. It presents audience, appearance, content, type, and subject for children to choose in conducting their advanced searches. Children can select what they would like to include in their searches by clicking their choices under each category. Guided styles are correlated to some of the formats such as screenshots, multimedia materials, and interactive formats. For example, In "Search Help" feature of American Memory, screenshots are presented to guide users in understanding how to search. In AMNH Congo Expedition and MedlinePlus, the Introduction and MedlinePlus Tour in multimedia format guide users to understand the collections of these two digital libraries. Finally, Chat with a Librarian is another form of guided help because users get help from librarians in their interaction process.

Procedural styles are frequently applied in FAQs, especially related to questions regarding how to accomplish a task. For example, in the FAQs of American Memory, four steps are listed on the topic of downloading and saving files. How to use Lookup Tools is specified in the FAQs of the Perseus Digital Library. At the same time, procedural styles also include different approaches to accomplishing a task in many of the FAQs; for example, several ways for a user to find his/her disease or condition can be found in the FAQs of MedlinePlus. In the FAQs of the Perseus Digital Library, multiple ways to access the Perseus content are illustrated on a screenshot. Procedural styles are also employed in search and browse tips. One example is offering users three different number types for a number search in Tips for Searching and Browsing of the NYPL Digital Gallery.

Examples are typically used to illustrate search tips. Interestingly, sometimes examples appear in the form of screenshots for better effect. For example, in Tips for Searching and Browsing of the NYPL Digital Gallery, examples of searching tips are presented in screenshots to provide a real search setting for users. However, examples are not limited to search tips, and they are also included in How to View and How to Order Reproductions in An American Time Capsule of American Memory. In the former feature, different formats of items and their corresponding players are listed, while in the latter one, different sizes of prints and their corresponding prices are clearly marked. Examples of the same style are also applied to the User's Guide regarding Obtaining Reproductions and Licences in the NYPL Digital Gallery.

In order to effectively assist users, some Help features integrate procedural and exemplary styles together. In the International Children's Digital Library, its Library Help not only offers users step-by-step instruction, but also uses an example to illustrate these steps. For example, the Help uses an example of looking for fairy tales to present five steps for an advanced search. The Perseus Digital Library presents illustrated sample searches for both basic and advanced searches in its Help for Online Perseus. In these sample searches, search examples are illustrated via actual screenshots with important elements highlighted in different colours. That helps users effectively learn how to conduct actual basic searches as well as advanced ones. More help features with more dynamic presentation styles are needed in digital libraries.

Problems with existing Help features
In the process of analysing the types, formats, and presentation styles of Help features in the selected digital libraries, six types of problems emerged from the data:

(1) lack of standards;

(2) trade-off between using explicit Help and implicit Help;

(3) tradeoff between using general Help versus specific Help;

(4) lack of interactive Help features;

(5) lack of dynamic presentation styles; and

(6) lack of Help features for advanced users and users who do not understand English.

First, Efthimiadis (1990) recognised that there were a variety of forms of help in online systems. The same applies to Help features in digital libraries: namely, there has been a lack of standards in designing Help features for digital libraries. Standards of Help features need to be considered at two levels: the first is the name of the Help features, and the second is the location of these features. On the first level, it is a challenge for users, in particular novice users, to identify the Help features that they need. They are not familiar with different terminologies for Help because many of the Help features are implicit instead of explicit; they include About, Introduction, Read Books, Tools, FAQs, Site Map, Advanced Search, and My Digital. These Help features could be related to general Help, search related Help, collection related Help, navigation Help, terminology Help, personalised and customised Help, and view-and-use-related Help. Novice users normally do not even have knowledge of the main components and the structure of digital libraries and their related Help. Moreover, on the second level, the Help features are located at different locations depending on the digital libraries. Some of them appear in the tool bar at top of the page, some of them might be embedded in the middle of the page, and others might require users to scroll down the bottom of the page to find them.

Second, users can get assistance from both explicit Help and implicit Help. However, not every digital library has explicit Help, and users do not know what types of implicit Help are available. It is up to users to dig though a digital library to identify all the potential implicit Helps available to them. Thus, it appears to be a good idea to include major implicit Help under an explicit Help, as shown in four of the selected digital libraries. However, users do not trust explicit Help based on their past experience. One of the reasons that users do not use Help features, as identified by Dworman and Rosenbaum (2004), is that they like to use implicit Help more than explicit Help. It is also important to offer implicit Help by obvious names and in obvious locations so that users can easily identify them. Multiple ways to access the same information is essential for users. Unfortunately, the names of these Help features are not always consistent when they are shown in different locations. For example, in the tool bar at top of the page of American Memory, it says Contact, while under Help it states Contact Us. At the same time, in the left panel, it refers to Contact Options.

Third, one uniqueness of a digital library is that it contains multiple collections. That poses a challenge for users to learn how and when to identify general Help and specific Help. For example, the general Help section, non-specific to particular collections, is easily accessible from the main page of American Memory. However, the home page of a single collection (An American Time Capsule) within American Memory does not contain general Help in the main page of American Memory. On a large monitor in high resolution, a user can see the bottom of the page with the Help section, which consists of the Glossary and other implicit Help pages specific to this collection. On a smaller monitor and with lower resolution, the user has to scroll down to see whether there is Help available.

It would be more intuitive to include a Help link – even if just to an anchor at the bottom of the page – near the top of the page, or with the other links in the navigation bar. Under Working with the Collection are links that lead back to the general Help section. These do provide an alternate route of access to the general Help section, but it would be better if users could always access general Help when they access individual Help. To make things worse, these collections contain different types of Help features because of the nature of collection or the preferences of different Help designers. If users have to search or browse multiple collections, they need to learn different Help features for different collections as well as the general one.

Fourth, one interesting finding of this study is that the text is no longer the only format available for Help features. Images, screenshots, multimedia materials, and, especially, interactive formats start to appear in the Help features of digital libraries. The only problem is there are not enough interactive Help features. Users have their own, individual problems in using digital libraries – they are limited by their own knowledge structure and their search problems. Thus, it is difficult to design a one-size-fits-all Help feature. Interactive Help features enable users to interact with digital libraries or librarians to effectively solve their problems. Research has shown that users prefer interactive help, and the lack of interactivity is a problem with many current Help systems (Cool and Xie, 2004; Xie and Cool, 2006). However, the existing interactive Help features communicate with users through a predetermined form or procedures, such as Advanced Search in the NYPL Digital Gallery, Tools in the Perseus Digital Library, and Training Materials in About MedlinePlus.

For the time being, Chatting with a Librarian is the only feature that allow users to interact directly with a librarian online, but that can only be done at a certain time, and it requires time and effort. Context-sensitive Help is the desirable approach, as suggested by Hill *et al.* (2000) based on user requirements, for offering users opportunities to interact with IR systems when they need help, but context-sensitive Help has yet to be implemented in digital libraries. In addition, visualisation tools for searching, navigation, and browsing digital libraries are a new direction for Help design (Wan, 2006).

Fifth, traditionally Help is presented in descriptive style. That is one of the main reasons that users do not like to use Help, because they do not want to spend time reading though long paragraphs of texts. Empirical studies demonstrate that users prefer examples and step-by-step instructions (Xie and Cool, 2006). The least effort principle applies to users' Help uses. It is a crucial issue in terms of how to present the content of Help in assisting users to effectively understand the Help. In the selected digital libraries studied here, descriptive and guided styles still account for the majority of Help features. Help features need to guide users, but, more importantly, they need to effectively lead users to solve their problems. Converting descriptive and some of the guided Help to procedural and exemplary Help, and, more important, integrating guided, procedural, and exemplary styles, offers a valuable approach for Help design.

Sixth, current Help features of digital libraries do not consider the needs of different levels of users, and users who cannot understand English. While novice users need help related to how to get started, advanced users need help in dealing with more complicated or specific issues. The existing Help features do not differentiate among different levels of help. In general, these Help features are designed for novice users, but novice users do not know where to start. They also lack the knowledge to identify different types of implicit Help features. Since majority of the Help features are

designed for novice users, expert users do not have adequate support for their problems. The Tools of the Perseus Library provide expert users different types of tools for them to search for different types of information. The only problem with these tools is that it takes time to access them, which might hinder their use. More tools and related Help features are needed to satisfy the needs of expert users. At the same time, not all users can understand English. Very little research has been done in exploring the differences between the Help use of novice and expert users, and further research is needed. At the same time, while we have digital libraries containing international collections, such as International Children's Digital Library, these digital libraries need to offer Help in multiple languages.

Conclusion

Help features are not separate entities of digital libraries. To some extent, the overall interface design is the most important Help feature itself. The more intuitive an interface, the less help a user needs. An intuitive design is self-explanatory, which can reduce problems that users might encounter in their interaction with digital libraries.

That is why in this study, Help features refers to any features that assist users to effectively use digital libraries except general search and browse functions.

This study provides insightful information regarding the current status of the Help features available in existing digital libraries. It is interesting to note that there are a variety of implicit Help features in digital libraries, but the problem is how to label them, standardise them, and organise them, and more important, how to introduce them to novice users. As it is impossible to design a one-size-fits-all Help for different levels of users, and for users with different types of tasks, problems, and knowledge structure, it is essential to design interactive Help features that allow users to engage in communication with digital libraries or librarians via digital libraries.

In order to design Help features that are really helpful to users, further research needs to extend studies to what types of help-seeking situations users generally encounter and the corresponding support they need. It is also important for further research to involve real users with real problems at real settings in their information-searching process when they interact with a variety of IR systems.

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Further reading

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