TechMatters: See What I'm Saying?:
Infographics Made Easier

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Visual literacy, defined in the Association of College and Research Libraries' (ACRL) competency standards for higher education (http://www.ala.org/acrl/standards/visualliteracy) as the ability "to effectively find, interpret, evaluate, use, and create images and visual media", is fast being recognized as a necessary skill set for the information literate individual in our highly visual society. Additionally, the ability to understand and communicate information clearly in graphical form is rapidly becoming a requirement for many types of jobs in many different fields.

One specific type of visual representation that can be used to convey complex data and information in an engaging and meaningful way is the information graphic, or infographic. Infographics are commonly used in newspapers (e.g., the well-known USA Today Snapshots found in the bottom left of the front page) and magazines to present statistics, timelines, geographical and other types of information. They can be found online easily using aggregator sites like the "Infographics Commons" (http://infographiccommons.com/) or visual.ly (http://visual.ly/), or by performing a simple Google image search for "infographic" combined with your topic of choice.

Creating an information graphic requires the ability to search for, find, and then interpret information and data, all skills that we routinely teach and that are well-within the wheelhouse of the typical instruction librarian. Equally necessary, and less familiar for most of us, are image manipulation and graphic design skills. Graphic design tools, such as Adobe Illustrator, are notorious for being expensive and requiring a significant learning curve. Fortunately, a category of online tools exists designed specifically to address this problem, and allow non-designers on a budget to easily start creating infographics, which includes Piktochart (http://piktochart.com), Venngage (https://venngage.com/), and infogr.am (https://infogr.am/).

General Features

Although each has its own branding and "personality", the three infographics tools mentioned above share the same overall purpose and many of the following common features.

Free and Fee-Based Accounts

Piktochart, Venngage, and infogr.am all provide both free and fee-based account options. For the most part, free accounts provide access to the primary features of the applications with limitations placed on number of infographics, design themes and graphics available, as well as access to a few advanced features like pdf exports. To create an account

for each, you need only provide a user name, email address, and password.

Templates and Themes

All three applications are template-based, meaning that each provides users with a limited set of pre-designed layout and color schemes that can be used as a jumping off point for developing custom infographics (see Figure 1). In each case, free account holders have access to only a limited set of templates, with additional options available to users with Pro or Premium (aka fee-based) accounts. Both Pikochart and Venngage also provide the option to create from a blank template, while infogr.am users can achieve the same option only by selecting a template and then manually deleting all of the pre-configured elements.

Figure 1: Selection of Free and Fee-based Templates from the Venngage site

Format Customizations

Whether working from a template, or a blank canvas, each tool provides a variety of options to modify and format text, fonts, and backgrounds. In all three, users can insert and edit text elements. Initially, the formatting of different element types (e.g., headers, body text) is controlled by template pre-sets, but in the case of Venngage and Piktochart users can override these settings and change font type, color, and size. These two tools also allow users to change the background color and opacity, with Piktochart also offering textured backgrounds. In infogr.am, colors and backgrounds are completely locked-in based on the selected template theme and can only be changed by selecting a different overall theme.

Icons and Images

Both Piktochart and Venngage provide a basic library of icons, shapes, and images that can be inserted into infographics. These graphics cover a wide range of types and topics (see Figure 2), running the gamut from basic shapes to social media icons and logos to people engaged in various sports and activities. Both tools also allow you to customize the color, size, and opacity of these graphics. Although free users do have access to a fairly extensive collection of graphics, even more options are available to those who pay. Beyond the image libraries, all three tools do allow users to upload their own images from their own computer, with Venngage also allowing embedded images from the web.
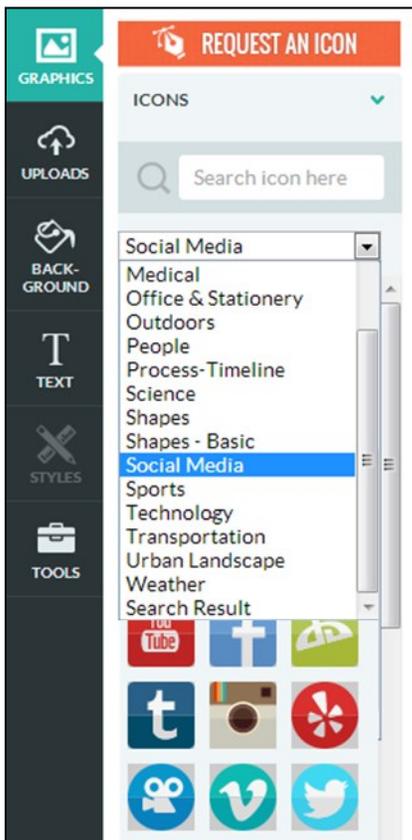
Figure 3: Chart and Graph Options in infogr.am

Figure 2: Sample of Free Icons and Categories of Graphics Available in Piktochart

Charts and Graphs

Since the display and visualization of complex data in an understandable form is one of the primary goals of an infographic, it is not surprising that each of these tools provides an array of different charts, graphs, and maps to be used for this purpose. From line, to area, to pie, to bar, to bubble, to scatter, to gauge and donut, all of the typical graph and chart types seem to be represented (see Figure 3). Simply select your chosen format type and then enter your data into each tool's embedded data editor to generate your graph or chart. Alternately, Piktochart and infogr.am allow users to upload data from an Excel spreadsheet or link to a live Google spreadsheet, thereby eliminating the need to redo work entering data that has already been compiled. As you would expect, colors, legends, and labels on charts and graphs can be customized.

Output / Export

After completing your infographic, you will likely want to share it with others. All three tools allow you to "publish" your infographics to a public site where they can be viewed by others. Each will provide you with the public URL that you can then share with your users. Although both infogr.am and Piktochart provide options to generate a "private" URL, this feature is only available to users with paid accounts. Likewise, although all three tools do provide the functionality to export infographics as pdf or png files, this feature is only available to paying customers.

Good Design is Still a Skill

A word of warning: these tools, with their extensive templates and relatively easy-to-use features may make you think it is easy to create high-quality infographics. It is not. It is one thing to create the picture; it is another to make sure that picture is readily understandable so the viewer can draw insights from it. It's like PowerPoint—the introduction of that tool, with its templates and functionality, made it much easier for anyone, even a non-designer, to create decent slides for use in presentations; however, it has taken many, many years for a good percentage of people to learn how to use design principles so those slides are as informative, readable and well-designed as possible.

For design principles, there are literally hundreds of books on the subject, with the leading ones being tomes that might be familiar to you (e.g., the many works of Edward Tufte, such as *Visual Explanations: Images and Quantities, Evidence and Narrative* (1997). Others explicitly address the recent infographic phenomenon (e.g., *The Best American Infographics 2013* by Gareth Cook (2013) or *Cool Infographics: Effective Communication with Data Visualization and Design* by Randy Krum (2013). Many web articles

Conclusion

While the PBL sessions continue to be offered as an option for information literacy sessions at Mount Aloysius College, newly developed instructional sessions maximizing the use of iPads and subject-based educational apps are also being offered. At Ferrum College, PBL sessions are a notable component the library information literacy program and now extend to some upper division classes.

The biggest challenge we faced in creating our PBL sessions was buy in from fellow librarians and faculty who were unfamiliar with the approach. While our PBL sessions had positive learning outcomes, more focus needs to be placed on where to introduce PBL and how to scaffold information literacy skills through upper division courses without simply repeating the same type of session.

Moreover, time is an important factor in planning any PBL exercise. Even restricting the material to only the basic essentials of an introduction, time for searching, and a discussion period it is difficult to complete a PBL session in 50 minutes without strong preparation and practice beforehand. Finally, while our design relied heavily on the use of iPads, our research shows a PBL session could be developed similarly at other libraries with different technologies or exercises. Overall, our implementations demonstrate that a PBL approach to information literacy instruction can be applied in a variety of learning situations and provides an engaging learning experience for millennial students.

References

Barell, J. (2010). Problem-based learning: The foundation for 21st century skills. In J. Bellanca & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (pp. 175-199). Bloomington, IN: Solution Tree Press.

Barrows, H.S. (1996). Problem-based learning in medicine and beyond: A brief overview. In L. Wilkerson & W.H. Gijselaers (Eds.), *Bringing problem-based learning to higher education: Theory and practice* (pp. 3-12). San Francisco, CA: Jossey-Bass Publishers.

Becker, Jr., C.H. (2012). Student values and research: Are millennials really changing the future of reference and research? *Journal of Library Administration, 52*(6-7), 474-497. doi: 10.1080/01930826.2012.707948

Daniel, D. (2013). Millennial generation students search the web erratically, with minimal evaluation of information quality. *Evidence Based Library and Information Practice, 8*(1), 81-83. Retrieved from http://ejournals.library.ualberta.ca/index.php/EBLIP/article/view/18537

McHaney, R. (2011). *The new digital shoreline: How Web 2.0 and millennials are revolutionizing higher education.* Sterling, VA: Stylus Publishing.

Oblinger, D. G., & Oblinger, J. L. (2005). *Educating the Net generation.* Educause.

Porter, B. (2011). Millennial undergraduate research strategies in Web and library information retrieval systems. *Journal of Web Librarianship, 5*(4), 267-285. doi:10.1080/19322909.2011.623538

Taylor, A. (2012). A study of the information search behaviour of the millennial generation. *Information Research: An International Electronic Journal, 17*(1). Retrieved from http://files.eric.ed.gov/fulltext/EJ971949.pdf

can be helpful as well, such as http://spyrestudios.com/the-anatomy-of-an-infographic-5-steps-to-create-a-powerful-visual/ and http://www.wired.com/2013/10/13-sterling-pieces-of-data-viz-from-the-best-american-infographic-2013/. Be sure to at least spend some time reviewing sources like these before you start designing infographics for wide-consumption; otherwise these easy-to-use tools can end up leading to a bunch of output that is not as good as you (or your students or audience) would hope.

Conclusion

Although differing to some extent with respect to features and functionality, Piktochart, Venngage, and infogr.am are all tools that can decrease the learning curve when it comes to producing quality infographics. Students can use these tools to create information graphics to use in research papers and presentations. Instruction librarians can use them to create infographics to enhance their teaching materials and engage students. You may even want to consider an assignment requiring students to develop an infographic to present information they gather, evaluate, and synthesize as part of the regular research process.

Because these tools make it easier to create quality data visualizations by reducing the effort needed to learn complex graphics and design software programs, they allow you and your student to put the focus on finding and communicating quality information which is, after all, an end goal for information literacy instruction.