2014

Visual Literacy across the Disciplines

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Visual literacy is a crucial skill for today’s university students and faculty. Thus, it is essential for academic librarians to have an understanding of basic issues surrounding use and discovery of images. This chapter defines visual literacy, explores potential visual needs across subject disciplines, discusses search strategies for images, describes potential roles for academic librarians related to visual literacy, discusses ethical concerns regarding images, lists visual literacy competencies and selected resources on visual literacy, and indicates where to locate images.

There is ample evidence of image creation throughout world history. Images have been used to communicate, entertain, and inform throughout the ages, and they increasingly do so today. Consider a typical day—how many images do you think you are exposed to, on average? Some experts estimate that we see more than five thousand images daily. Visuals continue to grow exponentially as an important part of contemporary society, expedited by the popularity and ease of the creation and sharing of images via social media and mobile technologies. Visual literacy serves an important role in the academic world, including in academic libraries, where the need for images crosses disciplinary lines and is a crucial part of research, communication, and learning in many subject areas. Barbara Olins Alpert makes the following important observation:

It is evident that drawing and painting are visually inspired, but it may be surprising to discover that activities directed toward verbal and scientific creativity are also often inspired by vision. Even now, in our highly literate world, complex thought often occurs primarily as images ... when we have understood something, we say, “I see.”
To help provide a framework for this chapter, it is important to define the terms *images* (also referred to as “visuals” in this chapter) and *visual literacy*. One classic definition of the concept of “image” comes from the art historian John Berger, in his book *Ways of Seeing*, when he states that seeing comes before words, and that an image is a sight that has been recreated or reproduced. It is detached from the place and time where and when it was first created. Berger also suggests that the artist’s way of seeing is reflected in his or her choice of subject, but our perception or appreciation of an image depends on our own way of seeing, which starts developing as soon as we are born, so the artist’s and viewer’s interpretations of an artwork will differ.

But images come from many areas in addition to the fine arts. To expand on Berger’s definition, visual images are a copy or other rendering of objects. An image may exist in print or digital format. An image is a representation of something on a flat plane, but with digitized technology it can appear online as three-dimensional. The representation can be of a person, animal, object, landscape, or other entity. Images can be simple and focus on one element, for instance, typeface. Examples of images include art, graphs, logos, photographs, diagrams, and anything with depth and dimension. Images can be a simple single line or a complex grouping of many individual images. They can be still or appear to move, as they do in film. Images can be multimodal, meaning interwoven (as they often are) with other codes, like audio or text. For example, newspaper images are usually accompanied by captions and text. When images are combined with audio or words, they change the status of the image to clarifying or supporting the audio or text rather than standing alone. Alternately, the text may clarify or support the image. Berger says that looking is a choice, and the way we see things is affected by what we know and what we believe. Viewing images is a way to make sense of our place in the world.

There are several definitions of visual literacy in the professional literature. The Association of College and Research Libraries (ACRL), which defines information literacy as the set of skills needed to find, retrieve, analyze, and use information effectively for a range of purposes, ties the importance of using images, or visuals, to enhancing information literacy as a whole. The ACRL endorses visual literacy, and its *Visual Literacy Competency Standards for Higher Education* indicate that the visual learner should be able to define the image or images needed; find, interpret, analyze, and evaluate images; use images effectively and ethically; create visual media; and be able to cite images. In a similar vein, the Visual Resources Association (VRA) believes that students need to develop the following competencies: how to identify reliable image sources, how to judge the quality of images and associated descriptive data, how to accurately identify historical content, how to understand the concept of intellectual property, and how to cite images in their work. Related terms
for visual literacy include literacy cognition, computer visualization, imagery, imagetexts, visual messages, visual communication, visual culture, and visual research.

THE IMPORTANCE OF VISUAL LITERACY TO HIGHER EDUCATION

Why is it important to have a visually literate population and support visual culture? Visual literacy is a necessary skill for a variety of reasons. Images play an increasingly prominent role in university education as a legitimate aspect of various disciplines; visual literacy is now intertwined with education and multiple other literacies. Today's learners are now more visually oriented than ever. Images are important for a number of reasons: They can aid in critical thinking and learning, communicate information quickly, and serve as a source of inspiration and engagement.

In academia, using and implementing visuals in an effective way is increasingly important at all levels of the university, from first-year students to faculty members. On university campuses, it is increasingly common for faculty members to incorporate visuals into required work for their classes in disciplines other than the visual arts; however, in many cases, visual literacy is not a formal outcome for university students. In 2002, library science professor and visual literacy scholar James Marcum lamented that, “insufficient attention is paid to the social, situated, socio-technological, and practical dimensions of learning that are now available from several scholarly perspectives.” He also pointed out that many advocates claim that visual literacy must be the required new competency, based on its importance and prevalence. In the last ten years, visuals have become more accepted in academia as both a pedagogical tool and a representation of research, as evidenced by the sheer number of articles in the literature on the purpose of visuals in various disciplines.

Just as it is important to be informed consumers of texts, financials, and the media, it is equally important to be able to understand, interpret, and use visuals. Sandra Moriarty and Keith Kenney give an overview of sources and areas of visual importance in their paper entitled “Taxonomy of Visual Communication and a Bibliography.” The taxonomy includes such areas as art, cultural studies, education, psychology, and visual communication, among others, and how various visual concepts interrelate. Like any field of inquiry, visual literacy has progressive levels. Melissa Thibault and David Walbert describe them in the following way:

The first level of visual literacy, too, is simple knowledge: basic identification of the subject or elements in a photograph, work of art, or graphic. The skills necessary to identify details of images are included in many disciplines; for example, careful observation is essential to scientific inquiry. But while accurate observation is important, understand-
ing what we see and comprehending visual relationships are at least as important. These higher-level visual literacy skills require critical thinking, and they are essential to a student’s success in any content area in which information is conveyed through such visual formats as charts and maps.\textsuperscript{14}

Visual literacy, along with other types of literacies (two examples are information literacy and media literacy) is growing exponentially in prominence in various fields and disciplines, including academic librarianship. Arlene Archer encourages a multimodal approach to teaching academic literacy practices and suggests drawing on the full range of students’ semiotic resources, which includes visuals. One benefit of visual literacy is that the visual genre seems to enable students to discuss issues seldom raised in certain disciplines.\textsuperscript{15} Visual literacy brings new conversations to the disciplinary table and gives space for different learning styles.

Evidence for the increasing emphasis on visual literacy within academic librarianship is the proliferation of various related standards in our profession, for example, the ACRL’s previously mentioned \textit{Visual Literacy Competency Standards for Higher Education}, approved in 2011. A VRA whitepaper entitled “Advocating for Visual Resources Management in Educational and Cultural Institutions” is another example of a formalized framework for visuals in academia.\textsuperscript{16} And the Art Libraries Society of North America (ARLIS/NA) published \textit{Information Competencies for Students in Design Disciplines}, as well as other related standards.\textsuperscript{17} There is an upward trend for the inclusion of formal visual literacy objectives within various disciplinary standards, for instance, the ACRL’s \textit{Information Literacy Competency Standards for Journalism Students and Professionals}, which include two objectives specifically related to visual literacy.\textsuperscript{18}

These and other formalized standards provide an excellent framework for universities, including university libraries, to implement visual literacy throughout the curriculum. In his book \textit{Visual Studies: A Skeptical Introduction}, James Elkins says that since the visual culture is expanding and becoming more complicated, universities should go beyond introductory art history courses to introductory courses that develop the visual skills of students regardless of their major. He states that various courses should require specific visual competencies and sets of visual knowledge and suggests that academia seriously consider which kinds of images can serve as a useful common ground for an education in images regardless of the discipline.\textsuperscript{19}

\textbf{TODAY’S LEARNERS ARE VISUALLY ORIENTED}

Visual literacy is a relevant ability because students tend to be visually oriented. Lesley Farmer says that visual literacy is intuitive, and that
about 30 percent of the brain is dedicated to processing visual information. Kate Manuel found that the average student retains 10 percent of what she reads, but 20 to 30 percent of what she sees. Current university students are accustomed to multimedia environments. Manuel states that today’s first-year college students have watched, on average, more than fifteen thousand hours of television. Generation Ys, also known as Millennials, were born after 1981 and have spent more time watching TV than reading, and much of their reading consists of online scanning. They often incorporate visuals as they communicate personal information on social networking sites and blogs. Generally speaking, visual media (rather than oral or textual media) dominate Western culture. There are a multitude of ways to view, create, and convey images: Television, video-games, magazines, movies, social networking sites, blogs, news, video, desktop computers, and mobile devices are just a few. Marketing is also heavily visual, demonstrating the power of images to influence consumers. And the attention economy—the time allowed to engage user interest—continues to grow shorter as multitasking behaviors increase and attention spans decrease.

VISUALS AND CRITICAL THINKING

Students become better critical thinkers by identifying, analyzing, interpreting, and evaluating what they see, no matter what the format. Visual literacy adds another dimension to students’ core knowledge, helping them recognize and explore multiple perspectives and resolutions through creative thinking skills. Comics and graphic novels are now considered a legitimate artistic medium containing profound and relevant writing and aesthetically strong visuals. These formats are praised for tackling weighty issues like racism and war, as well as promoting an individual sense of responsibility. Many K–12 school librarians and teachers have long recognized the importance of comics to learning, since they provide context, guide the reader’s attention, help readers build connections and see story structure, and provide different, interactive points of view. Some university professors have adopted this visual format as a pedagogical tool for many of the same reasons. Graphic novels have a respected reputation as learning objects for both young adults and college-age populations. These types of visuals may be incorporated into analytical viewing classroom exercises.

Art Spiegelman states that, “Comics are a gateway drug to literacy,” but other visuals in other disciplinary areas also lead to increased literacies. A variety of images may be used to illustrate concepts that encourage critical thinking more easily than text. For example, a large sculpture made of Doritos corn chips illustrates a mathematical concept in a novel way. Diagrams, charts, animations, and historical photographs can also
accomplish the illustration of concepts more clearly across subject disciplines than simple text.

**VISUALS, COMMUNICATION, AND INSPIRATION**

Visuals can add appeal and emotional impact, provide inspiration, and communicate information concisely. Research in the fields of psychology and education show that emotions speed decision making, and emotion drives attention, which in turn drives learning, memory, and problem-solving behavior. There needs to be emotional arousal for learning to take place and to establish biochemical links between emotions and memory. Emotions can be crucial to engage students' curiosity. The more feelings are engaged, the more learning takes place. For example, a highly emotional photograph of individuals interacting with the Vietnam Veterans Memorial could evoke multipronged learning and discussions about war, memory, and public monuments, among other areas. Many examples of highly charged emotional images come from photojournalists documenting natural or man-made disasters.

Visuals can also be a source of inspiration for work, artistic or otherwise. Visual arts students know that looking at the work of fellow artists may help spark and inform their own creations, with an improved end result. Students from all subject disciplines can also use images to help with study techniques, storyboards, or other inspiration for their projects.

Such images as flowcharts, illustrations, maps, and text as picture are all efficient methods for communicating quickly. Simple symbols can replace text when information needs to be shared in a short period of time, like signage for highway drivers, or where language differences might be a consideration, as in airports. Images can sometimes be more effective at conveying information than text. A graphical chart allows viewers to quickly compare numbers or see distribution. Edward R. Tufte suggests that complicated, multidimensional data can be displayed on a two-dimensional plane through such information design principles as effective use of color and layering. Accurate representation of the data is also important so that a chart does not mislead the viewer.

Researchers have found that we generally have a better memory for pictures than for words, but there are at least three lines of thought on why there seems to be what is called the "picture superiority" effect. Allan Paivio asserts that we use separate processes to encode visual and verbal information. When we see an object, we also think of the word for that object, so we encode it twice. Two other lines of thought come from the single code theorists and the sensory-semantic theorists. Both say that we use a single process for visual and verbal information, but we either spend more time processing pictures or the pictures have distinctive features that make them easier to encode. Combining images and verbal
information can be powerful for learning, possibly because of dual code processing, which appeals to both sides of the brain, spatial–visual intelligence, and multiple learning styles. Cognitive load is the amount of mental effort it takes to process new information. Images can reduce cognitive load by explaining or organizing information so that it is easier for learners to integrate or make connections with existing knowledge. While images also have the potential to distract or confuse, which can burden cognitive load, the benefits of improving critical thinking, inspiring, and providing efficient communication outweigh any potential negatives of image overload.

VISUAL NEEDS OF SUBJECT DISCIPLINES

Visual needs vary throughout subject disciplines. According to James Aanstoos, the area of study known as visual literacy and the movement that spawned it are interdisciplinary in nature, encompassing fields of art, education, psychology, linguistics, computer science, and philosophy. This broad cross section leads to a fascinating variety of points of view on just what it means to be “visually literate,” and whether “this ability can or even should be taught, and, if so, how.” But even if visuality differs between areas, the basic tenets of teaching patrons how to find, use, interpret, evaluate, and create still apply in various ways, regardless of subject. The academic population needs visual literacy ability throughout the curriculum, not just in the visual arts. There are some questions to consider if you are an academic librarian with subject liaison responsibilities. They are as follows:

- How do I facilitate deeper understanding of images in my subject area?
- What types of images are most frequently used in my subject area?
- How might I expedite access to and understanding of these images?
- How do I apply images to scholarly work and lifelong learning?

Without question, most disciplines have a need for visual literacy, but disciplines' needs vary. As early as the mid-1990s, research at Brigham Young University indicated a demand for images and a need throughout colleges for visual literacy instruction of faculty. A more recent study in 2008 indicated a continuation of that trend, showing that the demand for images is on the uptick, and that there is an increase in demand for a wider variety of images. The following summarizes some of the types of needs for images in a variety of areas. Keep in mind that as time goes by, many fields are increasingly interdisciplinary, and the type of need for images may cross subject lines.
Arts and Humanities

The arts and humanities disciplines have an obvious connection to and focus on visuals for scholarly analysis. Art, English, history, theater, music, modern and classical languages, and any of the cultural studies (American studies, Chicano studies, religious studies, and more) may require image research and use. Studio art faculty and students use images for inspiration for their own creation of artwork. There are newer areas of study that require visuals for analysis or incorporation, for instance, the field of visual poetry. In addition to the study of traditional images of fine art and photography, there is now more scholarly interest in studying advertisements, illustrations, and other ephemeral image material in popular publications to help gain an insight into culture and society. Film studies programs on campuses have increased in popularity in recent years. The types of visuals needed in the arts and humanities may include photographs, art, advertisements, illustrations, visual poetry, graphic novels, comics, and posters, among others.

Social Sciences

Many social sciences have strong ties to visuals. The large number of materials linked to the Library of Congress Subject Heading (LCSH) visual sociology is one indicator of the importance of visuals to this field. Ethnography, the firsthand study of cultures, is a research method frequently employed by social scientists, and Sarah Pink describes the process of using photographs and video in visual ethnography. There are other visual methods that social scientists can use, like visually mapping data. Many social scientists acknowledge that seeing is not a biological process, but rather a social and culturally learned one, and there are philosophical concerns regarding the relationship between the pictorial and the linguistic. Visuals may be employed by educators to drive home critical conversations and analysis of how we “picture” gender and ethnicity in our society, and who is missing from the picture and why.

Danielle Devoss and Patrick Lebeau describe literacy, and by extension visual literacy, as being culturally and historically situated. Their work specifically analyzes two competing stereotypical constructs of the Native American image, the “noble warrior” and the “violent savage.” When students analyze and confront the plethora of images of Native Americans in our popular culture, they develop a new, heightened understanding of how Native Americans are literally viewed in our contemporary society. Types of visuals needed in social science research may include videos, photographs, artwork, popular culture images, and more.
Business

The business world frequently utilizes the power of visuals. Corporations invest significant sums of money in creating impactful logos. An effective visual logo has design, psychology, and legal implications. Business communication is closely linked to design, and it has become commonplace for university business communication classes to strive to teach not only software programs, but also critical design principles and strategies. Logos and other graphics can communicate a lot of information in a small-sized visual. Business is global, and using visuals to communicate internationally is another consideration in this discipline. Advertising and marketing are very image rich, influential, and prevalent. A market research firm estimates that a person living in a city thirty years ago saw up to two thousand ad messages a day, compared with up to five thousand today. The images used in advertising are high stakes because of their tie to profits. Types of visuals needed in the business field may include logos, graphs, charts, advertisements, images for presentations, images to communicate internationally, photographs, and clip art.

Sciences and Engineering

The hard sciences often use visuals for data representation, which can range from Google Earth, to three-dimensional and two-dimensional models, to photographs of equipment or processes. Visual Strategies: A Practical Guide to Graphics for Scientists and Engineers provides several examples of various ways scientists use images to communicate their work, including Venn diagrams, data modeling, and interactive graphs. The book includes case studies by scientists describing their process to show their work visually. Images in the life sciences often take the form of diagrams or drawings developed for specific interpretative purposes, or to channel meaning and “reduce the potential proliferation of meanings that artistic images exploit.” Types of visuals needed in the sciences and engineering may include diagrams, graphs, charts, visual data sets, geographic information systems (GIS) data, photographs, models, animations, and icons—which are the synthesis of the popular and the abstracted scientific image (for example, the widely known varieties of the cartoon rendering of the evolution of man).

Health Sciences

There are multiple needs for visuals in the field of health sciences. Heath sciences have at least two populations—that of the practitioner and that of the patient. The professional literature describes the need for more visual and audio resources regarding health information for consu-
Images may be used to diagnose or educate about various medical conditions or procedures. GIS data can be used for countless disciplines to present data visually, including the health sciences. The journal *Geospatial Health* describes a regular feature of their journal that offers truncated text and information supplied in visually representative and interactive videos. Finally, the article "Visual Revelations" details the importance of and how to accurately represent national health care data via line charts, bar charts, and choropleth (thematic, shaded) maps. Types of visuals needed in the health sciences may include figures, charts, illustrations, photographs, videos, and more.

**Education**

The field of education has long recognized the importance of visuals from primary education through a university education. For K–12 teachers, there exists a great deal of documentation in the professional literature about teachers using comic books, graphic novels, and picture books to teach visual literacy in the elementary grades. *Teaching Visual Literacy in the Primary Classroom* provides excellent examples of lesson plans that incorporate these various formats into student learning at a young age. Many education students at the university level are now required to create electronic portfolios of their work, with visual presentation as part of the graded end product. Some education faculty members encourage the use of visual social networking sites, like *Pinterest*, to complete projects. For example, at the University of Wyoming, students in an elementary education class are required to pin images of classroom design and explain whether they are effective or ineffective. Types of visuals needed in education may include graphics, art, drawings, photographs, comics, concept maps, charts, text, and infographics, among others.

**Government Information**

While not a discrete subject discipline, government information is specialized and interdisciplinary, and it is used by many researchers from various subject areas to gather data and be informed citizens. Since government information is often statistical in nature, it is important to be able to read tables, charts, graphs, and patent diagrams. See chapters 6 and 7 for research strategies in U.S. and international government documents.

Although different subject and information disciplines may have different needs, there is a great deal of crossover between disciplines, and images may be used for more than one purpose. Even if a scientific image is used to depict data, it can also be viewed as an aesthetic object and appreciated for its visual impact, for example, visual representations of mathematical fractals.
STRATEGIES FOR FINDING DIGITAL AND PRINT IMAGES

Image searching techniques may be applied across subject areas. Resources to search for images include subscription databases, digital collections, and other open-access sites. The sheer explosion of images available online means that there is a greater need to know how to evaluate them and be an analytical user and questioner of those images. The landscape of image access has changed dramatically throughout the past several years with the increasing number of digitization projects by academic libraries and the availability of images online. Most digital initiatives contain visual or image components. According to "2012 Top Ten Trends in Academic Libraries," digital collections and preservation of those collections are a high priority, and academic libraries will "increasingly focus on distinctive and unique collections in service to regional and national scholarly audiences." Many of these collections, particularly those that include such rare or unique content or institution-specific materials as university records and grey literature, are being or will be digitized. OCLC Research reports that 97 percent of the 169 research libraries in the United States and Canada with special collections surveyed have "completed one or more digitization projects and/or have an active program." The report also identifies such challenges as the need for comprehensive preservation plans, standardized architecture and policy for consistent preservation and archiving of cultural and scientific records, project goals that are aligned with the institution, and articulated funding needs and plans.

Digital initiatives and collections—both commercial and freely available—have a positive impact on visual literacy initiatives for the simple fact that they provide increased access to visuals for study, evaluation, and use. The impact of easier online access to visuals may result in an even higher expectation for students, faculty, and librarians to possess and promote visual literacy skills. Hans Brandhorst makes the important point that digital-image archives must have appropriate levels of descriptive data, organization, and standardization, so they are indeed discoverable. For a useful case study of a digitization project that meets cross-disciplinary research needs, see "Unlocking the Royal Geographical Society Archives."

There are several ways to expedite searching for images online. Most subscription-based image databases offer numerous advanced search limiters. For example, limiting by date or date range, geographic region where the image was created, image form (drawing, architectural, painting, sculpture, digital, and so on), image creator, event, subject of image, and color or black and white are all different ways that some databases offer to search for images. ARTstor provides helpful subject guides to images by collection that relate to specific areas like anthropology, history of medicine, languages, theater and dance, women's studies, and
more. Many open-access digital collection image sites offer similar search options, including browsing by a discipline or collection focus. Search engines like Google Image Search also offer advanced search features. After conducting a search in Google Images, click the gear in the upper right-hand corner to select advanced search features. Once in advanced search, limiters include image size, colors, type (clip art, animations, and so forth), region, site and domain, file type (.jpg, .gif, and so on), and finally usage rights. Other sites, like Wikimedia Commons, indicate usage rights of images, which are critical, so you know if any limitations exist on using a certain image. When searching for images, like searching for any type of resource, it is important to remember to cast a wide net by searching several different databases and websites, utilizing various synonyms in your keyword searching, taking advantage of truncation and phrase searching, and using search options and limiters.

Although some individuals may assume that images are available almost exclusively online, there remain a significant portion of useful images in print formats. Tips for searching for print books with images in library catalogs include utilizing search terms and subject headings. Subject headings in library catalogs may also be utilized to find books related to visual literacy. A few examples of relevant LCSHs include visual literacy, color in design, color psychological aspects, graphic design typography, information display systems, logo symbols design, media literacy, persuasion (psychology), and visual communication.

Other search tips for print images include the following:

- Add in art or photography of to a search to find books with artistic images related to that topic: wolves in art, food in art, photography of children.
- Add “pictorial works” to a search to find books on various topics with lots of images: “Vietnam war” “pictorial works.”
- Read the descriptions of book records in the catalog to give you clues that a book is illustrated. “Description 192 pages: illustrations (some color) ; 19 cm” means that the book has 192 pages, that the book is illustrated, and that some of the illustrations are color. The book is nineteen centimeters tall. “Description 344 pages, [48] pages of plates: illustration, map ; 21 cm” means that the book includes forty-eight full-page illustrations (plates), plus a map.
- Note that some heavily illustrated books are oversized and may be located in a separate section of the library. If the catalog gives a location of folio or oversized, the book is larger than other books at the library and may be shelved in a separate location.

The “Selected Sources” section at the end of this chapter includes a list of image and visual literacy resources.
ACADEMIC LIBRARIANS: ROLES IN VISUAL LITERACY

Academic librarians have various roles in the visual literacy realm in academia. We have roles in the creation of images as learning objects and on our webpages, facilitating access to image collections, preserving images, and providing instruction on how to find and use images. Susan E. Metros and Kristina Woolsey propose three ideas for making visuals a key part of academic curriculum: teach a basic visual design vocabulary; provide places, people, and resources needed for those in the academic community to become visual producers; and develop constructive critics of visual information. I will address the instructional aspects of images and how they relate to academic librarianship.

Written exams and research papers are not the only ways to assess student knowledge. Many students are now required to do visual projects, or there is an expectation to create visually appealing and effective work. Electronic portfolios showcase a student’s work for a course or program of study. Potential employers may also be interested in student portfolios, so faculty should have some understanding of visual literacy to prepare students to effectively communicate in a visual culture. Additional student projects that may include images are digital or print posters, assignments to find and analyze an image, presentations with visual components, turning credible data into an infographic, storytelling narratives with images, and more. Since there are a variety of potential image demands and uses by students, academic librarians should consider how visuals relate to their work.

The following are some possible areas to explore in your work as an academic librarian:

- Providing the needed language and vocabulary to explain or interpret images;
- Developing strategies to find images (both in subscription databases and open-access sources);
- Searching for images effectively;
- Questioning, interpreting, and evaluating image sources.

Lesson plans can be helpful in coordinating your research instruction. This includes noting what the image need is; noting what the image will be used for; interpretation, evaluation, and creation of images; and ethics. In addition to face-to-face instruction on how to find and use images, another opportunity is to create a related online guide—many pertinent examples exist. Finally, brainstorm ways to promote and implement visual literacy standards with library and campus colleagues.

Concept maps, flowcharts, and other graphic organizers help learners see steps in a process, identify cause and effect, and understand other relationships between ideas. As defined by the National Center on Accessible Instructional Materials, a graphic organizer is a “visual and
graphic display that depicts the relationships between facts, terms, and/or ideas within a learning task. Graphic organizers are also sometimes referred to as knowledge maps, concept maps, story maps, cognitive organizers, advance organizers, or concept diagrams." Flowcharts can depict a process approach to research in lieu of an outline. Graphic organizers with images can serve as mnemonics to help learners remember new concepts. Mnemonics may also be learner-created internal visualizations to aid recall. Concept maps or diagrams are an effective way to use visual techniques in a library instruction session, regardless of discipline. Either the library instructor or students can generate visual maps in print or using free, online software like bubbl.us. Individual learners can create their own, but concept mapping can also be a useful group activity, for they may be used to brainstorm topics or create an outline for a paper, discussion, or presentation. Joseph Donald Novak suggests that this activity helps students connect new information with existing knowledge. Diagrams may be hierarchical, use simple shapes and lines, or use words or brief phrases to describe relationships between concepts. A formal, structured concept map could substitute for a written report.

Academic librarians can use visuals in instructional presentations as an effective aid to pedagogy. Images of people, images from popular culture, or known marketing campaigns may also work as attention-getters. Multimedia—still images and streaming media—can be used to help trigger student topic selection. If students do not have a research topic when they arrive for an instruction session, presenting issues visually can help stimulate topic choice. Various disciplinary databases feature images with entries. Students can do an online image search or consult a visual dictionary for ideas. According to Maggie Weaver, the best use of presentation visuals is to open a talk, help channel thinking, emphasize key points, make comparisons, show relationships, explain new concepts, and restate the presentation's structure. Live demonstrations with active learning opportunities for students are preferable, but using a PowerPoint or other presentation software is sometimes a valid option for library presentations, and images make them more effective and interesting for the learners.

Although there are many ways in which images can be used in different instructional situations, it is important to remember that teaching content—your information and learning objectives—are the top priority. Images should enhance or help learners grasp content. Implementing images for images' sake is simply noise. Thinking about the purpose or function of images can be helpful in deciding whether you even need them, or what types of images you should use and how.

There are other ways that academic librarians may implement, support, and teach visual literacy in their own work and at their own libraries. During the 2013 ACRL conference, librarians presented practical examples of how their library implements the ACRL Visual Literacy stan-
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Standards. Some initiatives that Greg Hatch, Anne Morrow, and Donna Ziegenfuss shared that tie directly to the standards include using visual bookshelf labels, utilizing visual posters to promote library services, creating a book art studio, using exercises that involve changing posters with text to posters with visuals to transmit the message, posting visual video lectures, providing copyright and fair-use materials for patrons, and, impressively, working toward acceptance of a campus-wide visual literacy initiative.62

Conducting active learning exercises directly related to the ACRL visual literacy standards is another way to reach students and expand their visual literacy capabilities. During the 2012 ARLIS/NA conference, Emilee Mathews described specific exercises she uses with her students on how to analyze images using various flags, cheese labels, and comics.63 Analyzing advertisements to determine how an ad seeks to influence our behavior via visuals is another way to help hone visual literacy skills, and not just for business students. Ask students to analyze patterns, words, images, details, anomalies, and contrasts, regardless of the image used. Debbie Abilock describes how she prefers to teach with documentary photographs because they span many disciplines. She asks students to view, interpret, and respond to the image.64

In addition to students' needs, consider the visual literacy needs and support for campus faculty and library staff. Another role for librarians is to consider providing visual services for faculty members and staff, which can be an unmet demand. Yale University answered its faculty needs for finding images, but the school also provided guidance on how to integrate images into courses in a meaningful way. Yale changed its visual resources collection positions and added a technology specialist, who assists faculty with image management software, provides one-on-one faculty training, fields image reference questions, teaches image research for classes, and teaches image editing.65

Virginia Allison suggests that you ask yourself the following questions:

- How can your library implement visual literacy initiatives on campus if it does not first provide visual literacy training for its staff?
- What resources are currently available to facilitate visual literacy awareness and training?
- Why is it important to develop visual literacy tools that specifically reflect research interests on your campus?
- How and why should we use online tools and new media to deliver visual literacy training?66
IMAGES AND ETHICS

The old adage “do not believe everything you hear” also applies to “do not believe everything you see.” In addition to educating users about how to access, evaluate, and implement images, teaching the ethical implications surrounding images is yet another role for academic librarians. With the constant advances in such software programs as Photoshop, it is especially crucial that students know how to recognize when and why an image is manipulated and, more importantly, the larger repercussions and context. Images may also be manipulated in other ways. Infographics are a popular and effective way to represent large amounts of data, but, just like statistics, they can be misleading depending on the presentation of the information.

Other ethical image issues relate to copyright and fair-use concerns. Derivative artworks (an artwork created utilizing parts of an existing artwork) are still a complex and evolving area—take the Associated Press and Shepard Fairey “Hope” photo of President Obama case and the resulting controversies as an example. As digital sharing of images becomes increasingly seamless, copyright law becomes murkier. There are those who argue that fewer copyright restrictions mean a more robust and creative arts world. It is crucial to teach students how to cite images, just as we teach them to cite other types of sources. Most citation styles include how to cite an image; if not, the database ARTstor provides a general image citation template. Privacy of human subjects is another ethical concern. Social sciences researchers are aware of issues regarding respecting the rights of those whose images they use, and of protecting anonymity. Photojournalists have long wrestled with the ethical dilemma of showcasing human suffering and death during “instant transmission” in exchange for information sharing. Librarians can incorporate ethical image issues within instruction sessions or online learning objects to help educate patrons in this area.

CORE COMPETENCIES IN VISUAL LITERACY

The following section provides an overview of suggested visual literacy competencies. For more detailed information about visual literacy competencies, see the ACRL Visual Literacy Competency Standards for Higher Education and the article “Visual Literacy Standards in Higher Education: New Opportunities for Libraries and Student Learning.”

Define image need and locate images:
- Identify reliable image sources;
- Find images utilizing a variety of sources and search techniques (open access, subscription services, and print).
Analyze and evaluate images:

- Identify and understand basic elements, design, and technique in images;
- Use appropriate discipline vocabulary of visual elements when analyzing images;
- Understand images in cultural, social, and historical contexts;
- Think critically about images: Determine how elements of design influence the message and be aware of emotional, psychological, and cognitive influences in the perceptions of images;
- Judge the visual quality of images and associated descriptive data;
- Use and integrate images into scholarly work effectively.

Ethics and images:

- Understand ethical, legal, social, economic, and intellectual property issues surrounding the access, use, and creation of images;
- Cite images effectively and ethically.

CONCLUSION AND FUTURE DIRECTIONS

This chapter addresses the context and importance of visual literacy in higher education, various ways academic librarians can teach and use visual concepts in their work, ethical considerations for images, how subject disciplines can have different visual needs, and search strategies and sources for finding images. Visual literacy as an area of focus continues to build momentum in the academic educational process. The prevalence of discipline-specific visual literacy topics is also growing in the professional library literature. A recent College and Research Libraries article focuses on image use by historians, and how visuals are an integral part of the educational literacies and are important in the work of academic librarians. Although art historian Barbara Maria Stafford is surprised that universities have “not made it a top priority to train every student in the cognitive, affective, and expressive potential of imagery,” there have been advances made in academic visual literacy efforts, for instance, at the Center for History and New Media at George Mason University, which supports access to primary sources and how to incorporate them into teaching. A key reason images are important is because they help cross disciplines and create interesting ties. The book Figuring It Out: Science, Gender, and Visual Culture makes excellent connections between disciplines using visual images. The contributors are faculty members from English, science, women’s studies, art, and other disciplines.

James Marcum says we are living in a visual ecology, not just a visual culture, and libraries need to reflect this new reality. He foresees librar-
ians with new kinds of specializations in presentation, content management, and visualization. And as data digitization, curation, and access become more important, librarians will need to know how to read, understand, provide access to, and preserve visual and other types of data. The use of images to facilitate access for visual learning styles and hearing impaired patrons is another role for librarians to develop. Temple Grandin's book Thinking in Pictures discusses the various needs for visual learners, which librarians need to keep in mind while balancing materials and services for all learning styles.77 Academic librarians should make a conscientious effort to include more visuals in our instructional materials and libraries, ramp up efforts to teach campus populations how to access and use images, and take a strong campus leadership role in the curation and preservation of images in our collections.

SELECTED SOURCES

Selection criteria for the following sources include credibility, currency, and usefulness across disciplines. All sources are places to look for images and are freely available, with the exception of those listed in the "Licensed Databases" section.

Image Sites

Art Images for College Teaching. Available online at quod.lib.umich.edu/a/aict (accessed 19 June 2013).

Digital Collections

American Memory. Available online at memory.loc.gov/ammem/ (accessed 19 June 2013).
Smithsonian Institution Image Gallery. Available online at sirismm.si.edu/siris/sirisimagegallery.htm (accessed 19 June 2013).
Image Search Engines

Flickr Creative Commons. Available online at flickrcc.bluemountains.net/ (accessed 19 June 2013).


Wikimedia Commons. Available online at commons.wikimedia.org/wiki/Main_Page (accessed 19 June 2013).

Licensed Databases


Resources and Tutorials

Harper, Georgia, K. "UT Crash Course Copyright: Getting Permission for Images," University of Texas Libraries. Available online at copyright.lib.utexas.edu/permission.html.


The following list provides a starting point for those interested in pursuing visual literacy topics.


### NOTES

Visual Literacy across the Disciplines 297


22. Manuel, “Teaching Information Literacy to Generation Y.”


27. Tim Hawkinson, Dorito Polyhedron, food, mixed media, 13 x 13 x 13 inches, 1991. Available online at library.artstor.org/library/secure/ViewImages?id=8CJGcz9NzdLS1WEDhzTnkrX3oudNzdi%3D&userId=iTxGdzE%30&zoomparams=.


30. Tufte, Beautiful Evidence.


64. Debbie Abilock, "Visual Information Literacy: Reading a Documentary Photograph," *Knowledge Quest* 36, no. 3 (January 2008): 7, search.proquest.com/docview/194732232?accountid=14793.


74. Roy Rosenzweig Center for History and New Media, George Mason University. Available online at chnm.gmu.edu/tag/chnm (accessed 19 June 2013).

