

# The Toolkit in Action

A healthy tension throughout the creation of the toolkit was considering whether it could really be used as a stand-alone, self-guided technology guide for novice users. The tension comes from the aim of the project (a resource accessible to all) and the subject matter (necessarily technical, which can be a turnoff to many users). This tension was embraced and explored throughout the pilot process.

The first challenge was encouraging nontechnical users to open the toolkit up for even a quick look-see. Many, fearing that the toolkit would be an incomprehensible collection of geek speak, did not review it in advance of the site visits performed during the pilot. However, when a member of the project team started walking these reluctant users through the toolkit process, each quickly realized that the language was understandable and designed to connect with a lay audience. For these users, each visit quickly turned from a feeling of “I’m not sure I want to do this” to “This isn’t so hard! Let’s learn and explore more!”

The toolkit was piloted with fifty-eight rural and tribal libraries in eleven states. Each pilot participant was offered the chance to share feedback after the site visits via a survey. The results indicated a high level of satisfaction with the program (figure 3.1) and unanimous recommendations for others to use the toolkit (figure 3.2).

## Eating the Elephant a Bite at a Time

During the pilot, project managers noted two distinct approaches on how project members would use the toolkit onsite: novices tended to work through the material in a linear fashion (essentially from end to end), while more experienced techs would talk briefly with the library to discover the areas in need of the most urgent attention and then focus on just those sections of the toolkit that might provide the most help.

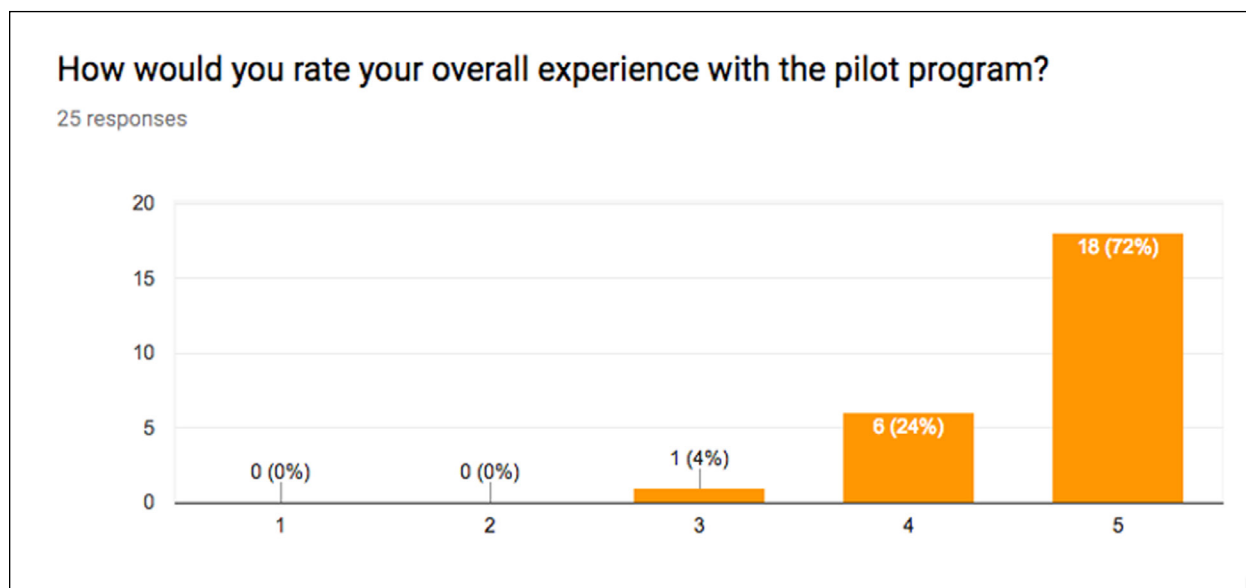
The **end-to-end approach** was most often used when the project member assisting with the toolkit site visit had little technology experience. This approach was especially valuable during the TGL pilot visits to help show where the toolkit was indeed self-explanatory and, even better, highlight areas that needed edits or other refinements to make the toolkit friendlier to novice users. In addition, this approach leans into the very design of the toolkit, making it a handy self-guided technology training course for users.

The **targeted approach** was most often used by a project member with technology troubleshooting experience. It would begin with a chat with the library worker about their experiences with technology, including off-the-cuff descriptions about things that the library was struggling with. The conversations led to targeted explorations of the toolkit, using sections that best addressed the issues described by the library worker. This approach is well-suited to quickly address ongoing frustrations and nagging hot spots that the library is experiencing.

Although no two site visits were identical, most of the TGL pilot visits had common elements.

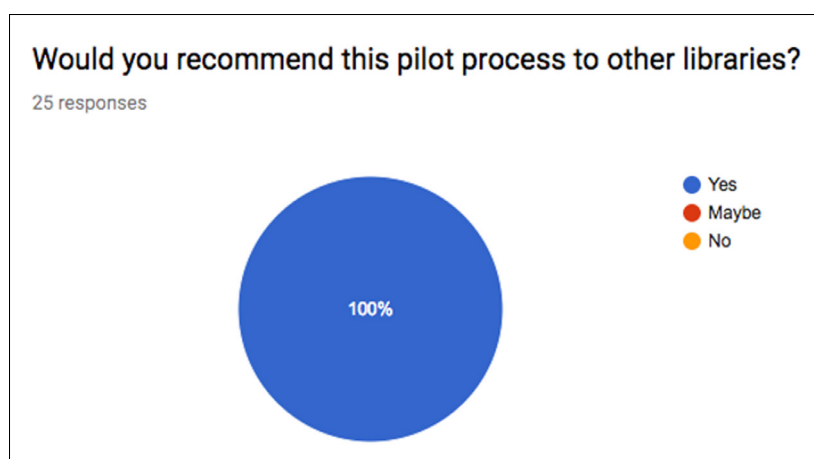
At the very beginning (perhaps months before the site visit), each library filled out an intake survey. The purpose of this survey was twofold:

- The project team wanted to ensure that only the libraries with the most need were selected for the visits to ensure that participants would receive the greatest benefit for the time invested in the site visit process. All library workers are busy, and it can be argued that rural and tribal libraries, typically with few staff and many responsibilities, might be the busiest of all.
- The survey provided the site visit team with some basic information about the library’s technology environment to help prepare for a productive visit.



**Figure 3.1**

A chart based on the post-visit survey taken by TGL participants, which shows a very positive overall experience with the program.



**Figure 3.2**

A chart based on the post-visit survey taken by TGL participants, which shows a 100 percent recommendation of the pilot process to other libraries.

The intake survey indicated who to include in the site visit, including the size of the site visit team (single or in partnership with a staff member from a state library organization, research and education network, or both) and who from the library (including nontechnical library staff, technical staff, partners, or volunteers) should be at the table. The survey was also helpful in determining the best toolkit approach up front (end-to-end or targeted toolkit experience), which was especially useful in planning the logistics of the day, especially for multiple-day road trips, when a large portion of the trip might be devoted to driving between sites.

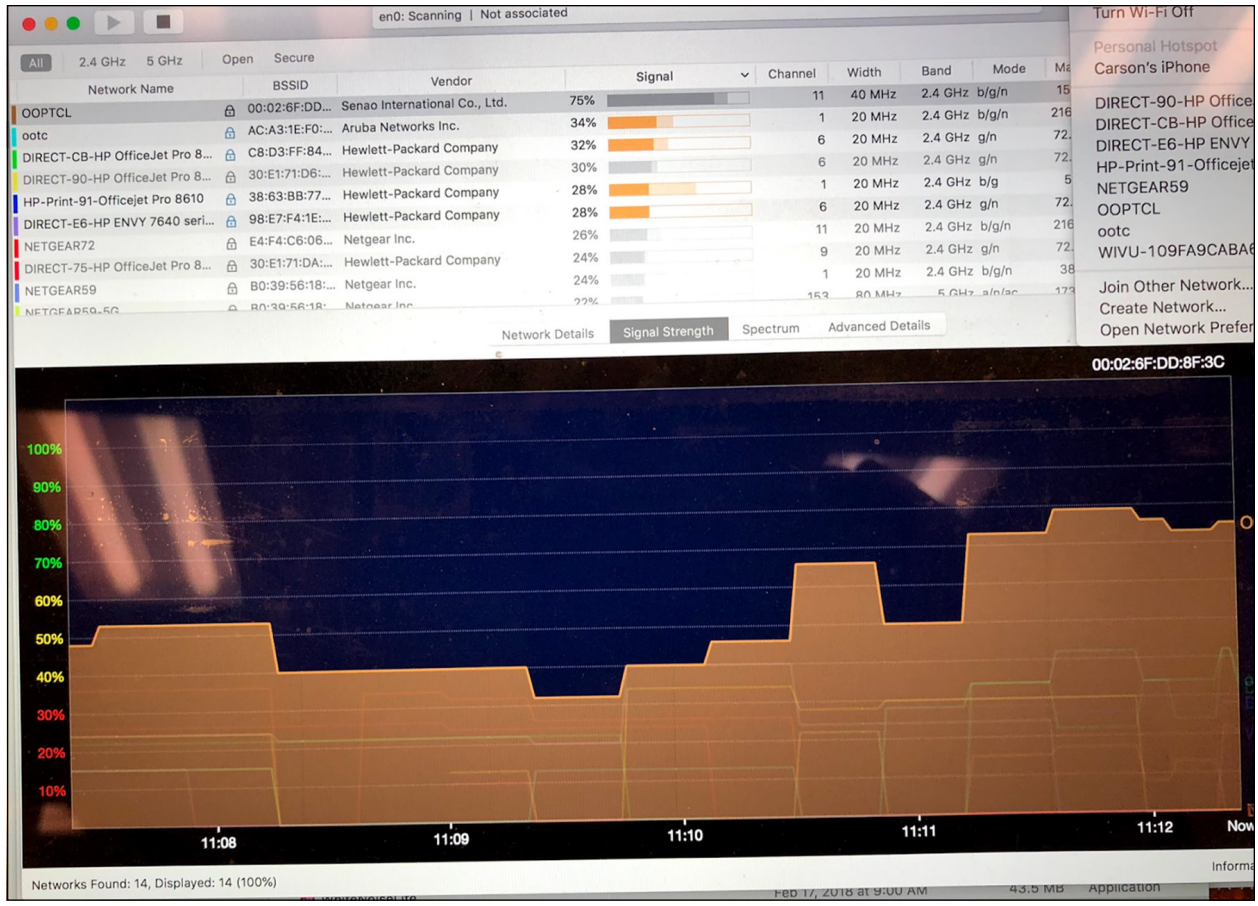
A key element of success for the visit, which may be surprising to some, is the use of a physical copy of the toolkit instead of an electronic version. On visits that I performed, I asked the library to print out a version for our visit, and I would bring my own hard copy and a folio filled with more so that every participant could have their own. While sitting and discussing things is a part of the toolkit experience, physically walking around (and sometimes crawling with a flashlight in one hand) for assessment activities helps make the technology knowledge practical.

The process of tracking things down can be quite an adventure.

At a tribal library visit in New Mexico, the library director expressed an interest in serving a bus stop near the entrance of a library building with a strong Wi-Fi signal but was bewildered as to why the reception was poor at the spot.

Using a Wi-Fi stumbler (software noted in the toolkit that allows users to “see” and measure Wi-Fi signals and signal strength on a laptop, smartphone, or other mobile device), as shown in figure 3.3, we could indeed see that the signal strength dropped off dramatically when stepping outside the building.

The cause? Many buildings in New Mexico are made of adobe—essentially mud that can be made into bricks or applied over a solid core structure that



**Figure 3.3**

A screenshot of the author's Wi-Fi stumbler on-site in New Mexico. The graph shows low and high signal strength as part of toolkit activities during a site visit to a tribal library. As the graph moves to the bottom of the page, it indicates a weaker signal.



**Figure 3.4**

An example of an adobe building in New Mexico.



**Figure 3.5**

Tom Rolfes (education information technology manager at Nebraska Information Technology Commission) finds a hidden Wi-Fi access point during a site visit to a Nebraska library.

includes a metal webbing (sometimes chicken wire). See figure 3.4 for an example of an adobe building in New Mexico. In essence, adobe is not only beautiful,

but the combination of elements make it an excellent shield against radio waves, including those used for Wi-Fi networks!

SHORT TERM ACTION PLAN (0-3 MONTHS)			
Action	Intended Result	Resources Required	Timeline
Move WiFi router from back of library to central part	Improve throughput in library, reduce dead spots	Additional LAN cabling	One month
Obtain information on contract with broadband service provider, including speeds, SLAs, contract time, costs, etc.	Understand what speeds library should be seeing, calculate cost per Mbps, understand if there is recourse for missed speeds.	Name of service provider and billing name/information.	One week
LONG TERM ACTION PLAN (3-12 MONTHS)			
Action	Intended Result	Resources Required	Timeline
Contract with an additional area broadband service provider and bond/combine with existing broadband capacity	Increase broadband capacity at library	Additional broadband connection and equipment to combine connection	6 months
Install WiFi repeaters	Reduce dead spots, increase access to WiFi outside of library for off-hour use	WiFi repeaters	5 months

**Figure 3.6**

A portion of the Broadband Improvement Plan document, which allows users to chart out actions, intended results, resources required, and a time line for both short-term and long-term plans.

The suggested solution to serve folks at the bus stop was to test different locations for Wi-Fi installation, such as in a window or outside of the library.

Another site visit, in Nebraska, started with a group of us sitting around a table talking about technical challenges faced by the library. In this particular library, staff knew that they had several Wi-Fi access points (installed by their city government partner), but they weren't quite sure where they were all located.

To help solve the mystery, we used a Wi-Fi stumbler to find the source of a Wi-Fi signal that seemed to be coming from a ceiling covered in acoustical tile. One team member grabbed a chair and popped one of the tiles loose and found the hot spot, which was placed on the hidden side of one of the acoustical tiles (figure 3.5).

Each toolkit visit involved a variation of these two stories—one or more technology mysteries that were solved through the simple process of evaluation as guided by the toolkit.

Given the payoff, it's probably not too surprising that even library workers who were skeptical that the visit would be worth the time invested, or perhaps unsure if they could gain the technical knowledge needed to fully participate (often referring to themselves as "tech illiterate"), quickly changed their minds and embraced the process. As mysteries were solved, amusingly many would start suggesting ways

we could extend the visit and discover even more things that could use some tech TLC.

Finally, the participating library was asked to fill out a post-visit survey evaluating the process and experience. As indicated earlier, both were ranked highly, yet there were always excellent suggestions for process improvements that were embraced and incorporated into the toolkit and visit process.

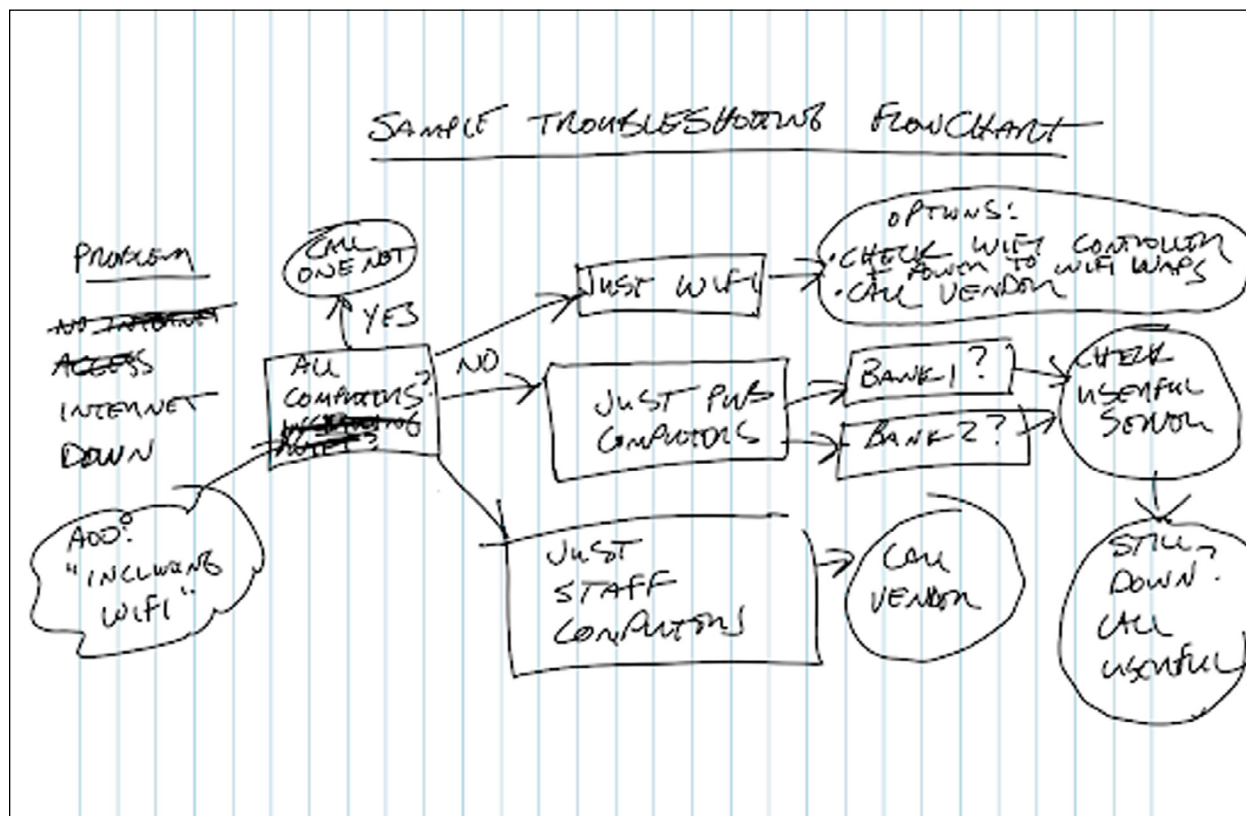
Depending on the users' orientation, either the end-to-end or the targeted approach proved to work perfectly well, although all users tended to benefit from expert guidance as part of the experience, especially in creating the final step in the process: a document called the Broadband Improvement Plan.

## The Broadband Improvement Plan (BIP)

While the toolkit itself has proven to be an excellent way to inventory, it would feel a little incomplete without a path to action. After completing even a small part of the toolkit, libraries sometimes find that they need to address technology issues. Sometimes there are a number of issues to tackle, and having a way to sort them all out is crucial to creating a path to action and improvements.

Another document from the pilot, called the





**Figure 3.7**

An example of a hand-drawn troubleshooting flowchart drawn on a site visit by the author.

Broadband Improvement Plan (BIP), is designed to help list and prioritize short-term and long-term actions (figure 3.6).

The document is a template (which can be used in any word processing software) that contains two grids for users to complete to build their own plan of action to address technology needs in their library.

The first grid, titled “Short Term Action Plan,” is designed to address the most immediate needs, including those items that should be completed within one to three months. The second grid, titled “Long Term Action Plan,” is provided for tasks that may take up to a year to complete.

The form is designed to be self-explanatory, and sample text is provided in the Word version of the document to give users an idea of how real-world needs were tackled in the BIP by an example library. Both the short-term and long-term sections contain grids with the same headings:

- Action
- Intended Result
- Resources Required
- Timeline

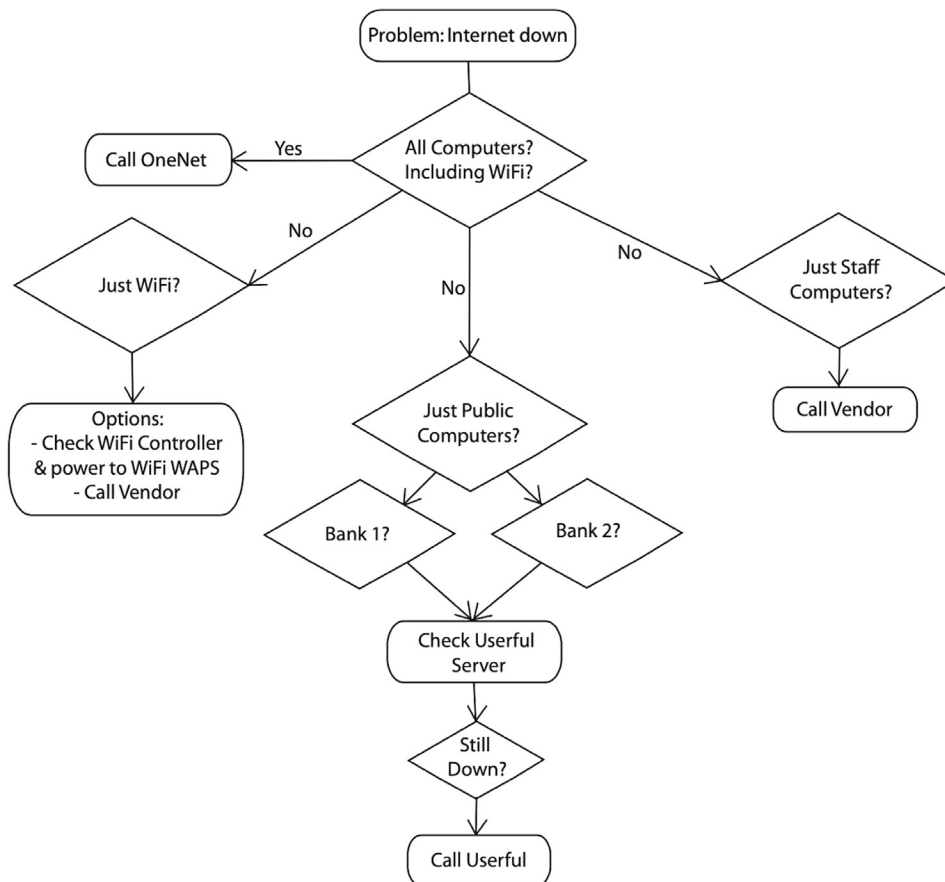
## The Toolkit as a Communications Tool

The biblical story of the Tower of Babel illustrates what can happen when people don’t speak the same language. Many nontechnicians who have tried to communicate with technical staff have lived the consequences of that story over and over again. While some keep on trying to communicate, many others simply give up. Not only is this situation personally frustrating to the people involved, but it also presents a barrier preventing many people in charge of libraries from maximizing the application of technology for the benefit of the communities they serve.

This unfortunate situation arises in part from a fallacy: that technology is somehow too difficult for a layperson to grasp. In truth, there are few technological concepts (arguably aside from highly complex ones such as the mechanics of the blockchain and the details of quantum computing) that a layperson cannot understand, at least in a conceptual sense. This basic understanding of fundamental technological concepts is also important to allow all libraries, regardless of size, to make wise choices about technology.

As in the biblical story, language can be a key barrier to understanding and, ultimately, progress. The

# Sample Troubleshooting Flowchart



**Figure 3.8**

The same troubleshooting flowchart as in figure 3.7, refined and reproduced with computer software.

toolkit is designed to be a teaching aid. Its format is designed to help nontechnical people learn essential concepts. It even devotes an entire section to a glossary of common technical terms.

During the pilot process, the project team sought out opportunities to involve both “library” people and “technical” folks as part of site visits. This pairing resulted in two powerful discoveries: the toolkit can create stronger bonds between nontechnical library staff and technical support staff and can also help form powerful teams of subject matter experts (with complementary skills) from different agencies or organizations.

The project team discovered that even in some libraries where technical staff are available (for the pilot libraries, mostly through a public library system or associated tribal department), there was little dialogue between the nontechnical library worker and the tech worker. In these cases, simply sitting down together to work through the toolkit instantly

created a shared understanding of essential concepts and vocabulary. Naturally, once the “library” person started having more technical understanding (and the “tech” person saw the transformation), conversations quickly shifted from the basics of assessment to more complex and specific troubleshooting dialogue. Some pilot libraries reported that the toolkit visit gave them their first opportunity to sit with their technical support folks and actually talk the same language.

Another positive situation emerged during the toolkit pilot process. In some states, the site visits were performed with a small team of local subject matter experts, including members of the state library organization (mostly nontechnical staff) and members of a technical organization (such as a research and education network or IT staff from a tribal organization or a university). In these cases, both partners had the chance to review the toolkit before the visit and enjoyed the process of using their focused expertise to help libraries. For instance, in a visit the author

**3. If your library did not apply for E-rate funding, it was because (select all that apply):**

- ☐ The E-rate application process is too complicated.
- ☐ The library staff did not feel that the library would qualify.
- ☐ Our E-rate discount is low and we don't feel it is worth the time to participate.
- ☐ The library receives E-rate discounts as part of a consortium, so it does not apply individually.
- ☐ The library was denied funding in the past and is discouraged about trying further.
- ☐ The library did not apply because of the need to comply with the filtering requirements of the Children's Internet Protection Act (CIPA).
- ☐ The library applied for E-rate in the past but no longer finds it necessary.
- ☐ The library receives its Internet access at no charge from the broadband service provider or other governmental entity.
- ☐ Other: {add reasons here}

See "Section 9: Additional Resources and Best Practices" some E-rate resources and information. Note that some libraries partner with their local school for E-rate applications and connections to aggregate demand, reducing application burden and potentially increasing services.

The State Librarian Office may also have resources to help libraries apply for E-Rate. A list of State E-rate Coordinators can be found on the American Library Association's website: <http://www.ala.org/advocacy/e-rate-state-coordinators>

**Figure 3.9**

An example question from page 47 of the toolkit, which asks libraries to list reasons why they did not apply for E-rate funding, as well as a "guidance" box that includes resources for libraries that are interested in E-rate funding.

performed in Oklahoma with James Deaton (formerly of OneNet, the Rural and Education Network for Oklahoma), the visit turned quickly from the bounds of the toolkit process to a deep dive into network diagramming and troubleshooting to address specific issues reported by the library. Deaton was able to use the troubleshooting time to provide a detailed description to technical support staff at OneNet to address the issues.

The process of troubleshooting a technical problem can be mysterious to non-technical people. When users discover that technology troubleshooting is mostly a linear process that can be diagrammed and shared, it turns mystery into mastery. In an example from the same library (figure 3.7), I created a troubleshooting diagram on-site showing the linear troubleshooting steps to try when the internet seems to be

down. Making things a little more complex for this library is the use of a proprietary public PC system that requires a local server to function. Later, using software, I created a much more legible (and detailed) version to share with the library (Figure 3.8).

## The Toolkit and Influence on E-rate Applications

The federal E-rate program, which provides discounts on select telecommunications services and equipment to K–12 schools and public libraries in the US, is widely used to mitigate ongoing technology costs.<sup>1</sup> Some, but not all, tribal libraries are eligible for E-rate. (Tribal library eligibility is determined by the local state library organization.)

## “Explainer” Video

As the TGL grant period wrapped up, the team created an “explainer” video—important because this was possibly the only enduring way to communicate the existence of the toolkit to users after the TGL grant ended. (Carson Block, “The Toward Gigabit Libraries Toolkit (Explainer Video),” October 9, 2018, YouTube video, 3:55, <https://youtu.be/PXWv3-HYm-l>.)

Although participating in E-rate is widespread among public libraries, not all eligible libraries pursue the discounts. As was mentioned in chapter 2, one section of the toolkit lists the common reasons that libraries opt out of the program (figure 3.9).

In working with libraries during site visits, the project team discovered a reason that was not noted on the list but became apparent throughout the pilot process. Some libraries simply didn’t know where to start in identifying their broadband service and equipment needs.

The process of working through the toolkit and creating the Broadband Improvement Plan essentially creates a tangible, actionable list of services and equipment needed by the library to improve its technology. With this list in hand, several pilot participants that had previously opted out of E-rate reconsidered their position.

## Broadening the Reach

As the toolkit TGL grant period wrapped up in mid-2019, a compelling question remained. How would

people in the library community know about the existence of this pilot project and the resources to help libraries understand and improve their technological environments?

After the second and final meeting of the project advisory board (during the American Libraries Association conference in New Orleans, Louisiana, in June 2019), the project team engaged a handful of board members to review a project awareness strategy based on the concept of an “explainer video,” a format that is commonly used to communicate sometimes complex information in a brief, powerful, and easy-to-digest package. The team’s hope was that the video would serve as a guidepost to the toolkit and associated project resources (at its home on the Internet2 website) for as long as possible.<sup>2</sup>

The script for the four-minute video was written and narrated by Block, with images taken from the toolkit and original graphics created by his daughter Jessikha Block, who also edited the video.

On October 9, 2018, the team published the video on YouTube and spread the word through a relatively modest approach of social media and discussion list postings, as well as requests for members of the advisory board to help spread awareness. As of June 2021, the video has been viewed nearly 1,400 times, much to the joy of all involved in the project.

## Notes

1. Universal Service Administrative Co., “E-rate,” <https://www.usac.org/e-rate/>.
2. Internet2, “How to Use the Toward Gigabit Libraries Toolkit,” YouTube video, 3:55, posted by Carson Block, October 9, 2018, [www.internet2.edu/tgl/](http://www.internet2.edu/tgl/).