CHAPTER 12

ETHICS, DISTRIBUTION, AND CREDIBILITY: USING AN EMERGING GENRE TO TEACH INFORMATION LITERACY CONCEPTS

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Currently, society is swept up in an information explosion. Individuals are subject not just to a plethora of information, but also the accompanying messiness of the landscape as information streams continually from all directions in a variety of formats, media, and genres. In addition, as information is generated and distributed, it doesn't move from point a to point b to c to d and so on (the author's desk to the editor's to the peer reviewer's, back to the editor, to the printer, to the reader); it's created and published quickly and often informally and it reaches audiences via a multitude of venues. Outside the traditional academic peer review process, publication and dissemination are relatively easy and, as a result, a myriad of information is accessible. This information can take a variety of forms including, but of course not limited to, Tweets, blogs, videos, BuzzFeed lists, infographics, and news sound bites. This information reality is filled with opportunity for discovery and burgeoning conversations that transcend geographic limitations, but it also leads to an overabundance of inaccurate, time wasting information that requires a rigorous degree of scrutiny.

This new landscape puts educators into a difficult situation because we're trying to teach students to manage all of this information, not just as students, but also as citizens. There is no overarching rule to indicate whether information is "good" or "bad." Instead, we need to equip students with the skills to make their own decisions about how, when, and why to use information. One approach to this challenge is to give students a starting point by using a genre that they are familiar with and that has emerged within this new information landscape: infographics.

As an emerging genre, infographics, or information graphics as they are more formally known, can be used as a tool to empower instructors with pedagogical

opportunities to teach information literacy (IL) skills. Throughout this chapter, we'll start by defining infographics and go on to show how IL allows for emerging genres like infographics to be used in educational settings. In addition, we will describe how the consumption, production, and distribution cycle of infographics relate to IL. We conclude by offering guidance on how instructors can use this genre to teach IL skills and concepts and allow students to make better, ethically informed choices.

DEFINING INFOGRAPHICS

A genre that is becoming increasingly present in information landscapes is infographics, whose popularity has exploded with the expansion of social media. While the genre is not new—it dates back to early cave drawings and Egyptian hieroglyphics (Smiciklas, 2012; Krum, 2014)—infographics open a window for teaching IL concepts in the classroom.

Infographics, as the word itself implies, merge information with graphics. They communicate by combining words and visual elements in an engaging, static, cohesive display that attempts to inform, persuade, educate, and/or entertain an audience about a particular issue. While these displays may communicate numerical or statistical data, this is not a requirement of the genre. Infographics usually contain images, text, numbers, statistics, drawings, color, linework, or some combination thereof. They are stand-alone and offer a quick snapshot of whatever topic or theme they discuss.

One special caveat of infographics is that they are static rather than dynamic. Displays that can adjust instantaneously with user input, known as interactive data displays, are related to but distinct from infographics (Rawlins & Wilson, in press; Toth, 2013). Both display information, but infographics are not adjustable by the audience. This distinction is important because this chapter will focus on static infographics. In other words, once an infographic is published, it can no longer be changed, similar to a printed journal article or book chapter.

Within the last several years, as the genre has become even more popular, and as how-to books, compilations, and other guides surface (Smiciklas, 2012; Lankow, Ritchie & Crooks, 2012; Cook, 2013; Krum, 2014), it's becoming apparent that many people are embracing the genre to communicate about their interests, products, organizations, and causes. (For examples of infographics, check out these online repositories: Cool Infographics at http://www.coolinfographics.com, Visual.ly at http://www.visual.ly), or Daily Infographic at http://www.dailyinfographic.com).

Infographics are so ubiquitous that they exist on nearly every topic imaginable, and they can be found almost anywhere: marketing campaigns, annual

reports, social media sites like Twitter, Pinterest, and Facebook, promotional fliers, etc. They offer packaging that is both fun and engaging in terms of design and are capable of conveying a relatively large amount of information in a small, discreet footprint. Because of these features, they are much more readily shareable than other genres that communicate the same amount of information via text alone.

INFORMATION IN FLUX

While there are many definitions of IL, for the purposes of this chapter, we'll be using the current Association of College and Research Libraries' (ACRL) definition: "Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ACRL, 2000). This definition emphasizes a set of skills that an information literate person possesses and uses. This skillset is applicable not just for students in their roles as students, but also as individuals, citizens, and professionals.

In February 2015, ACRL finalized the *Framework for Information Literacy for Higher Education.* The approach of this document encourages educators to teach IL not simply as a set of skills, but also to teach within a framework that emphasizes metaliteracy and conceptual understanding of key IL threshold concepts.

IL, viewed through either a skills-based or conceptual lens, carries with it an attention and ability to critically think about the information lifecycle and the ways in which information is created, distributed, and consumed. Much like writing and research, IL skills are organic and iterative, and they reflect the rich and complex workings of the information cycle. Information (whether in the form of a song, a journal article, a painting, a tweet, or an infographic) is created and then distributed, consumed, shared, discussed, and subsequently has the potential to give rise to "new" information. The song inspires another musician, the journal article is cited, the tweet is retweeted, or the infographic is shared. Understanding how these currents move or might move in different contexts and under varying influences leads to a critical awareness of sources of information; an information literate person engages in the rhetorical act of asking questions about who the creator of any given piece of information is, the audience for whom it was created, and the purpose, in addition to using the content of the information.

The information landscape is undergoing vast changes. The sheer volume of information available can muddy the waters for students. New discovery tools mimicking the ostensible simplicity of Google provide students with easy access to millions of documents with a few taps of the keyboard, sometimes leading

students to think that resource discovery is easy. However, finding a source and finding a *relevant, accurate* source are two different things. As more sources become available, it's more important than ever that students are capable of critically examining sources. In nonacademic settings, information is constantly feeding us streams of information—from the billboards on the side of the street, to the devices in our pockets—about our social, political, and financial worlds.

Access to this information is in some ways liberating and a boon to democracy. However, there are some complications. Students may be likely to find and cite information that (rightly or wrongly) simply reaffirms their own beliefs. For instance, information students find may be influenced by the phenomenon filter bubbles, where a person's search history influences his or her new search engine results (Pariser, 2011). In other ways, the vast amount of information can be frustrating and overwhelming, especially when information found can be contradictory, obviously biased, or out of date. Also, uncritically assuming that "free" information is unbiased or uninfluenced by the platforms through which the information is made available is a mistake. Some would argue that the idea of the Internet as a public good, or information commons is an illusion. Jeff Lilburn (2012) insists that "claims that social media has become our new public space, or new commons, overlook the fact that, unlike a true public square or commons, many of the most popular social media tools are privately owned and regulated" (p. 143). Awareness of the financial interests behind creators and purveyors of information is another component of information fluency.

Because information dissemination is in flux, educators who teach IL are left with some challenging questions:

- How do we prepare our students to be information literate in an information-saturated world?
- When so much information is constantly being generated, posted, reposted, tweeted, retweeted, and regenerated, how do we encourage students to slow down and engage with the facets of IL?
- How do we teach students to contribute to the information lifecycle in meaningful, accurate, ethical, information literate ways?
- How do educators guide students to interact with their source texts, analyze them, synthesize them, and then communicate them in their own meaningful contributions to the field?

CONSUMPTION

As students consume the information contained in an infographic, ideally, multiple IL skills are being used. In theory, the students know they have an

information need, they seek it out, they evaluate the source and decide whether the information is reliable, and then they use and attribute it for legal and ethical reasons. However, the linearity of the process implied by the previous sentence is rarely the reality for information searches, especially in the realm of infographics. Often people encounter infographics and other information on social networking sites, and they often don't know that they even *had* a need for that particular information. For instance, someone might see an infographic about the funding of presidential candidates pop up on Twitter—they may not have known they *needed* that information, but they may be interested nonetheless. The discovery process, because of the rapid and informal publication methods of information, is imbued with elements of serendipity and complexity.

Another skill is the ability to access information. Access is perhaps the simplest part of the consumption of infographics. Rather than seeking and finding information in response to a need, people are presented with a continual flow of information. Individuals hardly have to do anything to encounter a piece of information. Content from various media washes over consumers like waves. It's impossible to engage with all of the conversations that are available, and teaching students to pick and choose what they engage with is part of the challenge. It's also essential to teach students when they need to go further to confirm information that's presented via infographic. To do this, they may need to check the sources that are cited in the infographic or track down the information in other ways that may not be as easily accessible. For instance, an infographic may illustrate the government's expenditure on a program. Before accepting this at face value and acting on or using this information, it would be beneficial for the student to confirm this in the budget or in other documentation. This fact needs to be sought; it won't present itself in the same ways that an infographic does, and it may not be easy to find, so there's still a need for educators to address discovery and access.

Infographics also present unique challenges because they have the advantage of an immediate rhetorical punch. Using a combination of colors, images, and linework, an infographic's producer can use design techniques to shape the audience's reaction about a given topic. As a result, infographics offer audiences the "illusion of trustworthiness" because of their visual nature and statistical information (Toth, 2013). People ascribe more credibility to images than text alone (Kostelnick & Roberts, 2010; Kimball & Hawkins, 2008; Tufte, 2003; Kienzler, 1997; Schriver, 1997). Images and visuals can be seductive in that audiences may not question the authority of the data that's conveyed or question its merit in the same way they might with a book or journal article. Some have even suggested that infographic producers distort data to make a stronger point and attract attention to the display (McArdle, 2011). As such, students may be

Figure 12.1. A completely fabricated statistic demonstrating the persuasive power of a visually designed piece of information.

quick to make snap and superficial decisions about the information, without fully considering its authority.

Non-information literate audiences may also be more likely to believe information presented in infographics even though source material may be questionable and/or non-existent. According to Ellen Lupton (1989), "Statistics promote the objectivity of numbers while suppressing an interest in explanation" (p. 151). For instance, if we say in this chapter that 80% of all academic librarians are female, most information literate people would want to know the source of the data. However, if we design that 80% statistic with female and male pictograms in an infographic, some people may be less likely to question the data and focus more on how the data is visually presented. As a demonstration of this, the statistic in Figure 12.1 is completely fabricated and cites no source information whatsoever, but seems viable because of its visual presentation. This example illustrates the point that designed "statistics resist the skepticism on which empirical method is founded, and project an authoritative image of self-evident factuality" (Lupton, 1989, p. 151).

Another part of the challenge is teaching and encouraging students to evaluate the information they encounter and gather via infographics. This evaluation is always an essential skill, regardless of the genre or medium of access. However, like much of the information that students encounter, there is no formal vetting

process, so it's especially important to guide students to ask the essential questions behind evaluating sources of infographics.

In some cases, the information used to create the infographic may be incorrect or flawed. In other cases, the source of information for the infographic may be outdated. And while in the minority, some infographics even go as far as blatantly misleading an audience with the type of information presented either to advance a cause or sell a product.

To avoid being misled, some of the questions all information consumers need to consider are: Who are the authors? What is the purpose? Why does this piece of information exist? How does the creator of this information support claims? What interests might the creator be representing or promoting? Whose financial interests are in play? Who funded this, and who has something to gain from the distribution of this information? It's only by engaging in this scrutiny that any consumer can really decide whether to trust a source or not, whether the source of information in question is a book, a peer-reviewed article, a tweet, or an infographic.

The ethical use of information, with attention to economic, legal, and social issues, is another competency that deserves attention. When students use information from infographics, it's essential that they cite them as sources, even though, because of the information's informality, it may feel free for the taking. Citing and documenting sources, in addition to being the legal thing to do, also reminds students that information doesn't exist independently from an individual or organization with a set of biases and a particular point of view. Being aware of this can strengthen the student's attention to evaluation.

PRODUCTION

Students are not just information consumers—they're writers and communicators, so they're information producers as well. While simply consuming infographics requires the use of many of the IL competencies, the production of infographics raises issues of equal importance. Advances in technology and the ease of software programs have also made infographic production much easier for the common user. With the click of a few buttons, even a novice can generate a simple infographic. And herein lies a problem: If virtually anyone with computer access can create an infographic, there is no way to ensure the products are reliable, accurate sources of information. What we can do, however, is educate students in higher education settings to interact with infographics as consumers and producers in information literate ways.

To create an infographic, a producer needs to conduct a research process that any information literate person should undertake. After deciding on a rhetorical

strategy of audience, purpose, and topic, the producer needs to determine the extent of information needed, access source material effectively and efficiently, evaluate this source material, and appropriate newly researched material for a specific purpose and audience of the infographic.

When students shift from consumers to producers, they have to make a large transition from thinking, analyzing, and using the information as consumers. They are forced to consider more deeply the rhetorical dimensions of infographics, including the audience, contexts, and purposes of the documents they create in the genre. For instance, as a consumer, a student might use an infographic to decide for whom to vote in an upcoming mayoral election. But as a producer, the student needs to make a plethora of decisions, including who the target audience is (i.e., Democratic voters, undecided voters, or Republican voters, senior citizens, first-time voters, etc.), what information will be relevant for voters (i.e., city gun rights regulations, police and fire compensation packages, funding for a new pedestrian bridge, etc.), why someone might use this information, in what context will they use this information (i.e., in the voting booth, in informal conversations, before a debate, etc.), and then present this information in a way that will allow quick and easy access. As producers of infographics, students also need to consider how to gather accurate, relevant information to inform their audience and communicate their sources of information ethically.

In effective infographics, each design element does rhetorical work so that the infographic can communicate the desired message effectively. Even though some infographics may appear as if they are for a general audience, most of them have a specific purpose and targeted audience in mind. Students are confronted with research challenges, inherent ethical concerns such as including source material and minimizing data distortion, while simultaneously deliberating on design elements of visual persuasion.

The genre, like all forms of communication, offers the producer a lot of rhetorical power. The producer also has a responsibility in terms of their ethical use of information included on the infographic. For instance, the producer should include accurate information that is taken from credible and reliable sources. But without knowledge of IL competencies, it would be easy for the producer to skew information, omit citations and/or source material, or present material from overtly biased sources.

DISTRIBUTION/REDISTRIBUTION

Technology, particularly the Internet, document design software, and social media platforms such as Twitter, Pinterest, and Facebook, has enabled a virtual explosion in the rate and amount of distribution of information. In the

past, there were more gatekeepers (editors, copyeditors, publishers, etc.) in place before the information could reach intended audiences. But now audiences can receive information without as many filters. The dissemination is much quicker and easier since individuals can share and publish anything they want simply by tapping a button on the screen.

The ease with which individuals can now disseminate information is a double-edged sword. Dissemination and communication technologies have allowed many more people to express themselves and enter various conversations, arguably democratizing conversations in the public sphere to an unprecedented degree. However, because dissemination is so manageable and attainable by such a large number of people, there's a plethora of information that may not be high quality, and as a result, it takes more effort to filter the extraneous or irrelevant information.

Looking specifically at the genre of infographics, the power and resources for almost anyone to produce an infographic presents a huge potential for problems. If people don't have the IL skills to produce accurate infographics using reliable (properly cited) sources, the result is a glut of inaccurate, poorly constructed, misleading infographics that are incredibly easy to distribute. Depending on the number of followers or friends in social media circles, the distribution of inaccurate information can be far-reaching.

But the ease of distribution also presents an even more dire compounding issue: redistribution. Once wrong information is distributed for the first time, viewers of that information can redistribute the infographic to others who in turn redistribute it to more followers. Redistribution in social media networks is unthinkably simple. People can "like" or retweet or "pin" with a single click, making the spread of information (or misinformation) potentially very speedy. Because infographics are designed to be stand-alone documents, they can be emailed, tweeted, or reposted in a variety of virtual places as well. This can be a boon to public good, because if the information could help people make good decisions or avoid bad ones individuals can simply and quickly consume that information and synthesize it with their existing knowledge base. However, if the information is biased or inaccurate, this poses a problem, especially if consumers of information aren't engaging in healthy evaluation practices. For example, even news sources can be susceptible to redistributing inaccurate information, as has been shown with celebrity deaths (Decarie, 2012). Celebrities such as Tony Danza, Justin Bieber, Gordon Lightfoot, and Morgan Freeman have all at one time been reported as dead when they were, in fact, still alive.

The other potentially troubling situation is that as a result of redistribution, information becomes separated from its original context. It can sometimes be difficult to tell from the infographic itself who the creator is or for what purpose

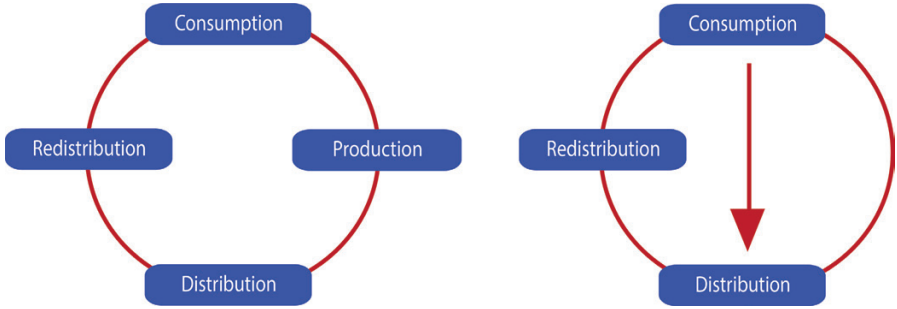

Figure 12.2. The diagram on the left shows all parts of the infographic's lifecycle, while the diagram on the right shows an unaccounted for critical step. While not all information consumers will be producers, being aware of the context of production allows for ethical use and distribution of information.

it was created. The product is alienated from its producer, relieving the producer of the responsibility (and credit) for its creation. An information literate person can do the work to track down the original source, or try to follow the trail of posting or reposting, but it sometimes isn't even possible, and many people wouldn't think to take the time to do this.

Another issue when considering redistribution is that during the act of sharing, retweeting, or reposting, an individual can easily shift from the role of the consumer of information to the distributor of information, entirely skipping the production stage or the role as producer. (See Figure 12.2.) This jump is problematic ethically because the distributor doesn't consider the rhetorical contingencies that a producer does during the creation of content. This makes distributing and redistributing incorrect or poorly constructed information easier and more prevalent.

In other words, inaccurate infographics, especially catchy ones that capitalize on emotional responses to issues, can rise to the level of pandemic. Redistribution in the worst-case scenario can be a combination of poor consumption, bad production, and quick distribution, resulting in mass communication of bad information.

AN OPPORTUNITY FOR COLLABORATIVE TEACHING OF INFOGRAPHICS

With all its difficulties and challenges, the infographic genre is incredibly exciting from an educator's standpoint for several reasons. Infographics are uniquely

positioned in relation to the information cycle, involving people at multiple phases of the cycle. They also offer an engaging way to highlight the rhetorical complexities of communication and allow students to hone their visual and verbal composition skills. Moreover, infographics provide a practical solution to a challenge that educators routinely encounter by allowing for the potential distribution of students' work beyond the walls of academia. Students are thus empowered to compose for and reach real audiences if they choose.

If students are allowed to become consumers, producers, distributors (and redistributors) of information as part of an assignment to create infographics, their consumption and production of documents in this genre provides a charged moment of potential where critical awareness can blossom. The students we're teaching today will be producing information in many formats and genres in the future, and hopefully the understanding of IL they gain in relation to infographics will heighten their awareness of these issues in other genres and situations. As literate navigators of this information landscape, their future decisions and contributions to society-wide conversations will be more well-informed and of higher quality.

The genre is also exciting because it encompasses the information life cycle and allows for a moment of opportunity at which writing or document design professors and librarians can collaborate to raise student awareness and nurture skills to both consume and produce information. While a writing or document design professor's emphasis is on the rhetoric and design involved in the production of an infographic, the librarian's concern is more explicitly about the ways in which people interact with the information and the ethical implications of that interaction. We have a shared interest in educating students at this particular moment, and while our vocabularies and viewpoints may have minor differences, our ultimate goal coincides.

Recognizing this, we decided, as a writing professor and a librarian at a large, comprehensive mostly undergraduate liberal arts university, to co-teach sessions that introduce students to the genre of infographics. An ideal place to do this is in Visual Rhetoric and Document Design, a course taken by upper-level writing majors or minors. One of the major units in this course focuses entirely on infographics. Students begin as consumers and then, from the knowledge they gain, move into the role of producers and potential distributors.

Before the first day of our unit, we tell the students to begin by first viewing a sampling of infographics and selecting some that aesthetically appeal to them or interest them. After answering a series of questions to analyze the visual design components of their favorite infographics as well as to determine how they are rhetorically situated, students come to class ready to discuss particular information objects and the genre as a whole.

In class, we begin by asking students to simply look for citations on their selected infographics. After doing this, we engage them in several conversations, selecting a few of their infographics to show the rest of the class on the overhead projector. First, we discuss the facts, figures, images, and information that are not cited. Doing a quick look at many infographics that come across our radars on any given day will almost inevitably show that many infographics simply don't cite their sources.

Next, we discuss the rhetorical implications of creating a document with no cited sources. What is the effect of making a claim with no source? If any given consumer considers this issue at all, does she trust the infographic? In our experience, students notice the damage this does to the infographic's credibility. We also discuss how in some situations it wouldn't matter, depending on the rhetorical purpose of the infographic. For example, if ABC Corp. creates an infographic to promote sales of the widgets from the previous quarter, does it really make a difference that ABC has not cited themselves as the author of this information? Or, if the sole purpose of an infographic is to entertain, is it important if information is incorrect or not factual?

After discussing uncited facts, we discuss information that is cited on the infographics they're examining. We ask students to think about whether these are trusted sources, and why or why not, a similar approach we use for asking students to assess scholarly sources for a research paper. At this point, students discover that in some cases, the sources and the citations of can be problematic. For instance, there may be a citation that points to a URL for a general site that doesn't seem specific to the fact that is stated (i.e., htpp://www.nytimes.com). In other cases, there may be citations, but it is not clear to the viewer which citations are supporting which information. Some other sources are from companies with financial interests at stake, and still others are organizations with political biases.

We also ask students to pick two "facts" that are displayed on their chosen infographics and research their accuracy by checking the source materials cited and/or by doing additional research. Many students find that items presented as facts on their infographics are, in fact, not actually true or are completely misrepresented. These moments can allow students, as consumers of information, to begin to see the rhetorical motivations behind the infographic.

Beyond the information, we also ask students to find the original contexts of their favorite infographics. During this task students often find that because the infographic has been posted and reposted so many times, the origin is completely obscured. It forces them to think and move beyond the information on the infographic and act with the understanding of an information literate person, (i.e., someone who is concerned with who created the information and who is the intellectual owner). In other words, when students think explicitly about

the origin of an infographic, it reinforces for them the notions of intellectual property and responsibility.

Going forward, the class is assigned to write a research proposal for creating an infographic, and then actually produce the infographic and reflect on their product. The purpose of the research proposal is for students to prove that they have a good grasp of the project by outlining the purpose of their infographic, the specific targeted audience, and the contexts in which it will function. They also have to justify their source material choices and why they deserve a place on their infographic.

Following approval of their proposals, students create an infographic about an issue of their choosing. At a minimum, their infographic must contain a strong title, a display of quantitative information, a display of qualitative information, and citations and documentation for all source material. Like any type of research, students are expected to find credible sources and cite them. The students can include any shapes, linework, color, or images to produce their final infographic, as long as all borrowed material is accurately attributed and their design choices fit within the larger rhetorical situation.

Finally, after they have constructed their infographic, students write a reflective memo where they self-assess their infographic based on the rhetorical, design, and IL issues we discussed throughout this unit. By this point, many students understand the responsibility they have as producers of information to create accurate and ethical infographics.

CONCLUSION

If educators empower students using IL principles, then they're empowered to make better political, financial, and ethical decisions, and effectively help govern our democracy as literate, critical thinking citizens. Creating assignments that engage students in thought and conversations about these challenges and working with educator partners can help prepare students to deal with the onslaught of information and hopefully help them do better work and contribute to society's conversations in meaningful ways.

Society benefits from an amazing array of information that's accessible in ways that until recently were unimaginable. There's a tremendous amount of possibility, but there are also some challenges associated with this access. As a result, educators need to instruct students to develop and use IL skills and understanding when they encounter new information as well as new forms. Infographics, and perhaps other emerging genres, allow educators a window to meet students in a realm where they're comfortable. Since students routinely encounter infographics, educators can use this genre as one of many tangible media with which

to highlight IL competencies. Ideally, the lessons learned about IL from studying infographics can be applied to other forms of information.

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