Chapter 6

Additional Resources and Final Remarks

As we learned about how information visualization impacts and interacts with libraries, every individual and affected party to this profound undertaking should make concerted efforts to learn the process involved. Thankfully, today there are many learning opportunities and resources that people can use to gain sufficient information and the expertise necessary to properly use and experience the benefits of information visualization. These opportunities will help people in improving upon the skills they already have, or will help them begin studies in this field with a stronger footing.

Some of the major opportunities and resources that are available for individuals to use to get the necessary training include books that give detailed information on the subject, tutorials that offer in-depth explanations about the process of information visualization, webinars, blogs and websites, and articles and journals written by people who have done intensive research on the topic. The interested individual can also decide to use massive open online courses (MOOCs) to gain enough knowledge to become proficient in information visualization.

In this chapter, the various opportunities and resources at one's disposal will be referenced. The text discusses the specific things to look for to ensure that the resource chosen offers both valuable insight and the required steps to start grasping a fundamental knowledge of information visualization. In addition to the basics, opportunities are available to become more conversant in the knowledge and application that it will take to effectively work with this new way of conducting library business and services.

Books

A substantial amount of information is available in book form that offers guidance and essential knowledge needed for information visualization proficiency. For those who are just beginning, I recommend starting with books that provide information on data visualization in simpler formats and steps so that one can quickly grasp the material in a short, reasonable period of time. Such books will include the use of simple charts and principles to show how data has been encoded. These texts should inform readers about the fundamentals of incorporating visual attributes, such as color and shape, into information visualization and explain the differences achieved when these attributes are used. As the subject progresses, readers will get to a point where the author explains in detail how information visualizations are designed.

Three exemplary book resources are given below, serving as excellent learning resources for not only beginners but also advanced learners on the topic of information visualization:

- Tufte, Edward. *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press, 2001.
- Ware, Colin. *Information Visualization: Perception for Design*. Burlington, MA: Morgan Kaufmann, 2012.
- Few, Stephen. *Now You See It: Simple Visualization Techniques for Quantitative Analysis*. Berkeley, CA: Analytics Press, 2009.

These references are a great starting point for individuals looking to learn more about information

visualization. Having a physical reference book available is useful, so that learners can quickly return to the book when necessary for either a refresher or to understand something better at a later time.

Tutorials

Tutorials are one of the single greatest tools that have led to the success of most research programs. Most tutorials are appropriate for the learning process of a subject, especially when it involves learning specific skills such as programming and design. Many tutorials are now available on the Internet, as well as from other sources, that are highly effective and efficient in helping individuals develop and enhance their abilities.

The one drawback with tutorials, depending on the learning goal, is that most of them do not offer a deeper explanation of the subject. They are more likely to give a general description. They enable individuals to gain a higher level of understanding of the tool or topic at hand. Most often, tutorials are a representation of information collected from books, websites, journals, articles, and even well-written programs. These tutorials are simplified to a form that allows the person going through them to easily grasp the concept without straining or growing frustrated.

When looking to gain a basic amount of knowledge on information visualization, tutorials can be a wonderful choice. Using tutorials to study information visualization allows learners to identify those areas that they need to focus on and those areas that they can easily ignore.[1]

Below are two examples of online tutorials that can help individuals dive deeper into learning information visualization, from both a theoretical and practical perspective:

- D3.js tutorial: https://github.com/d3/d3/wiki/Tutorials.
- Tableau tutorial: www.tableau.com/beginners-data-visualization.

Online Courses

Due to their convenience, online courses have grown significantly in popularity over the past several years. Most people prefer online courses since they are easy to access, and people can study at their convenience. What draws many people to these courses is their directness. They are straightforward and short, allowing an individual to quickly gain the expected skills being taught without much struggle. A good number of universities and other organizations are now offering these courses, which have allowed many people to gain knowledge on a variety of subjects at a lower cost than in-person classes. Some of these courses are free, and others require a fee. Usually, these fees have been subsidized.

Two good examples of online courses that are being offered on information visualization can be found at the following links:

- DataCamp: https://www.datacamp.com/courses.
- Lynda.com: https://www.lynda.com/Design-Infographics-tutorials/Data-Visualization-Fundamentals/153776-2.html.

The number of sources that can give one access to online courses is vast. Because of this, it is important that the individuals looking to take an online course are able to identify if it indeed does offer the knowledge they are hoping to gain. I recommend that before deciding on a course, individuals should hone in on the skills they want to develop first, and then go online to research the various courses available and look at the feedback provided by previous participants.

MOOCs

Massive open online courses (MOOCs) are a form of training offered to an enormous number of people over the Internet. Those interested just log in to the website, sign up, and then begin studying until they have reached the end of the course materials. What is very appealing about this type of learning is that it is often free of charge. Some of the features one can expect from MOOCs include lecture notes, filmed lectures, readings, and questions. At times, there may be an interactive forum to participate in, which is a wonderful way to enhance the learning experience for all the parties involved. However, overall, these courses are not reliable in comparison to other resources because an individual can misinterpret the information presented with limited direct interactions with the instructor. Some good examples of MOOCs for information visualization include the following:

- Coursera: https://www.coursera.org/learn/datavisualization.
- Udacity: https://www.udacity.com/course/data-visualization-and-d3js--ud507.

As wonderful as a MOOC is for gaining some basic understanding, it is not wise to assume that it is fully accurate, and this is one of the largest substantiated criticisms of this resource. According to Ryan Nelson of UVA McIntire School of Commerce, MOOCs have received several criticisms on their inability to provide sufficient rigor when it comes to offering the best academic strategies.[2]

Webinars

Webinars are an appealing resource because they are seldom time intensive. W*ebinar* is a short form for "web-based seminar." A webinar involves workshops, presentations, lectures, and seminars that are offered through the Internet, primarily using conferencing software. Several webinars have been offered on the topic of information visualization. These webinars are easy to access, and they require an individual only to register and subscribe to that given website. A good example of a link that requires registration before being able to watch the webinar is given below:

- Qlik—Data Visualization: Best Practices in 2016: http://go.qlik.com/NAM_16_Q1_Data_Visualization_FEB25_Registration_LP.html?sourceID1=web.[3]

Webinars offer flexibility, and they often offer an interactive environment to communicate with presenters and fellow attendees. This format is very appealing. With a webinar, participants can gain the knowledge that they expect.

Conclusion

Information visualization is a vast topic, and because of increased demand, more opportunities are coming up to enable those interested to gain sufficient knowledge on this topic from a wide variety of resources, which are tailored for different learning styles and abilities. With the information available from these sources, one can easily navigate a pathway to become an advanced expert in information visualization. In addition, it is always a prudent idea to seek out reputable blogs, articles, professional journals, and publications to stay up-to-date on the latest advances in the field.

Final Remarks

By changing the conversation and beginning to have more in-depth conversations to prepare libraries for the onset of information visualization on a global basis, we can provide library directors and library staff with a better understanding of information technology and its importance. Through these initiatives, these key players will learn how information visualization can be implemented to provide them with data that allows them to better perform their responsibilities and benefit their library staff and end users.

With the use of information visualization, more people are able to understand and process data in a more efficient, streamlined manner. This technology has presented as much interest and excitement as it has challenges, as it is difficult to keep up with the rapidly changing landscape. However, researchers, scholars, and practitioners have dedicated great efforts to training and informing individuals while also demonstrating the usefulness and benefits of implementing information visualization.

Today, libraries are working to create a culture in which staff is trained in information visualization, as it benefits both the work environment and end user. There is still a lot of work to do, but with budgetary priorities shifting from having to purchase physical materials to having to purchase e-resources, it has become substantially easier. By implementing information visualization, libraries have found a way to stay competitive through better research support, data understanding, library message delivery, user engagement and connection, and data assessment. It is an investment that pays off.

Increased acceptance of information visualization comes along with a higher volume of scenarios that showcase data visualization in action, further solidifying why it is the way of the future. The ability to retrieve data and relay it in an easy-to-follow, quick-to-process manner is powerful and effective. Furthermore, it extends the reach of information on a global level, whether in large urban areas or small rural areas.

The largest obstacle to conquer thus far has been training of library staff, but there are many initiatives that now make training easier than it ever has been before. This chapter includes a list of available resources for further training. These resources are helpful at breaking down any remaining resistance and highlight how information visualization will help end users—faculty, students, or professionals who are seeking out data.

What is left to do? It's time to act and embrace these new technologies and understand how they are revolutionizing the ways that libraries conduct business and the services they offer. A lot of progress has been made, and there is still much to do. The time has never been more ideal to take the initiative to incorporate information visualization into the fabric of the library culture.

Notes

1. "Courses," DataCamp, accessed October 25, 2016, https://www.datacamp.com/courses.
2. Ryan Nelsen, "Best Practices for Killer Data Visualization [Webinar]," *Customer Insights* (blog), Qualtrics, August 4, 2015, https://www.qualtrics.com/blog/4-best-practices-for-killer-data-visualization.
3. "Data Visualization: Best Practices In 2016," Qlik webinar, accessed October 25, 2016, http://go.qlik.com/NAM_16_Q1_Data_Visualization_FEB25_Registration_LP.html?sourceID1=web.