

Teaching with Technology: An academic librarian's guide

EDITED BY
JOE M. WILLIAMS
AND
SUSAN P. GOODWIN



Chandos Publishing
Oxford · England

Virtual reference and instruction

Amy VanScoy and Megan Oakleaf

Effective instruction in the virtual reference environment

Most academic libraries use chat technology as a complement to their established in-person, telephone and e-mail reference services. The name librarians have adopted for this technology, virtual reference or digital reference, describes the original or most comfortable use of the service – ready-reference or other short-answer questions. Since the inception of chat technology services, librarians have struggled with patrons who require one-to-one instruction to address their information needs, and this topic has recently been addressed in scholarly publications and at professional conferences. This chapter seeks to provide an overview of the instructional uses of virtual reference in academic libraries and includes strategies for using virtual reference transactions to support patron learning.

Virtual reference in academic libraries

‘Virtual reference’ is a phrase used to describe online reference services that allow patrons and librarians to communicate via text. Sometimes virtual reference services

allow librarians and patrons to 'co-browse' or share webpages. Many academic libraries offer virtual reference to supplement their in-person, phone and e-mail reference services; however, the type and sophistication of these services vary widely, depending on the needs of a library's patrons, the amount of money a library can afford to invest and the level of technical support available to the librarians.

Some virtual reference services employ publicly available instant messaging services, including AOL Instant Messenger, MSN, Yahoo and Google Talk. These technologies allow librarians to 'chat' with patrons by typing text; the services also allow file-sharing and voice communication, but at the time of writing these features are not commonly exploited by academic librarians. Some libraries employ additional technologies, such as GAIM or Trillian, to allow librarians to combine multiple instant messaging services into one interface. Others use contact centre services, such as tutor.com, QuestionPoint and Docutek – these are more expensive, but are often run by a vendor who provides support for the technology. Contact centre services offer enhanced features, such as co-browsing, automatic statistics gathering and reporting, file-sharing and communication features such as pointers and highlighting that help librarians communicate with patrons. They may also offer staffing during extended hours. Numerous articles and presentations compare various contact centre services (Coffman, 2003; Houghton and Schmidt, 2005).

Instruction in the virtual reference environment

In the early 2000s many academic libraries began to offer a reference service via chat technology. At first librarians

focused on the mechanics of the service, including deploying the technology, providing staffing and collecting statistics, and on methods for delivering accurate, fast reference services. Many librarians expected patrons to use virtual reference as they use the phone, mostly for ready-reference questions or troubleshooting and only rarely for questions that require instruction. Over time, librarians realised that a significant amount of virtual reference interaction can be described as one-on-one instruction. For example, Johnston (2003: 31) found that 60 per cent of the University of New Brunswick's virtual reference interactions had an instructional component. Desai and Graves (2006: 178) found that 83 per cent of virtual reference interactions at Southern Illinois University Carbondale featured instruction.

Instruction in the chat environment is similar to the one-to-one, point-of-need instruction that occurs at a physical reference desk. In both environments patrons initiate the reference transaction in real time at their time of need, when they are most open to learning (Beck and Turner, 2001: 83). In addition, instruction provided via in-person or virtual reference services is "authentic" in that the student has a specific project underway and has specific questions regarding how to proceed' (Elmborg, 2002: 458). However, virtual reference offers a major advantage: students can get specific, individual instruction that is available regardless of location (Grassian and Kaplowitz, 2001: 195). On the other hand, instruction in the virtual reference environment offers two major challenges. First, the lack of physical proximity means that neither librarians nor patrons can use non-verbal communication. Second, many librarians and patrons speak much more quickly than they type, so the virtual reference encounter can be frustratingly slow.

Because of these challenges, librarians must learn techniques to facilitate instruction in the virtual reference environment.

Furthermore, because the challenges of the technology can occupy much of a librarian's thought during the interaction, librarians must actively focus on the instruction component of the interaction, and not allow impatience or distraction to cause them simply to answer and not to teach.

Suggestions for virtual reference instructors

The instructional role of virtual reference is a growing one. Librarians who provide virtual reference often encounter opportunities to fill gaps between what patrons know and what they must learn in order to complete a task. These 'teachable moments' offer librarians the chance to contribute to patrons' information literacy skill set. Suggestions for making the most of instructional opportunities in the virtual reference environment can be found in the library literature, at professional conferences and in conversations between providers of virtual reference. The following strategies describe ways in which librarians can reinforce patrons' metacognitive strategies for learning, encourage patrons' active engagement in the learning process and employ instructional techniques rooted in social constructivist learning theory. All of these techniques can improve the information literacy skill level of library users.

Strategies that encourage metacognition

Metacognition is often defined as 'thinking about thinking', or the ability to be intentional and reflective about one's thoughts. Expert thinkers and learners are metacognitively aware of their mental processes. When working to solve a

problem, they remember methods that they have tried in the past, with both positive and negative results. They actively refine their problem-solving strategies based on what is empirically known, what others have experienced and what works best for them as individuals. Research indicates that people who employ metacognitive behaviours can more easily describe the initial state of a problem they want to solve, the goals they need to achieve to solve the problem, the tools they have at their disposal and any constraints or barriers barring the path to achieving the solution (Davidson and Sternberg, 1998: 50). Because metacognitive behaviour is the hallmark of an expert learner and thinker, reference librarians should seek to develop metacognitive skills in their patrons. Librarians should expect to encounter patrons with widely varying metacognitive abilities. By integrating the following strategies into their virtual reference service, librarians can reinforce the skills patrons currently have and model skills patrons still need to acquire.

Catch patrons being good

In virtual reference transactions, reference librarians should actively reinforce the positive information-seeking behaviours patrons demonstrate. Librarians who acknowledge and complement patrons' behaviours achieve three goals.

First, they reveal to users that information-seeking is not random, but rather is a logical problem-solving process. As a result, users feel reassured that they are taking steps to solve their information needs. They also become aware – or are reminded – that there are frameworks upon which information is structured. Patrons can apply new knowledge of information structures to solve their information needs.

Second, librarians who catch patrons being good provide positive reinforcement of skills. Patrons feel that the

information expert recognises their hard work and that the information search they conducted before contacting a librarian was useful. Even patrons who have not engaged in preliminary information-seeking before contacting a librarian can be praised for their decision to seek expert assistance!

Third, providing positive reinforcement offers librarians a way to cement productive behaviours in the patrons' minds and minimise their mistakes. As a result, when patrons look back on the information-seeking experience they are more likely to recall the behaviours librarians wish them to add to their repertoire of information-seeking strategies.

Providing patrons with positive reinforcement requires an overt effort from librarians who are accustomed to providing fast service. While responsive service is important, it should be noted that positive reinforcement can be given quickly and produces valuable results.

Example 1

Librarian: I'm glad you can remember some of the words in the title.

Librarian: That will help us do a good search.

Librarian: Knowing the author's last name allows us to do a really thorough search.

Example 2

Librarian: That is a really good point.

Librarian: As you've said, you need to make sure you are using an authoritative website.

Librarian: Many people don't realise how important that is.

Librarian: Well done!

Example 3

Librarian: This is a great question!

Librarian: I can tell that you've already thought a lot about this topic.

Librarian: You already know what types of sources you need to answer the question, and you also know that you need to present both sides of the issue you're researching.

Librarian: That gives us a lot of information to start our search with.

Example 4

Librarian: I'm so glad you contacted us to assist you with this!

Librarian: Often, the best way to get this kind of specialised information is to ask an information professional.

Think aloud

In the virtual reference environment, librarians have opportunities to conduct personalised textual dialogue with patrons. In these dialogues, librarians should make the effort to make their thoughts, as expert searchers, transparent to patrons.

The 'think aloud' instructional technique employs three steps. First, the librarian internalises the patron's reference need and treats it as his/her own. Second, the librarian identifies the parts of the information-seeking process that the patron has already accomplished. (This step provides an opportunity to employ the 'catch them being good' strategy.) Third, the librarian describes his/her cognitive process throughout the remaining steps of the reference transaction. The third step of this process is the most difficult for many librarians, as the librarian must resist the temptation to take a mental 'short cut' to the patron's answer. However, making the effort to reveal internal thought processes allows librarians to achieve two important goals.

First, thinking aloud allows patrons insight into the expert information-seeking process of librarians. Patrons can learn how librarians define an information need, or what tools librarians use and why they used them. They can learn about how to evaluate the sources that are found and how to use them ethically. This strategy allows patrons a window into the minds of information professionals as they wrestle with the patrons' information needs. Patrons can seek clarification, ask questions and compare their own techniques with those the librarian suggests.

Second, by making the information-seeking process transparent to patrons, librarians can share not only their successful strategies but also the failures. In many cases, failed information-seeking strategies are even more instructive to patrons than successful ones. When a strategy fails, librarians are placed in situations patrons often encounter. However, librarians can reveal strategies for coping with failure by thinking aloud through why the strategy failed, what could be adjusted and when to try an entirely new technique. Patrons share in the journey and can benefit from witnessing the struggle.

Finally, because patrons often save the transcripts of virtual reference transactions, they can 'replay' their conversation with a librarian whenever they encounter similar information needs. Consequently, librarians should not hesitate to put energy and enthusiasm into their virtual reference transactions – their words may live on far longer than they think!

It is important to note that while the 'think aloud' strategy allows librarians to make their thought process visible to patrons, it should not be used to dominate the reference transaction conversation. Rather, this method should be employed sporadically throughout the dialogue, especially when patrons ask librarians to help them make decisions

during the information-seeking process. Librarians will find this technique most useful if they maintain the role of 'guide' or 'facilitator'.

Example 1

Librarian: You're looking for a book that your teacher recommended, and you know that the title has the word 'wrinkle' in it and it's about time travel.

Librarian: Hmm...

Librarian: I think the best thing to recommend is a search in the NoveList database.

Librarian: That's a good database for doing a search when you know a 'keyword' from the title and something about the plot.

Librarian: How does that strategy sound to you?

Example 2

Librarian: OK, I see you're using the terms 'anti-smoking campaign'.

Librarian: I'll enter the same terms in the search box.

Librarian: Hmm... no results. Well, that happens sometimes.

Librarian: Let's try another way of saying that...

Librarian: How about 'smoking cessation'? Does that get at your topic, too?

Librarian: Great. That worked much better! Sometimes databases use different terms than those we use in conversation. It's always a good idea to be flexible and experiment with different words.

Show, do not tell

In virtual reference transactions, reference librarians often have the opportunity not only to describe the information-seeking process but also to demonstrate it. While the 'think

aloud' technique highlights the importance of making expert information-seeking processes clear to novice library users, this strategy goes a step further. Whenever possible librarians should show, not tell, patrons the steps of the information-seeking process.

The options librarians have for showing patrons the information-seeking process vary depending on the technology used to provide the virtual reference service. This strategy may include 'co-browsing' webpages with patrons, 'pushing' prepared slides, audio files or tutorials to the patron or making an effort to direct patrons through opening a browser window and completing the steps during the chat. Regardless of method, it is important to move beyond narrative to images and interaction.

Librarians who use technology to engage patrons with visuals and real-time interactions achieve the important goal of addressing multiple learning styles. When librarians show, rather than tell, patrons how to proceed through the information-seeking process, they can appeal to their visual, auditory and kinesthetic learning modalities. By addressing more than one learning style, patrons are more likely to internalise and retain the lessons they learn during the virtual reference transaction.

Example

Librarian: OK, now that we know your keywords, let's get started with searching for the books you need.

Librarian: I'm going to begin pushing you pages. The first is the library homepage [www.library.org]. Do you see that?

Librarian: Super. Now... I'm going to click the link labelled 'Catalog' at the top of the screen [www.library.org/catalog].

Librarian: Go ahead and enter your keywords in the search box.

Librarian: Well done. I'll hit search for you [www.library.org/catalog/search].

Librarian: This is a nice result list! What looks good to you?

Take patrons to the next step

In virtual reference transactions, reference librarians should assist patrons with their immediate information needs and identify any additional steps the patron will face after the immediate need is met. Librarians may make patrons aware of coming challenges and opportunities, offer advice or, if patrons are ready to move to the next step, continue the reference transaction. During longer transactions patrons may need time to work independently to complete a step. In such cases, librarians can 'step out' of the conversation and re-enter when patrons are ready to continue. When patrons complete their information-seeking process, librarians should encourage them to return to the virtual reference service when a new need arises.

Librarians who guide patrons to the next step of the information-seeking process reinforce the concept that information-seeking is a logical process. Once patrons view information-seeking as a process that can be learned, they can employ metacognitive techniques and gain ownership of the process. Patrons who already have strong metacognitive skills in other domains can transfer what they know about their thinking and learning to the information environment. Whatever the information problem – undefined information needs, lack of familiarity with information tools, difficulty negotiating barriers to information – librarians can

use reference transactions to explain the information environment to patrons, broaden their perspective beyond their immediate stage of the information-seeking process and assist with the transfer of skills from other domains to the library world. In short, by reinforcing metacognitive behaviour, librarians can help patrons become more information literate.

Example 1

Librarian: Great!

Librarian: Now that you've selected citations for several articles that interest you, the next step is to figure out how to put your hands on the full text of the articles.

Librarian: Are you ready to go to that step?

Example 2

Librarian: I'm so glad we were able to find some books that look promising for your project.

Librarian: Eventually, you'll need to cite your sources in order to give credit to the authors and explain where you found your information.

Librarian: We can talk more about that now or you can come back later.

Librarian: What sounds best to you?

Example 3

Librarian: Well, since you need ten sources of different types...

Librarian: Let's take it one source type at a time. This will be more efficient, since the paths for finding books and finding articles are pretty different.

Librarian: Let's start with finding some relevant articles...

Librarian: Books will come afterwards. Sound OK?

Librarian: Those terms worked great... this looks like a really good list of articles!

Librarian: If you click on the names of the articles, you can see the full text.

Librarian: Look through those and let me know when you've found what looks good...

Librarian: I'll be here when you're ready to make decisions or switch to searching for books.

Strategies that promote active learning

Active learning is a central tenet of constructivist learning theory and widely accepted as a cornerstone of effective instruction. When people actively participate in real-world activities and problem-solving, learning occurs. Librarians can use active learning techniques during virtual reference transactions to engage patrons in effective information-seeking behaviour.

Let patrons drive

Because users learn more quickly and thoroughly when they are actively engaged in the learning process, it is important to 'let them drive' during virtual reference transactions. Librarians who employ this strategy can begin transactions by inviting patrons to describe or show what steps they have already taken in their information-seeking process. Throughout the reference transaction, librarians can encourage patrons to initiate actions while the librarian observes. When virtual reference technology allows, librarians and patrons can work together in the same screen space to solve information problems. The overriding principle for this strategy is to allow patrons to make decisions and take actions while librarians serve as guides

who can make connections, help patrons see patterns, ask relevant questions and encourage reflection.

Librarians who engage patrons in active learning achieve a number of goals. First, allowing patrons to drive provides librarians with the ability to view patrons' information-seeking behaviours and identify areas to improve or reinforce. The observation of patron behaviour not only helps librarians assist individuals, but may also contribute to librarians' understanding of the behaviour of entire user groups over time and the identification of barriers to information that were previously unknown. Second, the use of this technique has the added benefit of ensuring that patrons are actively participating in the reference transaction rather than passively waiting for problems to be solved for them. When virtual reference software allows shared screen space, patrons and librarians can achieve true collaboration and become partners in the information-seeking process.

Example 1

Librarian: I understand that you're having difficulties finding articles in this database on your topic.

Librarian: Why don't you redo the search in the space you see to the left of this text chat?

Librarian: Then I can see what happened and we can work together to fix it.

Example 2

Librarian: OK, so now you see that there are at least five websites that seem to answer your question.

Librarian: Why don't you click on each of your results, and we'll look at them together and talk about what might make one better than the others for your project.

Strategies that welcome patrons to the community of learners

According to social constructivist theory, what people learn is socially developed through interactions with 'expert' members of a specific community. By interacting with community members, novice learners are acculturated in the knowledge and skills of the group before joining a community of expert learners. According to Elmborg (2002: 458), librarians who adopt a social constructivist model of instruction can guide patrons to become members of a community of information-literate people. By adopting specific strategies, virtual reference librarians can acclimatise patrons to the information community.

Welcome patrons to the community

Virtual reference transactions offer an opportunity for librarians to support novice information-seekers as they progress towards membership in the community of expert information-seekers. To use this method successfully, librarians must focus on the goal: to prepare a new member to join their community. To achieve this goal, librarians should show enthusiasm for patron requests for assistance. They should also respond to patrons in the context of a community of learners by explaining that others wrestle with the same issues, fostering a climate of collaboration and recognising that patrons will pass on what they learn to others. Librarians should provide definitions for specialised community language, offer to confide 'tricks of the library trade' to patrons and explain the ethics, standards or history of library services and policies when relevant. Finally, librarians should actively elicit feedback from patrons as peers and the newest members of the information-literacy community.

Example 1

Librarian: I'm so glad you contacted us with this request!

Librarian: I see you found many web resources that are helpful.

Librarian: I can show you how we librarians pick and choose among them to find the best.

Librarian: Then you can show what you've learned to the other members of your team.

Example 2

Librarian: You're right... it's hard to know which database to select to search for an article on a specific topic of interest.

Librarian: One thing we at the library do is share among ourselves which ones have worked best for certain types of research.

Librarian: For your research, I'd recommend using the database listed first.

Librarian: I've had success with that in the past.

Librarian: Let's try it together.

Example 3

Librarian: Actually, that link takes you to the full text of electronic books that we don't have in print.

Librarian: I guess the name of the link is confusing, isn't it?

Librarian: What would you label it? I can pass your ideas on and maybe we can get it changed.

Librarian: The library website is constantly improving, due in large part to recommendations from patrons with good ideas!

Redirect to more social services when necessary

In virtual reference transactions, librarians should direct patrons to other reference venues or specialised librarians

when appropriate. As a rule, virtual reference librarians should respond to patrons as completely as possible in the primary transaction. However, they may also wish to transfer the patron seamlessly to another form of reference communication if the patron's instructional needs can be better met by an alternative medium. Librarians may also make referrals to other library staff members who can augment the transaction with a specialised level of expertise. The referral might take the form of a second librarian entering the chat, a library staff member calling the patron with additional information or the provision of additional contact information to the patron so that a consultation can be scheduled.

The goal of a redirection in a virtual reference environment is to facilitate the acclimatisation of patrons into the community of information-literate people by providing instruction in the most efficient and effective manner. If the patron's needs are specialised, it may be that an expert librarian can offer additional information that will facilitate the acculturation process. Thus the goal of a referral to another library staff member is to ensure that the patron is brought into the proper community of specialisation.

Example 1

Librarian: It seems we have answered this question as well as we can in an instant messaging environment.

Librarian: If you want to share a screen with me, I can redirect you to <http://library.org/askus> and we can begin a different kind of chat that will allow us to see the same screen as we search for your resources.

Example 2

Librarian: This is the sort of troubleshooting that could be done more quickly by phone.

Librarian: Is there a phone number I can reach you at?

Librarian: If I call you, we can get past this hurdle

faster, and then I can show you how to cite these sources properly.

Example 3

Librarian: My colleague is an expert in this area.

Librarian: I'll get you started with this search, and then he will log on and give you some detailed advice about how to choose your sources.

Example 4

Librarian: You say you'll be coming to the library this week? That's great!

Librarian: Our Special Collections department has some unique artefacts you might find really relevant to your research.

Librarian: When you're here in person, you can take a look at these items.

Librarian: Be sure to talk with the Special Collections librarians – they can give you really good advice about how to work them into your project.

Focus on patron learning

Whatever techniques virtual reference librarians choose to employ, the guiding principle of instruction in the virtual reference environment is to keep the focus on the patrons and their learning. Using techniques that encourage metacognition, active learning and community-building is critical to the instructional quality of transactions. Librarians who expend effort using these instructional strategies need not focus on minor details of the virtual reference transaction.

- *Do not wordsmith.* In the virtual reference environment, patrons may feel disconnected if the librarian's presence is

not evident. As a result, it is important that librarians keep the stream of words flowing. Instead of composing whole sentences and paragraphs and sending them in large chunks, librarians should send shorter segments and thoughts. The use of commas and ellipses signals to patrons that more information is coming.

Preferred

- Librarian: This is a great question! [8 seconds]
- Librarian: Let me think a second... [4 seconds]
- Librarian: Where should we look for this first... hmm... [6 seconds]
- Librarian: Well, if you're looking for scholarly sources, [8 seconds]
- Librarian: then that means we could begin with the catalog... [12 seconds]
- Librarian: or some article databases... [4 seconds]
- Librarian: or did you have another plan that you were thinking of? [9 seconds]

Not preferred

- Librarian: That's a great question. Because you said that you need a scholarly source, I think we should begin with the catalogue or maybe an article database that is general in nature but which has an option to limit for scholarly articles. Did you have any places that you thought we should look first or a database that you've already tried? [1 minute 15 seconds]
- *Do not worry about speed.* While patrons increasingly value and expect instant gratification, it is important that librarians remember that not all virtual reference transactions require speedy 'ready-reference' responses. Indeed, many virtual reference questions require

instructional responses. Once librarians determine that the goal of a specific transaction is to teach, they should employ strategies that facilitate learning, even when those strategies require a bit more time.

- *Do not focus on your grammar, spelling or capitalisation.* In order to focus on instructional strategies and maintaining visibility with patrons, sometimes grammar, spelling and capitalisation suffer. Unless the errors interfere with communication between librarians and patrons, they should be acceptable. Fixing such errors should not take high priority in virtual reference transactions.

Future directions for instruction in the virtual reference environment

As virtual reference technology evolves, the challenges addressed in this chapter may be eliminated. Technology that allows for fast and reliable voice and video should overcome the absence of non-verbal communication in virtual reference interactions. Ideally, new chat technology will offer increased functionality to support instruction, such as the ability to annotate webpages discovered during the interaction, highlight text for both the librarian and patron to see or handwrite on the screen as one does with a tablet PC or PDA.

In addition to technological advancements, assessment offers a path to future directions for instruction in the virtual reference environment. Because virtual reference technology generates a transcript of the interaction, assessment can be undertaken easily. Woodard (2005: 208) suggests that librarians review their transcripts with a peer

coach to help improve service. Ellis (2004: 110) describes analysing transcripts for ACRL Information Literacy Competency Standards. Because transcripts can serve as evidence of student learning, they can be used to identify new virtual reference instruction techniques, determine their effectiveness and ensure a bright future for instruction in the virtual reference environment.

References

- Beck, Susan E. and Turner, Nancy B. (2001) 'On the fly bi: reaching and teaching from the reference desk', *Reference Librarian*, 72: 83–96.
- Coffman, Steve (2003) *Going Live: Starting & Running a Virtual Reference Service*. Chicago: American Library Association.
- Davidson, Janet E. and Sternberg, Robert J. (1998) 'Smart problem solving: how metacognition helps', in Douglas J. Hacker, John Dunlosky and Arthur C. Graesser (eds) *Metacognition in Educational Theory and Practice*. Mahwah, NJ: Lawrence Erlbaum Associates, pp. 47–68.
- Desai, Christina M. and Graves, Stephanie J. (2006) 'Instruction via instant messaging reference: what's happening?', *The Electronic Library*, 24(2): 174–89.
- Ellis, Lisa A. (2004) 'Approaches to teaching through digital reference', *Reference Services Review*, 32(2): 103–19.
- Elmborg, James K. (2002) 'Teaching at the desk: toward a reference pedagogy', *Portal: Libraries and the Academy*, 2(3): 455–64.
- Grassian, Esther S. and Kaplowitz, Joan R. (2001) *Information Literacy Instruction*. New York: Neal-Schuman.

- Houghton, Sarah and Schmidt, Aaron (2005) 'Web-based chat vs instant messaging: who wins?', *Online*, 29(4): 26–30.
- Johnston, Patricia E. (2003) 'Digital reference as an instructional tool: just in time and just enough', *Searcher*, 11(3): 31–3.
- Woodard, Beth S. (2005) 'One-to-one instruction: from the reference desk to online chat', *Reference & User Services Quarterly*, 44(3): 203–9.