Strengthening Electronic Resource Competencies: A Structured Approach

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Front-line staff, including reference librarians and student assistants, are the first source of support for the library’s electronic resource users but are rarely trained to resolve electronic resource problems. This paper details the University of Toronto Library’s efforts to identify common points of electronic resource failure and the competencies to resolve those failures, and then to translate those findings into a training program grounded in experiential learning techniques that succeeded in increasing the confidence of public service staff when troubleshooting electronic resource problems.

Keywords: training, staff development, electronic resources, troubleshooting

Introduction

The shift from print resources to digital resources in academic libraries, including the University of Toronto Library, over the last twenty years has created a class of experts, those who know how to provide service and support for electronic materials, who are increasingly dissociated from those who work directly with the users accessing electronic materials. Some of this distance is necessary, electronic resources have a range of complex technical requirements and a range of potential failure points that often require technical expertise to diagnose and resolve. That technical expertise is different from the expertise that is required to work with the academic library users. As we move into a new era of eresources in academia, where these resources are the predominant type of materials acquired and used, there is a need to move eresources support skills out of a silo and ensure that all public service staff have access to the skills and information needed to diagnose and resolve simple eresource queries.

The goal of training front-line staff to troubleshoot electronic resources was not professional development for the sake of professional development but to introduce a base-level of understanding of the electronic resource life cycle among public service library staff, to give this group a level of confidence with eresources that would allow
them to provide more immediate service to users. To do this, the library had to
determine which types of electronic resource problems were most frequently
encountered, then had to ascertain the level of knowledge about electronic resources
among public service staff, then to determine what was the knowledge needed to
resolve common electronic resource queries and to triage issues, and lastly, to determine
the most effective training or teaching method to deliver that knowledge to the public
service staff. Because electronic resources are dynamic and technology is ever
changing, the goal was not to train public service staff in a rote set of steps but to teach
them about electronic resources in a manner that would make them confident working
with these resources. At a large urban university where service points are
geographically distributed, informal knowledge transfer between technical experts and
public service experts is constrained, so a more structured training approach is
appropriate.

**University of Toronto Environment**

The University of Toronto Libraries are comprised of forty-four branches at three
campuses, serving 80,000 students. In addition to the vast print collections, the library
holds 1.5 million electronic resources in various formats. Users interact with the library
in a variety of ways. In person, more than 18,000 people can visit Robarts, the largest of
the libraries, in a single day and online users can email their liaison, a general help
email or chat with a librarian in real-time via the Ask Chat with a Librarian messaging
service.

While staff and services at the library are decentralized, electronic resources
troubleshooting is centralized. An error reporting link on Summon and Catalogue search
results routes to a ticketing queue. The ticketing queue is treated as a triage point and
managed by the library’s IT department. A two-person team triages problems to the
collection development and metadata teams, and resolves technical queries. During the
busiest time of the year there are about 300 support tickets submitted per month, and
during slower period there are about 150 support tickets submitted per month. Problems
with electronic resource metadata are re-routed to a metadata queue, which receives
about 80 support tickets per month.

The need for staff training was driven by feedback from library selectors and
public service staff. Building on the troubleshooting workflow that is already in place,
public service staff wanted support in the promotion and use of electronic resources and
wanted to better understand how to answer electronic resource-related questions, and
wanted to feel more confident helping users access these resources.

**Literature Review**

Most electronic resource troubleshooting in academic libraries is reactive rather than
proactive. That is; troubleshooting happens once issues are identified and reported by a
patron\(^{iii}\) and troubleshooting is most frequently handled by technical services or the
library’s IT department.\(^{iv}\) Where public service staff is involved in troubleshooting, it is
usually through a triage approach\(^{v}\) where staff will manage what problems they can but
escalate issues to the IT team if they cannot be easily resolved\(^{vi}\). Academic libraries
commonly use electronic ticketing systems\(^{vii}\) to manage troubleshooting workflows and
it has been found that in almost half of cases\(^{viii}\) librarians, not patrons are the ones
submitting problem tickets.

Not all electronic resource problems are equally serious and many can be
overcome by a user or a librarian to allow them to eventually gain access to a resource\(^{ix}\).
In general, the most common errors were found to be inaccurate knowledge base
information,\(^{x}\) link resolver errors,\(^{xi}\) IP address or proxy server errors,\(^{xii}\) incorrect
Electronic resources must be managed in the library through their life cycle, acquisition, access provision, administration, support, evaluation and renewal or the expanded life cycle known as Techniques for Electronic Resources Management (TERMS). There have been findings that public service staff do not know where to send a patron to answer their eresources question or how to fill out a Help Desk ticket with enough information to resolve a user issue, let alone resolve complex queries. The use of TERMS to outline workflows for electronic resources in libraries and the use of the electronic resources life cycle as a basis for training for electronic resources support aims to provide the basic understanding of tools and processes that staff members need in order to adequately support users. Staff require knowledge of subscription and licensing processes, institutional affiliations and authorized users, remote access mechanisms, OpenURL and link resolvers, metadata sources and their impact on access, interactions between the link resolver, the discovery index, the discovery layer and the LMS, and knowledge of how to distinguish between an isolated issue and a widespread problem.

User support training is often not provided to public service and reference staff and when it is, this training has traditionally been conducted by presenting staff with written scripts or flowcharts, prescriptive tools to solve specific problems. When surveyed, public service staff report a desire to better understand the ‘big picture’ of electronic resources and not to undergo technically advanced training. Most workplace training emphasizes step-by-step procedures and can fail to achieve effective learning when workers are focused on learning techniques and not how to analyze a problem. In a more effective learning method, a learner undergoes an
experience, reflects on that experience, conceptualizes that experience and then engages
in experimentation, testing their observations. This experiential approach is especially
effective when coupled with learning outcomes with concrete educational objectives;
those that describe not what the instructor wants to teach but what learners should be
able to do by the end of the session. Display quotations of over 40 words, or as needed.

\textbf{Electronic Resource Training at the University of Toronto Libraries}

\textit{Common electronic resource points of failure at UTL}

To focus training needs, the library began by accessing the largest data source about
electronic resource failure at UTL – the archive of eresource problem tickets. Problem
tickets are managed using the software program Jira. Problem tickets can be submitted
by sending an email, creating an issue from within the ticketing system, or by filling in
a form from within the library catalogue. Staff in the IT department act as a triage point
for these tickets, applying tags that identify the problem type, assigning them to other
library staff for resolution, and communicating back to the submitter. Most tickets
receive several tags, identifying the type of product, the product vendor, and the nature
of the problem. All information and correspondence about a problem and its resolution
is stored within the Jira system for easy retrieval and reference.

Problem tickets are submitted by users or by library staff on behalf of users and the type
of problems submitted to the queue may serve as a proxy for the type of problem that
public service staff may encounter when working with users. To narrow the focus of the
training, only tickets tagged or containing the term “ebook” were retrieved. Between
2012 and 2018, for as long as issues have been tracked via the ticketing system, 947
issues were retrieved. The tagging system in the helpdesk software was used to separate
the tickets into 14 issue types:
<table>
<thead>
<tr>
<th>Issue label</th>
<th>Number of reports</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe digital editions</td>
<td>12</td>
<td>User cannot access text because of problems with Adobe Digital Editions (eg. Because they are on a public computer)</td>
</tr>
<tr>
<td>Book chapter in article finder</td>
<td>25</td>
<td>Article finder retrieves a record for a book that is only available in print OR user cannot connect through 360 link URL.</td>
</tr>
<tr>
<td>Concurrent Users</td>
<td>81</td>
<td>User cannot access book content because the maximum number of concurrent users has been exceeded.</td>
</tr>
<tr>
<td>Download limits</td>
<td>15</td>
<td>User cannot print or download content because of DRM restrictions.</td>
</tr>
<tr>
<td>Entitlement</td>
<td>180</td>
<td>Content is not accessible and CDD must check entitlements.</td>
</tr>
<tr>
<td>Image quality</td>
<td>37</td>
<td>The scan of the ebook is illegible or there are pages/content missing.</td>
</tr>
<tr>
<td>Instruction required</td>
<td>25</td>
<td>User required detailed instructions about where to click and how to access online content.</td>
</tr>
<tr>
<td>Metadata</td>
<td>262</td>
<td>The ebook record is pointing in the wrong place and Metadata team must update the record.</td>
</tr>
<tr>
<td>Issue Type</td>
<td>Count</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Not licensed</td>
<td>14</td>
<td>User sees content on a vendor’s platform and wonders why we do not have access.</td>
</tr>
<tr>
<td>Off campus access</td>
<td>24</td>
<td>User is off-campus and attempting to access content from a vendor’s platform without going through the proxy.</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>n/a</td>
</tr>
<tr>
<td>Permitted uses</td>
<td>26</td>
<td>User is inquiring if they are entitled to access ebook content based on their user type (alumni, ILL request).</td>
</tr>
<tr>
<td>User system problem</td>
<td>95</td>
<td>User is encountering a problem with their local system that is preventing them from accessing ebook content.</td>
</tr>
<tr>
<td>Vendor platform problem</td>
<td>145</td>
<td>The vendor’s platform is experiencing technical difficulties.</td>
</tr>
</tbody>
</table>

There are some issue types; entitlements, vendor platform problems and metadata, which are unavoidable and often involve working with the vendor to find a resolution, but there are other issue types which can be avoided or easily resolved through training and user awareness. To further focus training needs, ticket reports were separated by year to see which issue types were declining and which were increasing.
In 2015 the library undertook an initiative to include catalogue tags were an ebook had a limited number of concurrent users. There was a significant reduction in issues reported after the introduction of these tags. There was also a reduction in general requests for instruction as users became more familiar with ebook platforms and as ebook platforms became more easily navigable.
As device types and browser versions rapidly change and ebooks come with additional features that may not be compatible with all browsers, there was an uptick in error reports relating to user system problems. There was also an increase in problem reports related to users trying to access resources off campus and not going through the proxy server.

**Competencies for e-resource troubleshooting at UTL**

While help desk tickets were considered a useful proxy for training needs, it was important to determine which of the issues identified were deemed important by public service staff. In some cases staff might already feel confident to resolve certain types of problems and in other cases, problems which occur infrequently might severely impede the confidence of public service staff when dealing with electronic resources. The list of issues was sent as a short survey to all staff with public service responsibilities, and respondents were asked to rank the frequency with which they encounter each issue. There were 31 respondents.

**Table 2**

<table>
<thead>
<tr>
<th>Ebook problem</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-campus access, reported issues</td>
<td></td>
</tr>
</tbody>
</table>

![Figure 4](image-url)
<table>
<thead>
<tr>
<th>Issue Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction required - user requires step-by-step instruction about where to</td>
<td>87</td>
</tr>
<tr>
<td>click to access content</td>
<td></td>
</tr>
<tr>
<td>Concurrent Users - maximum number of concurrent users has been exceeded</td>
<td>83</td>
</tr>
<tr>
<td>Entitlement - content is not accessible on the vendor's platform but user</td>
<td>82</td>
</tr>
<tr>
<td>thinks we should have access</td>
<td></td>
</tr>
<tr>
<td>Download Limits - user cannot print or download because of Digital Rights Management restrictions</td>
<td>73</td>
</tr>
<tr>
<td>Book chapter in article finder - user cannot connect to book through 360 link URL</td>
<td>71</td>
</tr>
<tr>
<td>Not licensed - the user is searching on a vendor’s platform and trying to</td>
<td>66</td>
</tr>
<tr>
<td>access content that we have not purchased</td>
<td></td>
</tr>
<tr>
<td>Vendor platform problem - the vendor's platform is experiencing technical</td>
<td>57</td>
</tr>
<tr>
<td>difficulties</td>
<td></td>
</tr>
<tr>
<td>Adobe Digital Editions problem - user cannot access text because of</td>
<td>50</td>
</tr>
<tr>
<td>problem with Adobe Digital Editions</td>
<td></td>
</tr>
<tr>
<td>Metadata - the ebook record is pointing to the wrong place</td>
<td>47</td>
</tr>
<tr>
<td>Off-campus access - the user is off-campus and being denied access to</td>
<td>46</td>
</tr>
<tr>
<td>content on a vendor's platform</td>
<td></td>
</tr>
<tr>
<td>Permitted Uses - the user is unsure of how a book can be used (eg. for ILL)</td>
<td>46</td>
</tr>
<tr>
<td>User system problem - the user is encountering a problem with their browser</td>
<td>46</td>
</tr>
<tr>
<td>that is preventing them from accessing content</td>
<td></td>
</tr>
</tbody>
</table>
The results showed a mismatch in the frequency with which issues were actually occurring (via the help desk tickets) and the frequency with which staff perceived they were occurring, suggesting that the frequency with which issues were encountered should not be the only considerations when designing the training.

**Figure 5**

The most instructive piece of data gleaned from the surveys came from the comments:

“I haven't experienced most of these issues. Or I haven't framed the problems I have...”
seen users experiencing in these terms. I would like to know how to identify what the problem is when it happens so that I don't always need to report it to ITS. Thank you!"

This comment helped re-frame the training need from a need to train staff how to understand electronic resource troubleshooting to a need to train users how to understand electronic resources.

**Learning Outcomes for Electronic Resource Training**

The shift in focus triggered the use of the electronic resources life cycle as the major framing device for the training. There was no expectation that public service staff should have a deep understanding of every aspect of the life cycle and the processes that underlie it, but it was determined that public service staff should understand the main components, systems, and processes which govern electronic resources at the library.

When thinking about the acquisition stage, public service staff learn about why the need to buy books from different vendors results in different ebook platforms. In the licensing stage, public service staff learn about DRM and concurrent seat restrictions. In the providing access phase public service staff learn about ebook metadata including the role of Electronic Resource Management (ERM) systems, staff learn about authentication including how a proxy server works, and they learn about the differences between a catalogue and a discovery layer. Lastly, in the maintenance and troubleshooting stage they learn about common points of failure and who at the library is responsible for resolving them.

The content of the learning outcomes was drawn from the research done into common points of failure and core competencies for electronic resource troubleshooting but the structure of the learning objectives used Bloom’s Taxonomy to ensure that each desire learning outcome was sufficiently action-oriented. For example, if the
trainers looked at the data and determined they wanted “concurrent user limit” to be a training topic, the learner’s objective was to be able to “check if a resource had limited concurrent users and communicate those limits to users.”

With that framing, the following learning outcomes were established:

- Understand the different ebook platforms and how to provide a user with step-by-step instructions when accessing ebooks;
- Understand and communicate limitations related to Digital Rights Management (DRM) when accessing ebooks;
- Check if an ebook has limited concurrent users and communicate these limits to users;
- Understand the differences between a library catalogue and a discovery layer and how those tools provide access to the library’s content;
- Understand how access to the library’s resources is provided to users who are off-campus;
- Understand how ebook metadata enters the library catalogue and what do to if ebook links are not working;
- Have the knowledge to provide support to users with Adobe Digital Editions;
- Know the difference between a local access problem and a widespread access problem;
- Know who to ask for help when you can’t fix something yourself.

**Method for Training Development and Rollout**

The experiential learning approach was deemed the most appropriate to train public service staff to troubleshoot electronic resources. Eresources are a dynamic and quickly changing area. Most workplace training focuses on rote learning; on the memorization
of steps and scripts. This was deemed inappropriate for training in an area where
technology is rapidly changing and where public service staff might be asked about any
of hundreds of different electronic resource platforms, all with their own particularities.
Using the experiential learning approach, where learners have the opportunity to engage
in experimentation and reflection to solidify their learning, was deemed the best way to
teach public service staff to analyse a variety of problems that might occur in a variety
of systems.

The presence of a well-formed troubleshooting workflow meant that there was
no need for detailed exploration of many of the technical systems that underlie
eresource access. Rather, the major concepts and systems would be introduced, and the
majority of time would be spent by users solving sample problems in groups, or
engaging in active experimentation to test their learning\textsuperscript{xxxiv}, and then reporting back to
the session about what they tried, what worked, and what didn’t. During the discussion
portion, presenters could intervene and add information or possible solutions that may
have been missed by the group, but in most cases the group was able to land on the
correct solution.

\textit{Figure 6}

CASE 1

Help!
My professor says I have to read chapter 3
of this book before my lecture today. It was
working earlier, but now it says I don’t have
access. What’s going on?
Press Gallery: Congress and the Washington
Correspondents
http://myaccess.library.yu.utoronto.ca/login?url=
http://ebookcentral.proquest.com/lib/utoron
to/detail.action?docID=3360215

Why can’t the user access this book?
How can you help?
Mapping the activities onto the experiential learning cycle, the training had the following structure:

A) Abstract conceptualization: Trainers introduce a base of knowledge about the electronic resource life cycle;

B) Active experimentation: Learners are presented with an eresource problem and asked to use their newly acquired knowledge to solve it;

C) Concrete experience: With a partner or a group, learners test different approaches to eresource problem resolution until they find something that works;

D) Reflective observation: Learners report back to the larger group which approaches were tried, including what worked and what failed;

E) Abstract conceptualization: Learners make sense of their experiences and draw connections between their experience (solving the problem) and their knowledge (the eresource life cycle).

This experiential approach presented problems in the context in which learners work, rather than as abstract concepts, and allowed learners to immediately test the knowledge they had just gained. When learners reported to the group the solutions they had tried, they were reflecting on their experience, thus solidifying their knowledge. The cases, eight in all, were drawn again from real tickets from the help desk software. They were presented in order from least to most complex, so learners learned to rule out possible simple issues before moving to more complicated ones. The topics of the cases were as follows:

(1) No access because of limited concurrent users
(2) Discovery layer is pointing to a book only available in print

(3) User attempting off-campus access without going through the proxy server

(4) Link to ebook in the catalogue record is broken

(5) User needs help using Adobe Digital Editions

(6) Vendor is experiencing a platform problem

(7) User is experiencing a browser or other system problem

(8) Catalogue record is for an item the library has not purchased

The training had 80 librarian and staff attendees over five sessions. The training facilitators travelled to five different libraries within the system so that attendees did not have to travel in order to attend the training. Most of the training sessions were held over the lunch hour and food was provided for training participants. Arrangement of information worked well – participants were able to draw back on what they had learned about the e-resource life cycle in order to propose solutions.

At the end of the session, attendees were asked to report back what they had learned and the reported learning mapped well onto the learning outcomes for the session. Attendees could explain and trouble shoot proxy authentication, metadata issues and more.

**Future Directions**

**Attendee Feedback**

Following the final session, attendees from all sessions were sent a survey asking them to reflect both on the workshop and on their experiences resolving or triaging resource problems in the days and months since they met with the trainers. Survey results
reinforced feedback collected in sessions, indicating that key learning outcomes were achieved.

Attendees were asked to identify ebook problems that they had experienced since attending the workshop (see Figure 7). Previous to the workshop, staff had reported that the most troublesome book problems were users requiring instruction and concurrent user limits, though the problem tickets showed that those problem types were infrequent, especially in recent years. After the workshop, the most common error types reported were related to metadata and entitlements, error types that align with the most common issues reported via problem tickets. The training succeeded in teaching public service staff how to determine what exactly was going wrong when users were encountering electronic resource problems.

*Figure 7*

![Common ebook problems reported, post workshop](image)

Additionally, workshop participants highlighted themes that stood out as particularly important learning outcomes. For instance a majority of respondents indicated that in understanding the library’s relationship with vendors and how metadata enters the library catalogue, they are now much better able to triage access issues. Understanding
the access authentication process for off-campus resource users was also seen as particularly beneficial. While a survey question asking participants to indicate the most common resource problems seen since the workshop provided little new information, the ability of respondents to confidently connect their learning to their front-line practice is a success we note.

**Facilitator Feedback**

Feedback from workshop facilitators was positive in regards to their impressions of participant engagement and the success of learning outcomes. Facilitators did identify some workshop participants struggling with basic technical aspects (Eg. Typing in a URL) and will consider ways of designing future sessions that consider the range of technical skills that may be present.

Two logistical strengths of workshop design speak to some fundamental human needs: space and sustenance. Facilitators consistently heard positive feedback from participants regarding the decision to offer these sessions at all campuses, instead of inviting staff into a central campus location. And a decision to provide food at the sessions encouraged the participation of staff with generally less flexibility in their workday.

While these workshops provided an important opportunity for public service staff to strengthen or build eresource competencies, they also contributed to the work of relationship building between siloed departments and across employee groups. Recognizing the responsibilities and skills that are shared between these seemingly distant spaces, should make a contribution towards improving communication and collaboration.
What was left unaddressed in the planning of these workshops – or what was initially addressed but left unresolved – were efforts to extend learning beyond those staff who were able to attend. While a proposal was made to invite the participation of staff interested in training their departmental colleagues in the triaging methods the workshop outlined, there is more work that needs to be done before that approach can be realized.

Conclusion and Future Directions
The focus of electronic resource training for public service staff need not be to make every library worker an expert, but to un-silo the knowledge of electronic resources so that all library staff have the skills and tools to confidently serve the user community. Collecting data about the real eresource problems faced by the UTL community and developing training rooted in experiential learning around those real problems was an effective method to build that confidence.

Current training for new public service staff varies within the University of Toronto Library system, but in most cases on boarding will include a training session or sessions followed by job shadowing and initial solo shifts closely monitored by a direct supervisor or more experienced colleague. In a smaller library, training for new public service staff will often begin with a multi-hour group program during which all job related tasks are introduced, a manual may be reviewed, a library tour is provided, and institutional service values are discussed. Following this orientation session, a regular schedule will begin and additional training is provided in response to service needs as they arise. For instance, when an issue arises that was not fully introduced during orientation, the staff member is encouraged to request help from a supervisor or peer during which the issue resolution can be modelled. In larger libraries, a more elaborate training program may supplement or replace this on boarding model. The University of
Toronto’s largest library, Robarts, requires all new public service staff with research support responsibilities to attend eighteen 2-hour workshops that build required reference service and public service competencies. These workshops, offered in sequence throughout the Fall, are open to any University library staff but attendance is primarily new reference desk staff who are required to attend before any solo shifts can be scheduled. This range of on boarding models, from a single multi-hour session to a more comprehensive multi-workshop curriculum, highlights the challenge of rolling out a single electronic resource training model that will easily fit within the constraints of current institutional on boarding practices. Response to recent outreach regarding the inclusion of electronic resource training in standing staff on boarding sessions indicates that while the service benefits of early electronic resource training is known, budgetary challenges associated with hiring and training result in a very steep competition for training time. Even at our largest library where 36 hours of training is required, training facilitators are hard pressed to identify what content can be removed to make time for electronic resource troubleshooting.

Moving forward, the model of electronic resource training described in this paper will continue to be offered every other year or as needed, with sessions offered on all campuses. This workshop will also be available throughout the year to any library requesting a custom offering. But as our electronic resource collection continues to grow, and researcher demand for a seamless electronic resource experience keeps pace with that growth, it is essential that all staff training within our distributed service environment incorporates electronic resource troubleshooting as part of its core approach.


vii Samples, 100.


xiii Goldfinger, 85; Donlan, 99.
xiv Carter and Traill, 7; Goldfinger 85.

xv Goldfinger, 85; Carter and Traill, 7; Davis et al, 24; Munson, 35.

xvi Goldfinger, 85; Munson, 35.


xx Hart and Sugarman, 30.


xxii Samples 107

xxiv Rathmel, 101.

xxv Resnick, Evolution of Electronic Resources Support, 367.

xxvi Carter and Traill, 11.

xxvii Rathmel, 102.


xxix Marsick, 188.


xxxii Bloom, 201.

xxxii Pesch, 482.

Kolb, 50.