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Kelly Robinson

Embry-Riddle Aeronautical University, robinsk2@erau.edu

Anne Marie Casey

Embry-Riddle Aeronautical University, caseya3@erau.edu

Kathleen Citro

Embry-Riddle Aeronautical University, citrok@erau.edu

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He asked me what!? - Using Shared Online Accounts as Training Tools for Distance Learning Librarians

Kelly Robinson

Anne Marie Casey

Kathleen Citro

Embry-Riddle Aeronautical University

Abstract

Introduction

Training for new distance learning librarians and ongoing professional development for veteran librarians is a perennial topic of discussion. Distance librarians may have sole or primary responsibility for the off-campus student and faculty community at their institutions; they may work entirely in a virtual environment while their colleagues provide service to users in person; or they may be assigned to a particular college or program with unique service needs. Despite a considerable amount of information in the professional literature, courses, and webinars, it can be difficult for distance librarians to find training that addresses the specific needs of their unique student populations.

Regardless of the work environment, one general constant is that distance learning librarians provide some, if not all, of their services virtually (e.g., email, chat, text, via the Learning Management System (LMS), etc.). This enables them to track and archive reference questions and answers in a far more systematic way than has been possible in more traditional face-to-face reference service points. In addition, these modalities are often shared so that the student requesting the information submits to a generic account and receives information back from the library rather than an individual, who will not always be available. A reference archive of this type could provide a method of training that may be helpful for distance learning librarians, or indeed, anyone providing reference assistance. The review and discussion of reference questions answered through shared online resources, which can vary from a basic email account to a vendor product such as LibAnswers by Springshare, can help librarians learn about new trends in questions and the sources needed to respond effectively. By leveraging resources such as these knowledge-bases, distance librarians may quickly and inexpensively benefit from specialized peer training.

There is very little in the literature of library and information science on using shared online reference accounts as sources of ongoing professional development. This study proposes to address that by exploring the idea of shared online accounts as training tools, specifically, is this a common practice among distance learning librarians, and, if so, does it provide the learning opportunities librarians need. The results of this study could benefit libraries by providing a framework for training developed from programs that are successful in this approach. On the

other hand, if few libraries use this method, the results of this research may provide a springboard for implementing such training more broadly.

Literature Review

In a 2009 survey conducted among librarians who identified as having some distance learning responsibilities (Fritts & Casey, 2010), 91.5 percent reported that they did not receive training in any aspect of distance learning librarianship in their graduate degree programs. In addition, the most common response to an open-ended question about the type of on-the-job-training they received was *none*. However, “The respondents ... consistently emphasized the need for current awareness and ongoing training and development activities for distance librarians” (Fritts & Casey, p. 623).

Of those who had received some training, 68.8 percent said that it came from conferences and professional associations and over 80 percent mentioned workshops and webinars as the most desired format of external training (Fritts & Casey, 2010). Cassner and Adams refer to this study in the introduction to their compilation of conferences, associations, training opportunities, and professional connections related to distance learning librarianship. Building on the findings of the 2009 survey, they suggest many avenues of acquiring new skills through associations and organizations for professionals who may receive little, if any, formal training in their own institutions (Cassner & Adams, 2012).

In the responses from the 2009 survey to open-ended questions on both how the distance learning librarians received on-the-job-training and the ways in which they would like to receive it, mentoring was suggested as a beneficial way to learn (Fritts & Casey, 2010). This process is a very common training method in reference librarianship. “Library schools do not teach everything individuals need to know to become a good librarian... Mentoring ... librarians in the workplace is a way to enable individuals to gain valuable knowledge...” (Lee, 2009, p. 31). Mentoring can help a new librarian learn the job more quickly and feel a part of the team early on. In fact, at Regent University Library, new hires, who participated in an orientation and mentoring program in 2006-2007, agreed that the amount of training was what they needed and “the most conclusive result was the fact that the librarians felt supported in the job” (Lee, p. 35).

Peer mentoring is a common type of on-the-job-training for librarians, especially those in public services work. Reference librarians often work at a service point together and can assist each other to learn more about the best resources to answer complicated or unusual information requests. This type of peer mentoring becomes more difficult in a distance learning situation where librarians are generally responding to questions at a virtual service point and so are often not aware of the questions their colleagues are answering. However, the Frederick L. Ehrmann Medical Library at New York University (NYU) developed a method of peer training that proved very effective for librarians who shared an email account and responsibility for providing reference assistance (Vieira & Dunn, 2005). All public services librarians were copied on responses to email requests and required to read them. In surveys of the librarians conducted in 2004, the response to this peer training method was positive. One librarian responded, “Because expertise in various areas differs among searchers, I appreciate and learn from other searches” (Vieira & Dunn, p. 71).

Sharing the answers to questions among reference librarians as a way to learn from peers, like the NYU approach, probably dates back to the earliest libraries and has been documented since the late 19th century (Bejune & Morris, 2010). From the reference notebook to the ready reference card file, librarians have learned their craft from each other informally when they have had the opportunity to read about common or complicated questions. As new technologies were introduced, librarians have migrated their notebooks and files to the electronic world. Bejune and Morris chronicle a variety of these methods used over the years at the Purdue University Libraries, including capturing chat transcripts, building FAQs and developing a virtual notebook. All of these were done to establish a knowledge base librarians could refer to in order to learn new sources and techniques.

In a survey of distance learning librarians on their use of a knowledge bases in reference transactions conducted in 2011, 56 percent of the respondents reported that they built the information repositories from local reference transactions. In addition, 50 percent of those who answered the survey said that they developed these knowledge bases as a resource for librarians to have access to the information exchanged in reference transactions (Casey, 2012). So, in effect, the majority of distance learning librarians who participated in the survey were developing a knowledge base for informal learning from virtual transactions. Furthermore the use of a knowledge base developed as a resource for reference librarians providing service to a virtual community is described as essential for the Florida Ask a Librarian Reference Consortium, where practitioners learned about the specifics of local libraries to provide better service to users in the local communities (Bishop, Sachs-Silveira, & Avet, 2011).

From the use of a knowledge base as a resource for reference librarians, it is a small step to begin using it as a training tool. “With chat logs, every single reference interview can be captured in its entirety for later examination, without any extra steps needing to be taken. This creates the opportunity for a whole new type of reference training” (Ward, 2003, p. 46). Ward describes a training program for graduate assistants on the reference desk of a university library in which they were required to read the transcripts of virtual reference transactions to develop a sense for proper reference interview techniques as specified in the Reference and User Services Association (RUSA) behavioral guidelines. Based on a post-assessment survey, participants showed improvement in the skills they learned through studying the reference transcripts in the knowledge base.

Research Design and Methodology

The investigators employed a mixed methods approach for this study, in which quantitative and qualitative data were collected. The quantitative information was derived from a survey the investigators administered to academic librarians through electronic lists and Facebook. The answers to open-ended survey questions, follow-up personal interviews and a case study comprised the qualitative portion. This study was approved by the Embry-Riddle Aeronautical University Institutional Review Board for the Use of Human Subjects.

The population consisted of librarians who subscribe to electronic lists primarily available to members of the Association of College and Research Libraries (ACRL) or the

Florida Association of College and Research Libraries (FACRL). Between August 28 and September 2, 2015, the investigators sent an invitation to participate in the survey to librarians subscribed to:

- DLS-L, the listserv for the Distance Learning Section of the Association of College and Research Libraries (ACRL),
- CJC-L, the listserv of the Community and Junior College Libraries Section of ACRL,
- ULS-L, the listserv of the University Libraries Section of ACRL,
- Collib-L, the listserv of the College Libraries Section of ACRL,
- NMRT-L, the listserv of the New Members Round Table of the American Library Association,
- FACRL-L, the listserv of the Florida Association of College and Research Libraries, and
- Offcamp, an independent listserv dedicated to distance learning library issues.

In addition, they posted an invitation on the Facebook wall of the Distance Library Section. Since many librarians subscribe to most if not all of these lists and may also follow the Facebook page, it is impossible to determine the number of people who received the invitation.

The authors developed a survey designed to explore the use of a knowledge base generated from local virtual reference transactions as a training tool. They tested the questions with research librarians and made changes based on their input to improve the survey. They included open-ended questions designed to capture other ideas and opinions about the use of a knowledge base as a training tool.

One of the survey questions asked those willing to participate in a personal interview to indicate this by supplying contact information. From the list of those who agreed to participate in an interview, the investigators randomly selected five names using Microsoft Excel's RAND function. Using this function, a random number was generated for each name, and the five names with the smallest associated denominations were selected. They arranged times with each of these for a 30-minute telephone call in October, 2015. The investigators began each of the interviews with a list of prepared questions (see Appendix B) generated from responses to the open-ended questions on the survey, which explored librarians' attitudes toward and experience with knowledge bases in reference work. The investigators probed further with questions that were specific to the conversations in each of the interviews. They recorded the conversations with the permission of the interviewees and took notes.

The Hunt Library at Embry-Riddle Aeronautical University (ERAU) served as the location for the case study. The Research and Worldwide Library Services department of the Hunt Library consists of 11 research librarians who provide reference and research assistance to 5,200 students on the Daytona Beach residential campus as well as to 25,000 students enrolled in over 150 distance learning centers or in online courses through the ERAU Worldwide Campus. The librarians work as a team to support all students and share time at in-person and email research points.

Findings

Survey

The survey instrument was designed to quantitatively measure librarian participation in distance reference services and associated training, including training using a shared online knowledge base. Within the survey instrument, demographic variables were chosen to reveal information about the participants and their role in library distance services (Table 1). 139 participants began the survey. Of those, a preponderance ($n=133$) reported employment at an academic library, with 57 percent of these participants working at a Doctoral-granting institution. Over half of participants ($n=76$) work in a Reference/Instruction department, while 19 percent described working in a department not listed in the survey. Open-ended responses were coded using an open-coding method to determine that 6 percent ($n=8$) work in a dedicated distance services department. As is the case with convenience samples, survey participants are not representative of the entire population of librarians, limiting the research findings in scope.

Table 1
Demographics of Survey Participants

Responses	Response Percent	Response Total
Q2: Library type ($n=138$)		
Academic	96.4%	133
Public	0.7%	1
School	0.0%	0
Special	0.7%	1
Other (please specify)	2.2%	3
Q3: What is the highest level of degree offered by your institution? ($n=133$)		
Doctoral	57.9%	77
Graduate	15.8%	21
Baccalaureate	6.0%	8
Associate	20.3%	27
Trade or technical certification	0.0%	0
Q4: What is your institution's FTE (full-time equivalent) student enrollment? ($n=133$)		
1-1000	3.8%	5
1,001-2,999	18.0%	24
3,000-9,999	35.3%	47
10,000-19,999	18.8%	25
Over 20,000	24.1%	32
Q5: Your Library Department. ($n=134$)		
Reference/Instruction	56.7%	76
Acquisitions	1.5%	2
Electronic Services	3.7%	5
Technical Services	3.7%	5

Systems	0.0%	0
Administration	14.9%	20
Other (please specify)	19.4%	26

Q6: How do you describe your primary role at your library? (η =135)

Paraprofessional	0.0%	0
Part-time Librarian	5.2%	7
Full-time Librarian	72.6%	98
Administrator	5.2%	7
Manager/Director	16.3%	22
Other (please specify)	0.7%	1

Q7: Number of Employees at your primary work location. (η =135)

1	2.2%	3
2-10	27.4%	37
11-50	47.4%	64
More than 50	23.0%	31

The next set of survey questions were selected to measure participant responsibilities in the provision of distance reference services. 92 percent of participants (η=133) work in libraries that provide virtual reference services for distance learning students, with 69 percent (η=96) indicating that they personally provide virtual research services for distance learners. Q10 asked about the types of services participants' libraries use to provide virtual reference assistance for distance learning students (Table 2). Respondents could choose multiple types of services, and these varied widely across categories, with the greatest percentage of libraries reporting using phone (η=117) followed by LibGuides or other types of Research Guides (η=108).

Table 2

How does your library provide virtual reference services for distance learning students?

Type of Virtual Service	Percentage	H
Personal email accounts	54.7%	76
Shared library email account	68.3%	95
Chat	78.4%	109
Text	51.8%	72
Phone	84.2%	117
LibAnswers	37.4%	52
LibGuides/Online Research Guides	77.7%	108
Other	23.0%	32
No response	6.5%	9

Participants were given an open-ended response option in Q10 in which they could indicate if other types of virtual reference services are available in their libraries. These

responses were coded and compiled using an open-coding method (Table 3). The largest number of participants ($n=18$) indicated use of some type video or web conferencing software, while others reported being embedded in course or learning management systems ($n=11$).

Table 3

Other types of virtual reference services reported

Type of Virtual Service	Percentage	n
Video/web conference	14.0%	18
Embedded in Course/Learning Management System	7.9%	11
Consortial Ask a Librarian Service	2.2%	3
Homegrown App	0.7%	1
Fax	0.7%	1

Survey questions next measured participant experiences with virtual reference training and usage of shared online knowledge bases for ongoing professional development. Of survey participants, only 27 percent ($n=38$) reported that their libraries have a formal training program for new librarians in providing virtual reference services (Table 4). For a small percentage of these participants ($n=3$) this formal training program is not required, bringing the number of participants with a required formal training program for new librarians to 25 percent. Other predominant types of training offered for new librarians included self-study ($n=93$) and mentoring ($n=73$). Of virtual research training participants reported as mandatory for new librarians at their place of work, 25 percent reported that self-study or learning on the job is required ($n=35$) and 20 percent ($n=29$) indicated that mentoring is required.

Table 4

Training programs for new librarians providing virtual reference services

Type of Training Program	Percentage	n
No training provided	13.7%	19
Formal training program	27.3%	38
Self-study/Learning on the job	66.9%	93
Mentoring	52.5%	73
Conferences/webinars	24.5%	34
Professional literature	18.0%	25

Survey participants were next asked to select the knowledge base most used to share information about reference interactions in their place of work (Table 5). Due to limitations with the survey tool, multiple responses could not be selected for this question. Of participants, 20 percent ($n=28$) use LibAnswers (Springshare), while nearly as many utilize a shared email account for their knowledge base ($n=25$). 18 percent of participants ($n=25$) reported using no knowledge base to share reference information. Participants were provided with an open-answer text box in order to indicate other types of knowledge bases used. Many of the comments here were from participants who wanted it made clear that more than one knowledge base was used in

their libraries to share information about reference interactions. Among other choices, participants reported using chat ($n=3$), Gimlet ($n=2$), and a homegrown system ($n=3$).

Table 5
Online Knowledge Base Use

Knowledge Base	Percentage	H
LibAnswers	20.1%	28
Shared email account	18.0%	25
Wiki	3.6%	5
Intranet	3.6%	5
LibGuides	10.8%	15
No online knowledge base used	18.0%	25
Other	15.1%	21

Only 21 percent of participants ($n=30$) reported that reviewing answers in the knowledge base was a required part of training for new librarians, with an even smaller percentage reporting that reviewing answers was a mandatory part of ongoing librarian professional development ($n=21$). Of the participants with a requirement for reviewing the knowledge base as part of their professional development, 23 percent ($n=5$) are required to review the knowledge base daily, and 28 percent ($n=6$) are required to view the knowledge base weekly.

The survey also measured participant's opinions of the effectiveness of knowledge bases for sharing knowledge. Of participants working in an institution where a knowledge base is being used to share information about reference interactions ($n=124$), 60 percent of participants ($n=75$) report that this task is effective or very effective for sharing knowledge. This percentage changes somewhat based on the participant's role. Of participants who self-identified as supervising librarians or staff who provide virtual reference services or manage a library department that provides virtual reference services, 95 percent reported ($n=22$) that this was an effective or very effective tool for sharing knowledge.

Qualitative – Survey & Interviews

The researchers also reviewed qualitative data gathered from the survey instrument and used this data in creating follow up questions for interview participants. Raw data from open-ended survey questions Q19, Q20, and Q21 was categorized using an inductive coding method. Of the 16.6 percent of participants ($n=23$) who selected that a knowledge base is not effective in response to Q18, 18 participants provided additional feedback on what would make a shared knowledge base more effective for librarians who provide virtual reference services (Table 6).

Data indicated that a majority of participants were concerned about problems with usage ($n=10$); primarily that usage amongst librarians was not uniform. In the same context, participants ($n=3$) also pointed to the need for greater functionality within their knowledge bases. Many of these problems stemmed from accuracy and currency of information.

Table 6

Q19: What would make a shared knowledge base more effective for virtual reference services?

Inductive Categories	Participant Responses
Usage	<ul style="list-style-type: none"> • Easier to access and requiring librarians to use it • If it was being used by all who participate in providing reference. • If it was more widely used • Better way to view it; make it more officially part of job. • Making it mandatory • More uniform use • It is difficult to remember to go back to past transactions. We discuss in person. • First of all, the service has to be marketed, promoted, and pushed • If it was more widely used • Remembering to use it.
Functionality	<ul style="list-style-type: none"> • More complete information included about interactions • More current • A more robust FAQ area • Frequently asked questions with best answers, use in some kind of actual training for new reference librarians • For it to be organized by type of information request • Have a site search function of the KB • In my library, Lib Answers isn't regarded as a place to find information, only as a place to deposit it. A change in thinking might alter its use or value. Additionally, without Authority control, it's very difficult to find what you need - keywords are only assigned through use of natural language, resulting in several terms for a single idea.
Do not have one	<ul style="list-style-type: none"> • Existing (we don't have one right now) • We need to create one.

Participants were also asked to provide any additional comments about shared knowledge bases for librarians providing virtual reference services (Table 7). Of participants, 21 percent (n=29) provided additional feedback. 11 participants responded with feedback on the usefulness of knowledge bases, 5 participants shared drawbacks they find exist in using shared knowledge bases, and 6 provided suggestions on training or information they have learned about training from implementing a knowledge base.

Table 7

Q20: Other comments about the usefulness of a shared knowledge base

Inductive categories	Participant Responses
Benefits of knowledge base	<ul style="list-style-type: none"> • Ours is relatively new, but proving useful, especially for full timers to share info with the evening/weekend librarians • It's a good idea

- If done properly, it could be useful
- Although not everyone reads them, they are helpful for identifying trends in certain classes or acknowledging a consistent issue.
- It's helpful for repeat questions related to student assignments
- For those on the desk frequently, it's a great help. For those with sporadic desk coverage, it's often too big a knowledge base to try and wade through for a single question or two.
- Very convenient for linking a LibAnswer to support answering a student question
- We suggest that new librarians review recorded information about transactions to give them an idea of the kinds of questions asked and how experienced librarians answer them. Also, they can review chat transcripts to learn virtual reference techniques.
- We periodically review the chat transcripts, which does provide useful information.
- We use libanswers as well as an informal 'knowledge base' of previously answered questions.
- The knowledge base is an invaluable resource

Drawbacks of knowledge base

- Not really worth it, since most people don't use and then forget it exists
- I think there's a lack of awareness that it exists and it's overly complicated
- In principle, a shared knowledge base is great; however, our staffing model for virtual reference distributes coverage to the point that we each only do 1-2 hours a week. Remembering to check the knowledge base (and whether to contribute to it, second-guessing possible one-off interactions) is a whole other thing to consider managing.
- It's not as thorough as I'd like but there is an upgrade coming so maybe that will take care of it.
- It is pretty new at our institution

Training suggestions

- Everyone should read it more often
- Needs participation from all librarians. Maintenance must be done.
- We also have a library DL committee which helps with creating policy and ideas for DL.
- Some basic training by the librarian who is in charge.
- It's very minimal - mostly hands-on training.
- Don't use ACRONYMS ever

FAQs

- FAQ is helpful for repeat questions
 - The only useful 'shared knowledge base' at my library has been the construction of a FAQ, where specific answers are crafted for common, complex questions (i.e. setting up wireless library printing on a Macintosh laptop).
 - The old knowledge base was very useful for information sharing. But it became outdated. We use LibAnswers as a public FAQ on our website but have not gotten into sharing things internally through it.
-

Other methods for knowledge sharing

- A lot of it is done by shared personal contact, not an online forum
 - We actually do better with a print notebook
 - For me, this survey is confusing because the embedded librarians are separate from the reference librarians. Both provide virtual ref/res services, but in complete different ways. The answers would be different if the two were separated into two different surveys.
-

Follow up interviews were next arranged with survey participants. Using a standard sample size for phenomenological studies (Creswell, 1998) a sample of five participants was randomly selected from those who volunteered for interviews ($n=22$). Interviews were scheduled one month following the close of the survey and allotted up to thirty minutes each. Each interview participant was first asked whether they felt reference librarians had positive or negative opinions towards ongoing formal training. Participants indicated that they felt unable to answer this question as too many extenuating factors are involved in shaping opinions towards training. For participants, these factors include: faculty status; group think; time in position; and time or money limitations.

Next, participants were asked if formalizing the sharing of information amongst reference librarians would be effective for training. In this sense, participants were asked to imagine a scenario in which a librarian passes along information about a reference question to the next librarian on the reference shift. In an alternate situation, rather than perform this informal information sharing, the librarians wrote the answer in a shared knowledge base that was later used for formal professional training and development. 80 percent of interview participants ($n=4$) felt that formalizing this training in this way could be effective but faced challenges. Three participants felt that sharing in a different medium - whether it be print, email, or chat, was equally if not more effective. Only one participant agreed that formalizing this information sharing was useful for training, and had experience with this type of training.

Participants were then asked for their opinion on how a library could incorporate training using a knowledge base. A lack of consistency in responses made coding this answer difficult. Two participants felt that a knowledge base could be useful but only if there is a system in place to remind people to view it, such as an email reminder. One participant suggested that a knowledge base is more useful for technicians or students who perform reference and have limited experience. One participant indicated that the knowledge base was too difficult or time-consuming to implement. Lastly, one participant felt that a knowledge base, such as a reference desk answer tracker, could be a useful tool incorporated into ongoing professional training - such as having all librarians check it weekly on a Friday.

Participants were last given an open-ended question in which they could respond with any additional comments. Two participants discussed internal training teams at their libraries tasked with designing instructional, skills-based training for librarian professional development. Both indicated that training sessions on ways to utilize their shared knowledge base may be productive. One participant discussed other types of knowledge bases being used in her library, such as video tutorials. Two participants did not have any additional commentary.

Case Study - Hunt Library

A case study of librarian training at the Hunt Library at Embry-Riddle Aeronautical University formed an additional basis for the study's qualitative data. Training for new librarians in the Hunt Library is an arduous formalized process. All new librarians participate in training which includes auditing a class (AS 120 – Principles of Aeronautical Science) and being trained on specific subject areas (e.g. Basic Aviation, Human Factors, Aviation Maintenance sources) by their colleagues in the department. The subject training includes review questions which require the trainee to answer the assigned questions with the sources included in the training unit. This model of training within the Hunt Library has been both necessary since most librarians are not familiar with the specialized resources which support the university curriculum, and effective as it provides mentoring opportunities on a formal and informal basis.

When the Library was charged with providing library services to the Worldwide Campus, comprised entirely of distance learners in 1997, a new training program was developed. Prior to the merger of the libraries supporting the Daytona Beach and Worldwide campuses, services were provided to distance learners by two librarians who, independent of each other, answered research questions. Since the new model expanded the librarian pool to several librarians, it became clear that a shared approach to providing reference services would be more effective.

In the early years of the distance learning library service, students contacted librarians by toll-free phone (65%), email (30%) and Fax (5 %.) The first step in developing a shared approach to providing reference services was to develop a system for capturing the reference transactions regardless of how the questions were received. A print-based system was developed which allowed all the reference librarians the ability to review all correspondences. Though initially this was beneficial to assess that established standards and protocols were adhered to, it soon became a subject development tool since librarians could review their colleague's research strategies and note the sources consulted.

With the prominence of email becoming a standard communication tool in the 2000s, the tides changed which resulted in more contacts via email rather than telephone. Then, all correspondences could be captured in an electronic format. The first element of this process was the development of draft messages, which were standardized responses to typical questions which the librarians could use as a template to respond to a reference query. Thus, the beginning of a shared online knowledge base.

As email became the most common method of communicating with distance learners, the department created a shared email account using Microsoft Office utilizing folders so like templates could be grouped together. One librarian was assigned responsibility for developing the categories of folders and ensuring that content was as up-to-date as possible; aiding in the creation of an authority control system.

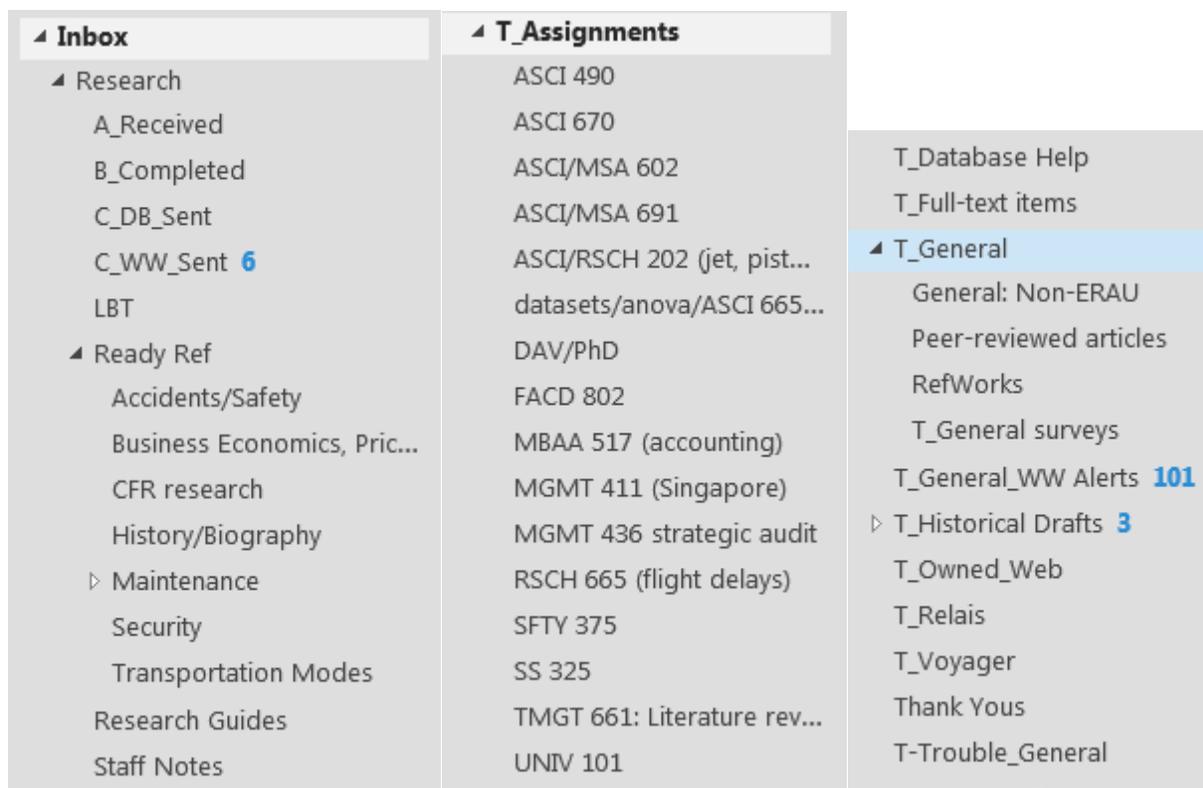


Figure 1: Organization of email knowledge base

Each email folder contains content which supports the subject category. The sent email files are reviewed by librarians to discern a pattern of repeated inquiries and to identify content that should be added to the folders. Additionally, the librarian responsible for this system sends out alerts via email to all those who staff the research service points so they are aware of trending or difficult questions.

Training on the use of this system is provided for all new research librarians. Additionally, the librarians are expected to review the folders on a regular basis for ongoing professional development. This process requiring the librarians to review the sent files is also very helpful to the associate director who has a regular opportunity to evaluate the librarians' work and identify areas for re-training.

From the point of view of a librarian who has worked with the knowledge base for several years, "Maintaining it is a time consuming commitment, but is a huge time saver, especially when answering questions outside of our primary subject expertise (P. Cairns, personal communication, October 30, 2015)." She also points out that it is helpful in answering run-of-the-mill questions as well, because "It does what a knowledge base should - it prevents us from duplicating work needed to research and write responses to common questions." This librarian also felt that the knowledge base provided for a more uniform response for students, no matter which librarian answered the question. She adds "It standardizes our responses to certain questions while allowing for a certain degree of personalization."

This knowledge base contributes to the effectiveness of the research librarians, according to long-time Associate Director for Research and Worldwide Library Services and current Library Director (K. Citro, personal communication, October 30, 2015). She states, “Our statistics and the thanks we receive from students has consistently supported our positive assessment of librarian training and use of the knowledge base. Over the past six months, the Hunt Library received 1,284 questions initiated through our virtual Ask a Librarian service, and over 100 letters of thanks from distance learning students. As a result of continued success, the library is now investigating more robust knowledge base systems as a logical next step”.

Discussion

Although 92 percent of the study survey participants work in a library that provides virtual reference services, only 69 percent of participants ($n=96$) reported that they personally provide these services. As many of the survey questions require familiarity with virtual reference services, this may present some discrepancies in the data. This was particularly noticeable during the interviews, in which the investigators found that levels of familiarity with virtual reference services and training for these services varied amongst participants. Had interview participants been selected from the group of librarians who self-identified as having direct participation in virtual reference services, there may have been more consistency in responses.

The majority of those who participated in the survey (86.3 percent) indicated that there was some form of training program for new librarians providing virtual reference services at their libraries. Of the methods used for training, mentoring (at 52.5 percent) and self-study/learning on the job (at 66.9 percent) were the most frequently selected answers. Since the survey questions did not explicitly ask respondents to indicate whether they consider reviewing a knowledge base as a form of peer mentoring or self-study, it is difficult to connect the concepts. However, there is a possibility that some of the participants whose libraries require a review of a virtual reference tool may consider this a form of mentoring or self-study.

Survey responses also varied amongst librarians who self-reported as having management or supervisory functions, and those who did not perform these duties. Overall, librarians in management positions reported more positive views of shared online knowledge bases as sharing and training tools. The role of management in the training experience of virtual research librarians may need further exploration. In fact, one of the issues that emerged in the answers to the open-ended survey questions and to some degree in the interviews was a sense that a knowledge base might be an effective training tool if the use of it were mandatory.

While a majority of participants reported that shared online knowledge bases could be effective or very effective tools in sharing information, a significant minority did not see these as effective and reported various barriers in implementing and using knowledge bases. In particular, problems with remembering to access the knowledge base and time constraints emerged as reoccurring themes in both the survey and interviews. An email notification system was recommended in both survey comments and during the interviews as a solution to the problem of remembering to access the knowledge base. This type of notification system was also discussed by our case study participants as a useful method for alerting reference librarians when pertinent

new content was added to the knowledge base. Future research may explore whether a notification system is necessary in conjunction with a shared online knowledge base.

Responses to the open-ended survey questions and to the interview questions also pointed to time constraints that may limit a librarian's ability to voluntarily read through a shared online resource as well as a concern that usage may not be uniform. Whether the latter refers to uniformity in regard to librarians referring to the knowledge base or uniformity in terms of quality of answers is difficult to ascertain, but either way this response seems to speak to lack of managerial action.

The case study explores the idea of uniformity. Training for research librarians at the Hunt Library is consistent and required. Included in the training is the expectation that librarians will regularly review the questions and answers in the shared email account. In addition, a member of the department creates and updates draft templates for recurring questions and all members of the department are required to familiarize themselves with them. The longtime supervisor of the librarians mentioned that the knowledge base contributes to quality in that she is able to monitor responses and engage a librarian in retraining if necessary. In addition, a veteran research librarian in the department discusses that reviewing the knowledge base helps her to continuously learn on the job as well as to provide easy access to currently common questions and answers.

Conclusion

As virtual reference services continue to grow and develop in today's libraries, so do the products available to store and share information. While many libraries have adopted shared online knowledge bases, the use of these as training tools for research librarians remains low. Librarians agree that knowledge bases may be effective tools in training, but time constraints in their daily work remain a primary obstacle in usage. Formal, mandatory training and usage of the knowledge base may present one solution to this, as may a notification system of reminders to prompt librarians to access their knowledge base.

While the librarians who provide reference support to distance learners believe that ongoing training is important, the majority appear to be left on their own to seek it out or absorb needed updates to their skills sets through informal mentoring. Perhaps this is a carryover from the traditional reference desk at which librarians often worked in tandem with colleagues or were shadowed by a supervisor, when new, and so engaged in a constant process of training through observation and mentoring. In this era of virtual reference, librarian may often work in isolation and not have access to the mentoring and coaching that contributed to training. It is a bit unrealistic to expect that a librarian will carve out time to seek out training on new questions and resources in the midst of a busy work schedule. Perhaps one answer is to encourage heads of reference to consider formal, mandatory training programs, which incorporate the regular review of the local knowledge base, such as is the case at the Hunt Library at ERAU and the Ehrmann Medical Library at NYU.

This study only begins to look at the possibilities of knowledge bases as training tools for librarians performing virtual reference services. Questions about the role of management in

librarian training and development, procedures to alleviate problems with uniformity and knowledge retrieval within knowledge bases, and solutions to alleviate the time constraints that make professional development difficult remain areas in need of further exploration.

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