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Topics and Features of Academic Medical Library Tutorials

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ABSTRACT. In a 2007 study, librarians at the University of South Carolina School of Medicine Library examined freely available online tutorials on medical library Web sites. The team identified tutorial topics, determined common design features, and assessed elements of active learning in library-created tutorials; the team also generated a list of third-party tutorials to which medical libraries link. This article updates the earlier study, describing changes and trends in tutorial content and design on medical libraries' Web sites; the project team plans to continue to track trends in tutorial development by repeating this study annually.

KEYWORDS. Tutorial, academic medical libraries, Web sites, interactivity, screencasting software, screen recording software, user education, computer-assisted instruction

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INTRODUCTION

Medical librarians are developing online tutorials in order to provide point-of-need instruction to patrons, as well as to replace or enhance traditional classroom-based training sessions. Some libraries have outsourced the technical design to computer services groups, while other libraries tackle this time-consuming task in-house. Due to the development of screen recording software, also known as demonstration authoring or screencasting software, librarians can create interactive and engaging online tutorials without knowing HTML or Flash.

The goal of this study was to assess the current status of online tutorials available on medical library Web sites. The project team, which consisted of five medical librarians, was not necessarily interested in suggesting tutorial-creation best practices or in trying to encourage medical libraries to create more online tutorials. The reviewers simply wanted to survey what medical libraries are currently doing in the way of freely available online instruction. The project team collected data regarding the characteristics of online tutorials created by academic medical libraries, such as their topics and the presence of interactive elements. The team also generated a list of the most popular linked-to third-party tutorials. The data collected was compared to the Anderson et al. study[1] to identify changes and trends in tutorial content and design.

METHODS

The project team used the list of the Association of American Medical Colleges' member schools[2] in the United States to identify academic medical libraries. From this list, the team

identified 126 academic medical library Web sites, which served as the review subjects. Each team member was assigned a list of medical library Web sites, ranging from 23 to 25 per person. While visiting each Web site, the team member would browse the site to identify tutorials that were created by the library, and when a Web site search feature was available, the team member would search the library's site for "tutorial" or "tutorials." Each team member also contacted the library via e-mail to determine whether all freely available tutorials were identified.

The team used the Tutorial Questions list (see Figure 1) developed by Anderson et al.[1] to guide their data collection process. For each library, the team collected information on the tutorials that they link to (question 1) and the ones that they create (question 2). If the library published their own tutorials, the team member viewed each one and answered specific questions about their design and features (questions 3-8). If a library identified the content as being a "tutorial," the team noted the item and answered the questions (questions 2b - 8) for it, even when it resembled a quick guide.

[PLACE FIGURE 1 HERE]

Legend: FIGURE 1. Tutorial Questions

In order for a tutorial to be considered interactive (question 4), it had to meet at least one of the following criteria: include a search simulation, require the user to complete exercises, offer branching options (such as places to click for additional information), or suggest that the user open up the database or software product in a new window and follow the steps. Although quizzes or review questions are examples of interactivity, such design features were counted in a

separate question (question 5). Data collection took place during February through March 2008. The data were compiled in an Excel spreadsheet for analysis.

RESULTS

Third-Party Tutorial Links

Out of 126 academic medical libraries, 100 Web sites (79%) included links to tutorials that were created outside of the library, such as by a vendor or another library (see Table 1). The most commonly linked-to tutorial was the National Library of Medicine's PubMed tutorial with 72 of the 126 libraries (57%) linking to it (see Table 2). Thirty-nine libraries linked to Thomson Scientific's Web of Science tutorial. Thirty-seven libraries linked to individual PubMed Quick Tours or the PubMed Online Training Web site,[3] which includes all of the PubMed Quick Tours.

[PLACE TABLE 1 HERE]

Legend: TABLE 1. Tutorial Linking

[PLACE TABLE 2 HERE]

Legend: TABLE 2. Third Party Tutorials: 2008 Totals

The most commonly linked-to tutorial created by medical librarians was the Duke University Medical Center Library and the Health Sciences Library at the University of North Carolina at Chapel Hill's "Introduction to Evidence Based Medicine" tutorial (29 of the 126

libraries linked to it). Citation management software tutorials were popular, with 19 libraries linking to the EndNote tutorial and 18 libraries linking to RefWorks's. The CINAHL tutorial created by the University of Florida was another commonly linked to tutorial, with 11 libraries having a link.

Publishing Tutorials

Sixty-six percent of academic medical libraries in the United States (83/126) created their own tutorials (see Table 3). The team identified and viewed 684 tutorials that were created by these libraries. EndNote was the most predominant topic with 65 (10%) tutorials (see Table 4). Other popular topics for tutorials included PubMed (43), Ovid MEDLINE (37), RefWorks (32), and PowerPoint (31). Evidence-based medicine (34), using the library catalog (32), database searching (31), and accessing e-journals (27) were common topics that contained information unique to individual libraries.

[PLACE TABLE 3 HERE]

Legend: TABLE 3. Creating Tutorials

[PLACE TABLE 4 HERE]

Legend: TABLE 4. Topics of Tutorials Created by Libraries

Software

A variety of software was used to create tutorials, such as screen recording software, multimedia programs, word processing programs, and presentation programs (see Table 5). HTML editors were the most commonly utilized software to design tutorials (178). Three hundred fourteen tutorials (46%) were created via screen recording software, such as Camtasia (142), Captivate (85), Robodemo (13), and Qarbon's ViewletBuilder (74). Fourteen percent (93) of the tutorials were in the form of PDF documents. Forty-three tutorials were designed using Flash, and forty were assembled using PowerPoint. Some tutorials were created using more than one type of software, such as HTML editors and PowerPoint. In these cases, each software product was counted. Therefore, the total number for the software types (737) was greater than 684 individual tutorials identified.

[PLACE TABLE 5 HERE]

Legend: TABLE 5. Software Used to Create Tutorials

Design Elements of Tutorials

The majority of tutorials did not require the user to interact with them. Eleven percent of the tutorials (76/684) included a search simulation or other interactive features that required responses from the user (see Table 6). Only 8% (53/684) included a quiz or review questions. Consequently, users are passive during most of the identified tutorials, simply viewing a demonstration or reading content.

Sixty-two percent (427/684) of the tutorials provided an avenue for the patron to communicate with the instructor or a reference librarian (see Table 6). A variety of feedback

methods was used in the tutorials, such as an online survey, the instructor's contact information, or an "Ask-a-Librarian" link.

[PLACE TABLE 6 HERE]

Legend: TABLE 6. Design Elements of Tutorials

Eighty-three percent (567/684) of the tutorials did not have a specific audience; instead, they were designed for any patron using the library (see Table 7). Forty-five (7%) were geared towards faculty, students, and staff as a whole. Nursing students were the most frequently used type of student audience (17/684). The team also identified 20 created for AHEC (Area Health Education Centers) members and ten tailored to researchers.

[PLACE TABLE 7 HERE]

Legend: TABLE 7. Target Audiences

The last question from the Tutorial Questions list pertains to printable contents. The team counted tutorials that were formatted to be printed, such as Word or PDF documents, or ones that had accompanying handouts. The reviewers did not count tutorials as having printable content if users could only print one screen at a time, such as with a Flash-based tutorial. Out of the 684 tutorials, 311 (45%) had printable contents (see Table 6).

DISCUSSION

The data collection phase of this study was conducted one year after the data collection phase of the Anderson et al. study,[1] which occurred during January and February 2007. One of the original team members was unable to participate in this study, and she was replaced with two new team members. Although the team strived for consistency in data collection and improved the methodology from the previous year, some level of collector error may have occurred.

How Much Has Changed?

Compared to 2007 data,[1] the incidence of libraries linking to third-party tutorials in 2008 increased by 16% (see Table 1). The National Library of Medicine's PubMed tutorial is still the most popular, and Thomson Scientific's Web of Science remains the second most popular (see Table 2). Two new additions to the five most popular third-party tutorials include the EndNote Tutorial and links to any or all of the PubMed Quick Tours.

There was an increase in the number of libraries creating their own tutorials, as well as a drastic increase in the number of individual ones available. Eighty-three libraries designed tutorials this year, while 73 published some last year (see Table 3). In one year, the number of tutorials created by libraries more than doubled (from 274 to 684).

While libraries commonly link to vendor tutorials, they do not solely rely on them to provide database instruction. One reason may be that the librarians wish to add content unique to their library, such as accessing full text through their e-journal management system. Other librarians may feel that the quality of the vendor tutorials is not a good replacement for their own.

In addition to creating tutorials for vendor database products, librarians addressed topics unique to their library, such as searching the catalog or accessing e-journals. Citation management software was a more prevalent topic this year. EndNote was the most popular topic (65) compared to EBM in 2007 (22). The team identified 51 additional EndNote tutorials in 2008 (see Table 4). The high number may be due to the fact that librarians frequently created multiple, short modules for EndNote rather than contained, comprehensive tutorials. If patrons simply need instruction on one particular skill, they can quickly access the module that covers the material. The same module trend existed for RefWorks tutorials, which increased from six to 32.

Not surprisingly, searching MEDLINE remained a popular topic. In 2007, PubMed and Ovid MEDLINE tutorials were tied at 15 each. In 2008, the team identified 43 PubMed tutorials and 37 for Ovid MEDLINE. The decrease in the number of Ovid tutorials may be due to the OvidSP interface changes that took place in early February. The team members were surprised to find libraries linking to Ovid Gateway tutorials in March.

Possible upcoming trends in topic areas for tutorial development include Web 2.0 technologies and Google. No Google tutorials were noted in 2007. In 2008, there were nine covering some aspect of Google, usually Google Scholar. Last year, there was only one RSS tutorial. This year, the team identified seven RSS tutorials. The five tutorials placed in the category of "Other Web 2.0 Tools" covered wikis, blogs, tagging, and other technologies.

Although HTML editors remained the most commonly used software for creating tutorials this year, more are being published with screen recording software than the previous year. There were 314 created with screen recording software compared to 42 last year (see Table 5). The team identified 121 new Camtasia tutorials alone. There were 70 created with Captivate

and 72 with ViewletBuilder. More libraries may be purchasing this software. Librarians who were already using this software last year are likely more familiar with it and consequently producing greater numbers of tutorials.

Librarians continued to design most of their tutorials for any patron to use (90% in last year's survey compared to 80% in this year's survey). Additionally, 20 new ones were created for AHEC members; in the previous study, this audience was not identified (see Table 6).

Though the incidence of tutorials requiring a search simulation only rose by 4% (see Table 6), the actual number with search simulations increased by 400% from 19 in 2007 to 76 in 2008. The University of Florida's *CINAHL* tutorial[5] and the Lamar Soutter Library's *Evidence-Based Medicine Tutorials*[6] are examples that include search simulations. Some encourage active learning by suggesting that the user open the database in a new window and complete each step. The Drexel University Health Sciences Libraries' *Introduction to PubMed*[7] is in a PDF format. The users are encouraged to print them and follow the steps in PubMed as they read the tutorial.

Surprisingly, there was a 3% decrease in the incidence of those with review questions or quizzes (see Table 6), though the number of tutorials with review questions rose from 27 to 53, an increase of almost 200%. The University of North Carolina Health Sciences Library's *Finding Health Information,*[4] for example, includes a quiz. As the users answer each question, they are provided immediate feedback in the form of a pop-up window.

The most frequently incorporated design features, compared to the 2007 data, included offering a way for the patron to communicate with the library and providing printable contents. There was a 38% increase in the incidence of tutorials, including a survey or contact information for a librarian (see Table 6). The *Finding Drug Information* tutorial[8] created by the University of Washington Health Sciences Library includes an online survey at the end. The Virginia

Commonwealth University School of Medicine Tompkins-McCaw Library for the Health Sciences' *Setting up PubMed RSS Feeds in Mozilla ThunderBird*,[9] for example, has a "share questions or comments about this tutorial link" at the end, which takes users to an online ask a librarian e-mail form.

The incidence of tutorials that included handouts or some useful form of printable content increased by 19% (see Table 6). The University of Florida's *CINAHL* tutorial[5] provides content in a variety of formats, including Flash, Word, and PDF. While this characteristic was not commonly discussed in the literature, many patrons appreciate having a printable tip sheet. Handouts can enhance tutorials that do not include a search simulation. After the users watch a demonstration of how to search the catalog, they can print out the handout to refer to while they attempt their own search.

While libraries are creating more tutorials, they are not typically including elements of interactivity in them. Librarians frequently use screen recording software to record audio with them. However, they do not take advantage of this software to add captions, let alone the quizzing, click boxes, and other features that make them interactive. In one published example, the instructor stops talking to answer a phone call during the recording, then the tutorial abruptly ends. If librarians do not take the time to edit major flaws from their tutorials, do they expect patrons to take the time to view them?

CONCLUSION

Studies have shown that tutorials can be effective replacements for in-person instruction.[10] But does interactivity enhance learning? Do quizzes actually improve recall?

Additional research is needed to determine whether particular design features may improve learning. In order to continue to track trends in tutorial development, the project team plans to repeat this study on a yearly basis.

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FIGURE 1. Tutorial Questions

1. a).Does the library link to outside tutorials (created by vendors or other libraries?)
Yes/No

1. b)What are the topics or databases covered?
List topic and producer

2. a) Does the library create freely available online tutorials?
Yes/No

2. b) What topics or databases are the focus of the tutorials?
List the title and URL of the tutorial.

3. What software was used to create the tutorial?
List

4. Is the tutorial interactive?
Yes/No

5. Does the tutorial contain a quiz or review questions?
Yes/No

6. Does the tutorial offer a way of providing feedback to the Library? (Is there an online survey or an email address for a librarian?)
Yes/No

7. Who are the target audiences for the tutorials?
List

8. Are there any printable contents related to the tutorial? (Is there a handout? Is the tutorial a PDF?)
Yes/No

TABLE 1. Tutorial Linking

Does the library link to outside tutorials?

		Yes	No	Number of Libraries
2007	Number	78	46	124
	Percentage	63	37	
2008	Number	100	26	126
	Percentage	79	21	

TABLE 2. Third Party Tutorials: 2008 Totals

Topic	Designer	Number of Libraries Linking to Item
PubMed	National Library of Medicine	72
Web of Science	Thomson Scientific	39
PubMed Quick Tours (any)	National Library of Medicine	37
EBM	Duke University & University of North Carolina at Chapel Hill	29
EndNote	EndNote	19
RefWorks	RefWorks	18
CINAHL Basic Searching	EBSCO	15
BLAST	National Center for Biotechology Information	12
UpToDate	UpToDate	12
CINAHL	University of Florida	11
CINAHL (Advanced)	EBSCO	11
Ovid MEDLINE	Duke University	11
Journal Citation Reports	Thomson Scientific	10
MICROMEDEX	MICROMEDEX	10

TABLE 3. Creating Tutorials

Does the library create freely available online tutorials?

		Yes	No	N= Number of Libraries
2007	Number	73	51	124
	Percentage	59	41	
2008	Number	83	43	126
	Percentage	66	34	

TABLE 4. Topics of Tutorials Created by Libraries

Topic	Number
EndNote	65
PubMed	43
Ovid MEDLINE	37
EBM	34
RefWorks	32
Library Catalog	32
Database Searching	31
PowerPoint	31
CINAHL	29
E-journals	27
Photoshop	13
Evaluating Health Information	11
ILL	10
Proxy Server	10
Google	9
Library Orientation	8
Excel	8
Groupwise	8
Web of Science	8
Dreamweaver	7
RSS feeds	7
EBSCO	6
InfoPOEMS/InfoRetriever	6
Reference Manager	6
Citing	6
Copyright	5
DynaMed	5
PDAs	5
Other Web 2.0 Tools	5

TABLE 5. Software Used to Create Tutorials

Software	Number (N = 737 *)
HTML Editors	178
TechSmith Camtasia	142
Adobe Acrobat PDF	93
Adobe Captivate	85
Qarbon ViewletBuilder	74
Adobe Flash	43
Microsoft PowerPoint	40
Windows Media File	19
Anystream Apreso	18
Adobe Robodemo	13
RealPlayer	10
Jing	9
Podcast	6
Apple QuickTime	3
Wiki	3
Microsoft Word	1

* Some tutorials were created using more than one type of software. In these cases, each software product was counted, so the total number was 737 instead of 684.

TABLE 6. Design Elements of Tutorials

Question	Year		Yes	No	Number of Tutorials
Search Simulation	2007	Number	19	255	274
	2007	Percentage	7	93	
	2008	Number	76	608	684
	2008	Percentage	11	88	
Review Questions	2007	Number	27	247	274
	2007	Percentage	10	90	
	2008	Number	53	631	684
	2008	Percentage	8	92	
Feedback/Survey	2007	Number	66	208	274
	2007	Percentage	24	76	
	2008	Number	427	257	684
	2008	Percentage	62	38	
Printable Contents	2007	Number	72	202	274
	2007	Percentage	26	74	
	2008	Number	311	373	684
	2008	Percentage	45	55	

TABLE 7. Target Audiences

Group	Number (N = 684)
Any Patron	567
Faculty, staff, and students	45
Members of Area Health Education Centers (AHEC)	20
Nursing students	17
Researchers	10
Medical students	6
Students (not specified)	5
Public Health faculty, researchers, and students	4
Educators and students	3
Physicians and medical students	2
Faculty	2
Health Care Practitioners	1
Nurse Anesthesia Students	1
Optometry Students	1