

Infographics

Part 1:

Invitations to Inquiry

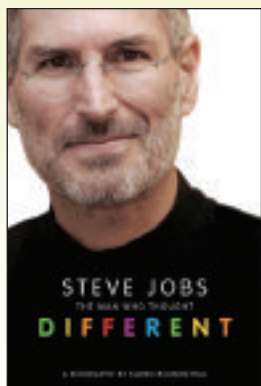
Annette Lamb and Larry Johnson

Young people are growing up in a visual world filled with charts, graphs, and diagrams.

Infographics have become a popular way to visually convey complex ideas. An infographic is a graphic representation of information that helps users visualize the “big picture” of an idea that might otherwise be difficult to understand. When these innovative visuals are connected with books and other library resources, synergy can occur to facilitate new ways of thinking.

For instance, an infographic could introduce students to Steve Jobs <<http://goo.gl/Nm5jDa>>. Youth could brainstorm questions about the facts in the infographic and access background information about their topic. Next they could read the biography *Steve Jobs: The Man Who Thought Different* by Karen Blumenthal seeking evidence to address their questions and extend their understandings.

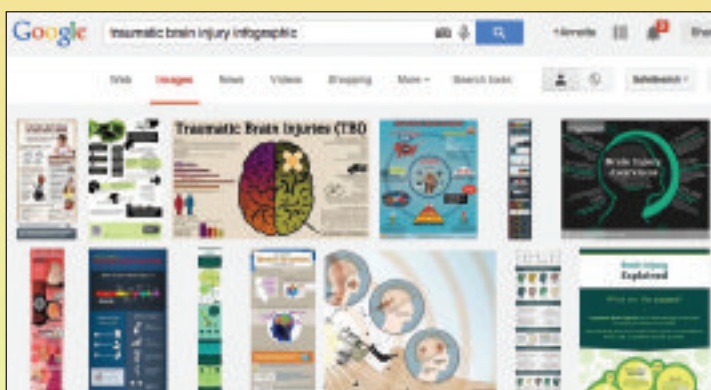
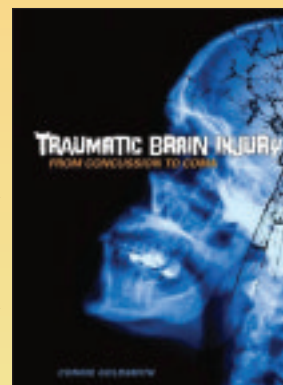
Let's explore ways infographics can kickstart student research across the curriculum. We'll examine options for locating and evaluating infographics, highlight practical content-area activities, and explore ideas for producing infographics.



SELECTING INFOGRAPHICS

Millions of infographics can be found online using the image search feature in popular search engines like Google and Bing.

Go to Google Images <<http://images.google.com>> and do a search for a topic adding the term *infographic*; for example, *traumatic brain injury infographic*. Provide students with a few quality infographics to analyze and ask them to brainstorm questions based on the contents of the infographic. Then select quality works of nonfiction to help youth address their questions. For instance, *Traumatic Brain Injury: From Concussion to Coma* by Connie Goldsmith is a concise book focusing on this popular topic.



A search for *endangered species infographic* yields dozens of high-quality infographics. Consider pairing them with such nonfiction books as

- Parrots over Puerto Rico* by Susan L. Roth
- Kakapo Rescue: Saving the World's Strangest Parrot* by Sy Montgomery
- The Case of the Vanishing Golden Frogs: A Scientific Mystery* by Sandra Markle
- The Elephant Scientist* by Caitlin O'Connell and Donna Jackson

Government websites are known for quality infographics. Search the USA Government website <<http://www.usa.gov/>> for the word *infographic* to find thousands of infographics across





JUNIOR FICTION

SOLUTIONS

Creech, Sharon. **Replay**. Joanna Cotler Books, 2007. 224 p. \$6.99. 9780060540210. Grades 3-5. Leo, preparing for a school play, wants Papa to be proud of him. Then he discovers his father's autobiography. Papa used to be different, and had a sister – and Leo never knew! Where is she? And why did Papa change?

Gaetz, Dayle Campbell. **Alberta**. Alibi, 2005. 189 p. \$6.95. 9781551434049. Grades 3-5. Sheila, Rusty, and Katie are looking forward to spending time at the Triple W Ranch with Katie's divorced dad, until they discover the ranch under siege from developers and Sheila's dad being blamed for a night watchman being shot.

Maycock, Dianne. **Lucky's Mountain**. Orca Book Publishers, 2007. 105 p. \$5.95. 9781551436821. Grades 3-5. When Maggie's family moves from their British Columbia mining community, they have to leave Lucky, her three-legged dog, behind. He was a gift from her late Pa. If she has to leave him, who'll take care of him?

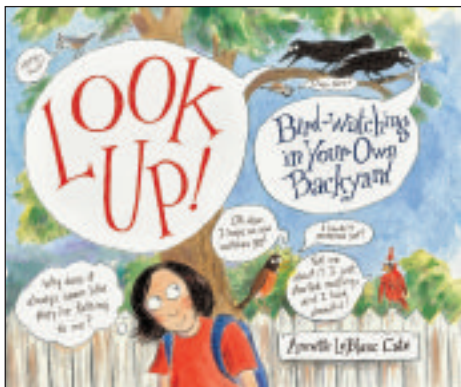
Riley, James. **Half Upon a Time**. Aladdin, 2010. 385 p. \$15.99. 9781416995937. Grades 4-7. Jack's grandfather wants him to rescue and marry a princess, so when one falls out of the sky and needs help rescuing her grandmother (who might be Snow White) from the Evil Queen, Jack decides to help.

Strasser, Todd. **CONFIDENCE**. Holiday House, 2002. 154 p. \$6.95. 9780823420612. Grades 4-6. In this first person POV, Lauren talks about the popular girls in her school, her friendship with the new girl (who may not be who she says she is), and her struggle to figure out who she, herself, is.

content areas. Government agencies like the Center for Disease Control (CDC) have thousands of useful infographics on science and health topics.

Websites like virtual.ly contain hundreds of infographics on popular topics. Do a search for natural disasters for lots of examples. Pair these with DK books like *Natural Disasters* by Claire Watts and Trevor Day.

When selecting infographics for use by children, consider topics that lend themselves to visual representations. For instance, you might start with the book *Look Up! Bird-Watching in Your Own Backyard* by Annette LeBlanc Cate. Then use infographics to explore information about popular backyard birds like hummingbirds <<http://goo.gl/pgYe7x>>.



Infographics can easily be overwhelming for youth, so it's important to select examples that match their developmental level. The American Civil War <<http://goo.gl/PuQW40>> includes a map, dates, and information about casualties without providing information overload. It could be used



by children reading *Civil War on Sunday* by Mary Pope Osborne.

Some infographics are replicated on many websites. Try to identify the original creator by examining the resources used to create the infographic. These are often found at the bottom of the infographic. If possible, link to the original website. For instance, the *How Do We Know* <<http://goo.gl/Rjp5kg>> series of infographics originates at the U.S. Census Bureau. In some cases the URL for the infographic may be very long. Use a URL shortener <<http://goo.gl/>> to provide quick access to the website for student use.

INTEGRATING INFOGRAPHICS

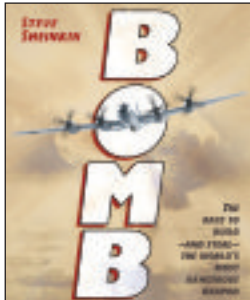
Infographics can be woven into inquiry-based learning activities throughout the curriculum.

Social Studies Connections. From bullying to drug abuse, teens face a wide range of social issues in their everyday lives. Connect infographics with popular realistic fiction as a way to discuss these issues. For instance, pair an infographic on the topic of *Bullying* <<http://goo.gl/cFwgn2>> with realistic young adult fiction related to bullying. Ask students to create their own infographic that ties in the social issue to their realistic fiction book.

Historical Connections. Infographics aren't a new idea. Consider introducing infographics as part of primary-source document activities. For instance, students reading the Sibert medal book *Bomb: The Race to Build—and Steal—the World's Most*



Dangerous Weapon by Steve Sheinkin will find fascinating infographics that were created during the 1940s and 1950s. In January of 1951, Mutual of Omaha produced *How to Survive an Atomic Bomb* <<http://goo.gl/52T6JU>>. Involve youth in locating other historical infographics.



Biography Connections. An increasing number of biography infographics features the lives of famous people. Singers like Mi-



chael Jackson, composers like John Williams, and world leaders like Gandhi are just a few examples of individuals you can find with a Google Images search. Ask youth to evaluate these infographics, then involve them in making their own biography infographic. Encourage students to begin by reading a biography that provides background information about their person of interest. The popular biography series *Who Was . . . ?* would be a great place to begin. Use *Who Were the Beatles?* by Geoff Edgers, along with the dozens of Beatles infographics available as examples.

Science Connections. The Citizen Scientist <<http://goo.gl/BXqJbB>> infographic shows the many ways everyday people are involved with important science projects. Students can investigate numerous proj-

ects, such as World Water Monitoring Day, Cornell Lab of Ornithology's science programs, and Nature's Notebook. This would be an excellent companion to the book *Citizen Scientist: Be a Part of Scientific Discovery from Your Own Backyard* by Loree Griffin Burns. Ask students to create an infographic related to a science topic of local interest, such as the migration of the Monarch butterfly.

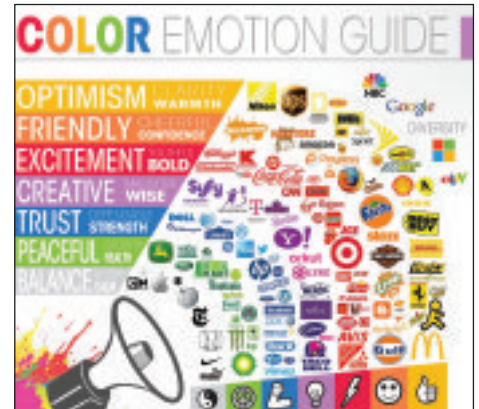


Art and Design Connections. Use the book *Go: A Kidd's Guide to Graphic Design* by Chip Kidd to introduce young people to the elements of design including form, line, color, scale, typography, and other topics. Ask students to compare the ideas presented in different infographics related to design. For example, a search for *color theory infographic* generates dozens of interesting examples to analyze. *The Psychology of Color in Logo Design* <<http://goo.gl/UJpJ84>> explores how color



is used to elicit emotions. Involve students in selecting an element and creating their own infographic.

Cross Curricular Connections. Infographics can stimulate



interest across subject areas. A young adult studying celiac disease might find the infographic *84 Signs You Have Celiac Disease* <<http://goo.gl/y6Goes>> to be useful in understanding the symptoms of celiac disease. This may lead the student to think about the role of food in their own life. *Relish: My Life in the Kitchen* by Lucy Knisley is a graphic memoir that explores the life of a young girl who discovers her passion for food. Involve youth in creating an infographic that reflects their relationship with food.

Another effective cross-curricular theme is history and the environment. Many works of fiction and nonfiction focus on the Dustbowl era. *The Great American Dust Bowl* by Don Brown is a graphic novel focusing on this environmental disaster from American history. Involve students in examining infographics associated with recent concerns about drought in the West, such as *Drought Grips U.S.* <<http://goo.gl/zt54ZB>>.

From natural disasters such as earthquakes and hurricanes to human catastrophes like the crash of the Hindenburg, infographics are an effective way to visualize and analyze important world events. *Pair Titanic: Voices from the Disaster* by



JUNIOR FICTION

THE I, Q SERIES

Smith, Roland. Book 1: Independence Hall. Sleeping Bear Press, 2009. 312 p. \$15.95. 9781585364688. Grades 4-7.

When Quest's divorced singer mom and Angela's widowed songwriter dad form a band, record a #1 hit, and get married, the blended family goes on tour, where they get mixed up with the Secret Service and the Israeli Mossad.

Book Two: The White House. Sleeping Bear Press, 2010. 288 p. \$15.95.

9781585364787. Grades 4-7. The Match tour gets invited to the White House, where they meet the president, who knew Angela's late mom when she was in the Secret Service. But is she really dead? Or is she the elusive assassin, the Leopard?

Book Three: Kitty Hawk. Sleeping Bear Press, 2012. 240 p. \$15.95. 9781585366057.

Grades 4-7. When the president's daughter, Bethany, is kidnapped during the Match concert by terrorists (with the Leopard's help), Q and Angela have to try to figure out whom they can trust and how they can get Bethany back.

Book Four: The Alamo. Sleeping Bear Press, 2013. 288 p. \$15.95. 9781585368228.

Grades 4-7. As Match heads to Texas, Angela and Quest are still trying to figure things out. Where does Q's whacked-out biological dad fit in? Who (or what?) is Boone, head of the SOS (Some Old Spooks)? And who is the White House mole?

Book Five: The Windy City. Sleeping Bear Press, 2014. 240 p. \$16.99.

9781585368242. Grades 4-7. Foiling terrorist plots unbeknownst to parents takes time away from schoolwork, so the stepsiblings are given a choice: catch up, or off to boarding school. But then who'll save the free world from the Ghost Cell?



Deborah Hopkins with infographics showing details about the ship and disaster. *Titanic 101: The Great Infographic History* by Steve Hall is a book that contains lots of infographics.

CREATING INFOGRAPHICS

Get your students involved with creating their own infographics. Unfortunately, youth can easily become overwhelmed when faced with this type of assignment. Help them focus on the purpose of their infographic and reasons for creating an infographic.

PURPOSE

Talk with students about the purpose of their infographic. Who is their audience? What question do they wish to address or what information do they want to provide?

Organize ideas. Some infographics are used to arrange many ideas in a useful way. For instance, rather than paragraphs of information about World War II, an infographic can organize the key ideas by bringing together a number of charts, graphs, and maps to provide a cohesive look at this event.

Show complex relationships. It's often difficult to explain connections among ideas when writing a traditional term paper. An infographic helps students describe complex relationships in a visual way. Clusters of images and phrases, along with shapes, lines, and arrows can help show connections. Life cycles, chains of events, and flowcharts are useful components in these types of infographics.

Compare information. Whether visualizing life "then and now" or showing how animals are alike and different, infographics are effective in making comparisons.

Make data meaningful. Infographics can help place sets of data in a useful context. The use of analogies, examples, and themes can help transform data into information.

Tell a story. Visual narratives are an exciting way to tell a story. Rather than using words, pictures are used to convey the ideas.

TYPES OF VISUALS

Once youth have identified the purpose of their visual, it's time to explore the types of graphics they'll weave into their infographic. Discuss different ways that information can be visualized. In some cases, a particular type of visual such as a time line will serve as the central element of the infographic. Conduct a search for *history of shoes infographic* or *history of automobile infographic* for examples. Other infographics incorporate a wide range of visuals including graphs, diagrams, and maps.

In *Graphic Inquiry*, Lamb and Callison (2012) described seven categories of visual elements. Ask students to identify these elements in infographics and think about which might be useful in their project.

Charts and graphs. From survey results to population statistics, numeric data is of-

ten represented using charts and graphs. Tools such as **Create a Graph** <<http://goo.gl/sxYVgo>> can be used to generate bar, line, area, pie, and XY graphs that can be incorporated into a larger infographic. Text data can be expressed in charts, matrices, and tables. These are usually expressed in rows and columns. It's important to remember that all charts and graphs should include a descriptive title, range of data, axis titles, and a legend.

Diagrams. Diagrams are useful in showing a simplified visual representation of an idea, object, or concept. From the anatomy of an insect to the operation of a machine, diagrams work well for showing relationships such as parts and wholes. Cross sections, graphical projections, and exploded views are examples of more complex diagrams, while life cycles, flowcharts, and time lines are easier to create.

Illustrations. Cartoons, sketches, and technical drawings are just a few of the illustrations that youth can incorporate into their infographics. Combining an illustration with a few key words can produce a memorable message.

Maps. To show relationships in space, a map is useful. Topographical, thematic, relief, military, political, and pictorial maps are just a few of the options. It's important that map makers provide a key or legend to help users understand the map.

Organizers. Concept maps, cause/effect organizers, and Venn diagrams are just a few examples of organizers that can be incorporated into infographics. Organizers are effective for showing relationships among data connections, chronologies of events, and comparisons. Shapes, lines, and arrows are often used in organizers to show the interconnection of information.

Images. Many devices can be used to capture an image. Historical photographs and satellite images are a couple examples of images that can be woven into infographics. While radar images might be used in a weather project, macro photography or microscopy imaging might be used in an insect project.

Symbols. From traffic signs to music notation, symbols are visuals used to represent ideas, concepts, or other abstrac-

tions. These simple visuals are popular in infographics. Avatars might be used to represent people, and pictographs are sometimes incorporated into other visuals such as charts and maps.

DESIGN ESSENTIALS

Once the types of graphics have been identified, students are ready to consider the design elements of their project.

Keep it simple. Be concise. Encourage students to focus on one concept or central question. Begin with a descriptive title, then add key ideas and data that establish a context for information exploration. For instance, a student might focus on a theme, comparison, or other scheme.

Limit words. Although it's important to use good grammar and mechanics, paragraphs of information can distract from an effective infographic. Instead, use short passages. Or use phrases in labels, boxes, or speech bubbles. Stick to the main idea, and eliminate unnecessary detail. Use words in interesting ways. For instance, apply **Wordle** or **Tagxedo** to create a word cloud.

Think variety. Incorporate different approaches to visualize the data. Rather than using a bunch of bar charts, think of alternative ways to display the data.

Apply principles of design. Use line, color, shape, texture, space, form, and other elements effectively. The idea of simplicity applies to design as well as content. Stick to a few colors, fonts, and lines, then use these elements consistently.

Provide citations. After viewing an infographic, users may want to learn more. Be sure to provide a list of resources used and places to go for additional information.

PRODUCTION TOOLS

Many tools can be used to create infographics.

Productivity tool software. You don't need fancy software to create basic infographics. Microsoft Word works fine. You can also create an infographic as a slide in Microsoft PowerPoint. Use the page setup to establish the width and height needed.

The SmartArt Graphics option can be used to create a wide range of interesting visual elements, including charts, graphs, and diagrams.

Adapt existing software. Many popular poster and comic tools can be used to create infographics. For instance, **Comic Life** can easily be adapted for creating infographics.

Professional design tools. If you have access and skills in using **Adobe Illustrator** or **Photoshop**, these professional design tools are very effective for the creation of infographics. In a middle or high school setting, consider working with a classroom teacher who is already teaching the use of these software packages. An infographics project would allow students to apply many of their software skills within the context of a meaningful project.

Speciality tools. There are lots of free online tools for creating infographics. A few examples include:

- Easel.ly
- Infogr.am
- Piktochart
- Visual.ly

CONCLUSION

Infographics can play an exciting role in inquiry-based learning. The teacher librarian can play an important role in helping teachers and their students select, use, and create infographics for projects across the curriculum.

RESOURCES

Lamb, Annette, & Callison, Daniel. (2012). *Graphic Inquiry*. Libraries Unlimited.

Adapted from the professional development workshop Infographics & Inquiry: Practical Ideas for School Libraries.