

9 | Designing your infographic: Getting to design

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The joy of building an infographic as a classroom-assigned project lies in the engagement that it can bring to both the teacher and student. Students begin to make connections to topic questions they created, researched, defined, and understood. Teachers see students making these connections and get excited. When working together, students can dig deeper to discover how to take content they've learned and present it to others so their audience understands the insights they've uncovered in their investigations. As you've seen in other chapters, infographics capture essential questions. The way students answer those questions is presented as collated evidence in infographics, backing up the insights they've gained.

Infographics, similarly to memes, are rendered to give the reader a sense of serendipity mixed with a sense of recognition of the absolute truth about something. Much as Debbie Abilock (2013) explains, "infographics that merge design, data, and a good essential statement or question create a sense of unease or 'friction' in the reader so that something that may be inherently known is now supported." As you look at samples of infographics throughout this book, you will notice when you read a successful infographic that either enhances a position you already hold or helps you to understand a new or difficult concept, you are engaged and possibly eager to carry the discussion further. Likewise, when students find that they have asked a real, essential-to-them question, they will work hard to make connections they can then present in visual form which helps them show it off.

Poster vs infographic

At first glance, it may seem like an infographic is today's word for poster. I disagree. Creating an infographic requires students to think beyond *the poster*. Students have produced posters since their early grades, and teachers have required that student posters demonstrate they've gathered information the teacher feels is important. For example, most poster assignments contain similar elements:

- » **topic overview**
- » **brief history**
- » **key figures**
- » **key locations**
- » **key experiments and/or important events**
- » **a conclusion**

These are displayed on poster board — or more frequently, online — and include images and captions. Teachers check for student understanding when asking students to present their newly discovered knowledge. The use of an information poster allows for critical analysis of display choices made for needed elements in a pleasing presentation and allows teachers to assess content knowledge — an important assessment for sure.

There is value in assigning the information poster. They offer advantages by teaching students how to pull out those facts, images, and text that exhibit important information about their chosen topic. In assessing these posters, we look at the end product for an understanding of the event, person, or idea by analyzing what we think are important facts displayed in a pleasing way. In an infographic, we want to see a distillation of an argument or claim rather than an explanation.

Assessment of an infographic takes place throughout the process itself and culminates in the teacher evaluating the success of the topic understanding and the choice of elements and design to best express that understanding. Both content knowledge and arguments based on that knowledge are important and useful in the classroom. As teachers it is important that we identify the product we actually want and the amount of time we are willing to invest in teaching the necessary, and very transferrable, skills needed to create a successful infographic.

By assigning students to create an infographic, we are requiring them to dig deeper into the content to make important connections that show the topic content in new, different, or challenging ways. By creating an *argument*, or an *insight*, that entices the reader to discover what the creator sees and understands within their argument, students actually *begin* a dialog with their reader.

Steps for teaching an infographic lesson

While it sounds like more effort than many teachers might like to take, assigning an infographic as a project is not only worthwhile, it *ramps up* poster knowledge from content knowledge to synthesis: a goal we all seek. Teachers can manage this instruction by assessing content knowledge through tests, essays, class activities, before (or while) students conduct their research for the infographic. When it's time to assess the infographic, teachers already know where individual students stand with their content knowledge and can focus their final infographic assessment based on a rubric centered more on design choice, essential questions, how the evidence supports the claim, and what dialog *begins* with the reader. Skills such as locating and evaluating information, note-taking, designing, citation, and question-asking are all incorporated into this process and have been assessed during the process. When a student has been given the OK to proceed with the design, the teacher knows that he has com-

pleted all the necessary steps prior to sitting down at the design table. These are all important, transferrable skills to any research-based product, so direct instruction here creates learning that is important for this necessary research skill set.

The steps needed to identify important data, analyze it, and apply it as support or refutation to an essential question are discussed in other chapters in this book. Let us look at the steps our students, with research in hand, could use to visualize their essential question into an infographic. Students will need the following materials:

- » **a packet of sticky notes for each student or group**
- » **at least one piece of paper, 11x17" or larger**
- » **student notes, outlines, and drafts**

The steps include pre-organizing the infographic, creating storyframes, creating a rough draft, formative assessment, workshoping the infographic, reflecting on the infographic, and determining final revisions. Other resources that might help are *Smashing Magazine's* article "The Do's And Don'ts Of Infographic Design" (<https://www.smashingmagazine.com/2011/10/the-dos-and-donts-of-infographic-design/>) and "8 Types of Infographic" on the NeoMam Studies website (<http://neomam.com/blog/the-8-types-of-infographic/>).

Step 1: Pre-organization: What's the "story"?

Once students have their research completed and an idea of what the essential statement or question might be for their topic presentation, they are ready to begin thinking about which data points will best serve as evidence for their statement, and what kind of design will best support, and more importantly, enhance that evidence. Having learned that there are many different

frames to present data such as pie charts, bar charts, or timelines, students look over the possibilities and determine what will best tell their story. If a story is about the steps it took to gain women's suffrage, then a timeline might be the frame of choice. But if a story wants to show that women's suffrage brought about changes in fashion, the student (or student group) could decide to cover many instances of change (e.g., bloomers and short hair). It could be framed as a comparison (between a woman from 1800 and one from 1920), or conceptually as a metaphor (for example, the journey to complete suffrage rolling and roiling on the waves of popular opinion). The first step to any infographic is: "What is my claim?" or "What is my story?"

At this stage, students have completed research and have collected numerical data (either in number form or visualized in charts, maps, or graphs), text (such as quotes or memes), and/or images (or, at a minimum, a sense of the types of images they would like to locate). This combined information may — or may not — be the data that completes an argument. Students should have lots of data to choose from so they can *play* with it to see which data tells which story — combinations of different data change the story. Students look at the data they have in hand and choose the data they think might create the argument they think they are making. They write these data bits onto sticky notes and place them next to their big paper for easy access.

Now is the time for the teacher and librarian to assess the data to see if the student is ready to move on to visual design. Here are some questions to consider:

- » **Does the student have appropriate data to support his or her stated question/statement?**
- » **Does he or she have enough?**

- » **Does the student have citations completed so that teachers, and other readers can verify the information?**
- » **Can the student explain the meaning of these data pieces?**

Assessment can be informal, with the teacher meeting with each student to see what has been chosen. Assessment can be formal too, via an in-class essay using only the materials students bring with them to class. The essay requires students to give background to the topic and place the topic within an historical, cultural, scientific, or other context as determined by the class subject area.

Step 2: Create storyframes

Once students have settled on a claim and/or a story, they are ready to storyboard their ideas and test several to see which of those designs might best help them tell their story. They can do this by using storyframes.

When making a movie or audio performance, writers *storyboard* their program. Laying out each scene with dialog, the expected placement of people, props, and set allows the crew to anticipate how to set up shots, where to light, where to stand and determine what the dialog is and how it's delivered, etc. (For examples of storyboards from movies like Psycho and Star Wars, visit <http://screencrush.com/movie-storyboards/>). In the world of online creation *wireframing* is a way to do a similar thing: determine image placement, graphic design, and coloring. An important piece to consider first in this process is the *flow* of the argument — and deciding what kind of frame best *holds* the story of that argument. For our infographic instruction, Debbie Abilock and I wrote a *KnowledgeQuest* article to help teachers and librarians think about infographic assignments (Abilock and Williams 2014).

My ideas for this chapter complement the article, merging storyboarding and wireframing to create a *story-frame* process. Storyframing — the juxtaposition of the concepts of *storyboard-*

ing and *wireframing* — is an important step in helping students think through where, how, why, and in what sequence to place certain design elements on their page. It creates the backdrop that best illustrates their ideas. Thus an infographic that tells the story of war's high death toll might *frame* it illustratively within a peace sign or along a road from battle to battle as the data shows higher mortality.

While there are many steps to creating an infographic, all of which are outlined elsewhere in this book, this step of storyframing is crucial. Review the sample infographics formats with the class, asking each student or student group to pay attention to the kinds of design frames that may be useful for their own infographic.

Release students to their groups or individual work and ask them to imagine their finished design: "What kind of understanding should their reader glean?" Give them the Question Design Matrix (see Appendix A in this chapter) as a worksheet to help them think through the many pieces that can make up a design. Asking the question from the matrix: "What kind of frame might work?" and then playing with different design frames, gives students the opportunity to play out different scenarios.

Again, using the structural components as outlined in Chapter 7, students begin to think about which design is the best to hold (or frame) the work. They can turn in to the teacher two or three design possibilities (for example, Topic 1: women at work; data showing women making less than men in the same job; frame of a see-saw with a woman on one side and man on the other. Topic 2: something about inequality, something along the lines of: the ups and downs of women's rights).

The teacher can direct student work at this point with questions to get him or her thinking more deeply and looking for connections: "I see that this chart tells us the amount of money that women make in comparison with men, and I wonder which of

these other pieces of data help us understand the bigger picture. Which one in particular might be most useful in doing that?" Teachers can also continue to assess for content knowledge at this point and give students credit for work accomplished in understanding key subject matter concepts. Assessing all along the way for both content and participation helps to keep students on task while allowing the teacher the ability to keep content front and center over the easier *dazzle* of creation. It keeps us all honest to keep honing in on how particular data points tell stories and why they are important. For example, "Can we see how the outcome of an event changed because of the discovery, and application of medicine?"

Step 3: Rough draft: "playing" with the data

At this point, students still have not approached the online digital tools they will be ultimately using. So often, when we want our students to produce something (a presentation, video, audio file, etc.) utilizing online tools, we want to get right to it, thinking that it is the tool that engages them. Watching students center on their 'aha' of the content shows us the real engagement comes from discovering new ideas and re-framing them into the stories they now understand in a way they didn't before; and making connections to their own vision spurs them on to wanting to create an interesting presentation.

Students place a working title on their sheet of paper. Place one data bit (a chart, number, factoid, or sketch) on a single sticky note. Then place it on the side of the large paper. Repeat until each data piece is represented by a sticky note and stashed on the margins of the paper. If students get lost or frustrated, have them return to their Question Design Matrix and review the question: "What is my compelling "aha!" argument?" Taking a different look at a frame can also help to re-track frustration. If a student has been working with a timeline frame and finds herself unable

to create the argument effectively, suggest a time out to remove all the sticky notes from the page. Pencil in a different layout style (perhaps a comparison, flow chart, or even a background image representing the topic, such as a helmet to represent war or a Ferris wheel that shows the circular nature of life and death in literature). Let loose afresh with the data and see if it now fits better. Only through non-threatening, easy-to-discard-and-replace materials can students take the risk to try and try again.

This is the most important part of the creation process: once students know what they want to *explain* or *argue* or *hypothesize*, they can determine which bits of data, visuals, and text tell the story. This takes time and experimentation. This is when students decide that the structure of their visualization is going to be a compare/contrast or timeline. They then lay their sticky notes on the draft drawing and add in the elements such as arrows, circles, or other items. Asking again and again, “Is this factoid the one that shows my reader the gist of my story?” “Will it allow students to mix/match/add/delete items that don’t assist in the storytelling?”

When they start this process online, they rarely participate in the process of asking questions, re-tooling titles to find the one that truly synthesizes the message or play with their data. What happens online centers on the design creation using the offered tools. Before we can design with the cool tools we have to go through the thinking process of the content. Often, there is a huge learning curve with the online tool and so students tend to want to fit data points into what the tool has to offer. What works is to go to the tool after the thinking has been done. There will be changes made, but the scaffold will be there to work with the creation tool – and using it in its best form.

At this point, student attention is on the content, the idea, and the story. The hands-on, with paper and sticky notes, provides a physical, visual way for students to imagine the meaning of their

work. I have seen it again and again: a student group will have what they think is a complete idea, and someone (maybe the teacher, maybe another student who sees the work in a gallery walk) asks: “What changes if you move this data in relation to this other data?” The creators often take a moment to think about it and most often go back to the drawing board to re-think their vision, change their title, or look at the data in a different way.

While we often start with a pre-conceived idea of what an infographic will look like, the end result *after* play time is often quite different. We may end up with an argument that is quite distinct from the initial thinking. This is a KEY point in time. It’s the moment when the student also experiences the “aha.” This is when students discard data, decide on the message, and then move data around into patterns that tell the story.

Step 4: Formative assessment: Instructor feedback

Now, the flow is beginning as students take the data they have in hand and begin to apply it. Teachers can take this opportunity to evaluate the data they’ve chosen as part of the process of evidence evaluation. As mentioned above, teachers can use this time for formative assessment through questioning and/or observation. But this is an excellent time for assessing for content requirements. If each student has a different project topic, but they all fall under the unit content (e.g., Civil Rights – with individual student projects on Rosa Parks, Jim Crow, *Plessy v Ferguson*) teachers can assess by:

- » **requiring an in-class essay** – ask students to write about how their particular topic created change during the years being studied in class.
- » **teacher check-in on the notes/data** – give points for notes that show up in the sticky note pages; check for depth and breadth.

Sadie's story

A Columbian Exchange assignment asked my students to think about what happens when very different cultures meet up. When Sadie first chose this topic and finished her preliminary research, she felt pretty confident that she understood that what Columbus brought to the New World was a more “technologically advanced” culture that would enhance what the native cultures they met had. She outlined what each culture met for the first time, and began her design.

Using the storyframing activity, Sadie noted on each sticky note a sample of an item from each culture. She began to play around with what those items might mean. Placing sticky notes with items like guns, money, clothing, blankets, food on the map in Europe, then placing sticky notes with items like gold, furs, and food items on the map of the Americas, she began moving them around when she would ask herself, “Did this item make it back to Europe? Once it got there, what happened to it — to the culture that embraced it?”

Likewise, she asked the same of the European items and their impact on the native cultures. She consulted her notes, and returned to research some more. Her conversation changed when she added in items like disease, language, cultural artifacts, and tools. What she thought she understood about the meeting of cultures (“the powerful European culture brought all the “new stuff” to the native culture that was primitive) changed when she expanded her research to look at the impact of particular items on the European culture.

Moving the sticky notes, experimenting with assigning different data pieces to each note, adding with shapes like arrows, Venn diagram circles, and deciding on an overall design concept help her to create her newly discovered argument: Exchange of culture, objects, and values flows both ways.

- » **citation checks** – definitely a requirement – librarians can help to verify format, etc. Require annotations for each citation.
- » **in-class test on the class topic.**

If the infographic assignment is to highlight something from the Civil Rights, the test might be on the Civil Rights movement in general. It might include a short essay on the specific topic the student has researched or impressions from other infographics the students have observed in their gallery walks – see below.

If a teacher is assigning an information poster – then he/she will most likely want to see lots of data points. Remembering that an information poster is designed to exhibit highlights from a topic in a clear and creative manner, having facts and images that cover the salient points of the topic is important. If the assignment is to bring concepts together into a metaphor, or a point of view argument, or other synthesis of a topic, as is required for an infographic, then there might be less data shown. Thinking through to an “aha” requires students to imagine the task and build an argument that informs, persuades, explains, or questions a concept or event. Laying out the anticipated topic allows them to question if they have narrowed down their topic enough in order to understand which of the many data bits they have in hand are meaningful to a particular thought, idea, or argument, or if they need to re-look at their question and tweak it in some way.

Because teachers have already assessed the quantity and quality of data acquired, it is now OK for students to discard or delete unnecessary factoids and other data. Many a compelling infographic contained a minimum of facts in favor of highlighting an important connection or a single piece of irony.

Step 5: Workshopping the infographic

Again, holding students accountable for each step along the way assures the teacher students are working with the material thoughtfully while they are learning the research process itself. By this time, students have:

- » **participated in class instruction** prior to the assignment, gaining the big picture of the unit to be studied;
- » **asked themselves many questions** about their topic and researched the answers;
- » **created notes** that include facts, figures, images, ideas, and quotes that help them understand why or how their topic is important;
- » **participated in a “scholarly conversation”** with their resources by annotating their citations and checking in on the usefulness (or not) of their resource;
- » **taken in-class objective tests**, in-class essays, discussions, and other assessments for content;
- » **created mock infographic for others to see.**

Now it's time to *workshop* their work by allowing students to participate in look/see activities and conversing with other about their work.

Gallery walks, brief presentations, and small group conversations allow students to try out their arguments on others to see if they have successfully stated what they wanted to before committing themselves to a design. This, too, is an important step that should not be skipped, because it helps students note where their project topic fits into the big picture of your unit. Conversations need to include:

- » **When did specific events take place?**
- » **What are the implications of one topic upon another** — e.g., where in the timeline of the 1950s/ '60s Civil Rights activism did the March on Washington fall? Did Rosa Parks' action influence the March or vice versa?
- » **How do those actions relate to each other?**

These sorts of insights and conversations can be taken back to individual student works so that they can be seen with new eyes — and maybe a whole new insight.

There are several ways to share student work:

- » **If this is a group project, choose one person to stay at the table with the project displayed on the table.** The other group members will spend about five minutes at each of the other tables to view the displays, ask questions of the student sitting there, and offer suggestions. A checklist of questions can be displayed on the board. After all the rotations have been completed, students return to their home table and report back to each other on their observations. The student who stayed behind explains any critiques he/she received from others. The group can make any changes if desired. This can be done informally and quickly, or it can be another assessment piece with each group participating in a “write around” at each table where the newcomers to the table write comments/questions about the piece.
- » **Display all the projects on the wall.** Place butcher paper beneath each project so students can write questions or critiques. Alternatively, pass out sticky notes that students can write on and place on the work itself.
- » **Have each group give a quick presentation** to the whole class showing their project in progress and answering questions about it.

Regardless of which activity is chosen, gallery walks allow for students and teachers to touch base and ask questions. Work with students before gallery walks and set guidelines for specific questions they might ask or items they might look for as they observe and speak with their fellow students.

Questions — whether for determining a topic, assessing learning, or just checking in — are continuous and probing. As a *drop-in* reflection tool, questioning can give one more opportunity to become sure of their direction. Teachers can take a moment to bring the class back to a focus point at any time during this process and spend a few minutes having the students ask questions about their projects such as:

- » **Do I see a pattern that best suggests my goal of persuading teachers that school should start at 10:00 a.m.?**
- » **What kind of image best shows off “23 percent of workers”?**
- » **What caption best explains the graph that correlates mosquito bites and childhood death?**

As students share their drafts, the teacher can respond with the question, “What is the goal of your infographic?” A student who asks, “What caption best explains the graph that correlates mosquito bites and childhood death?” might answer, “My goal is to get as many kids as possible in my school to contribute to a fund to buy mosquito nets.” The teacher then can use that as a prompt to generate discussion that models the brainstorming process that happens during the pencil and sticky-note storyframing stage.

Again, with any of these activities, the teacher can informally or formally assess the process, check-in with the data and evidence, and check for understanding.

Checking in with others to see what they take away from the infographic can help the creators make any needed changes before committing to a more finished draft. Others might see connections that the creators missed and upon reflection, the creators might like these new connections better.

Step 6: Reflection

As we get pressed for time, reflection can often be pushed aside. We might get frustrated because of time barriers, but significant learning can happen when students think back on their infographic-creation process. Reflection can be done individually, in small groups, or as a class, but it should be done regardless of the amount of time you'll need. Reflecting in a journal allows for teacher oversight and prompting (as well as another point for assessment) while small or whole class discussion adds that dimension of group insights that goes missing with pencil to paper writing. Both provide useful information that solidifies decisions and makes students ready to move on to creating their infographic digitally.

Step 7: Final revisions

With a completed storyframe in hand, students are ready to build their infographic, beginning to incorporate the next layer of design strategies: color, shape, light, and depth. Consider the ideas put forward in Chapters 6 and 7 to inform how color, shape, and light can enhance student infographics.

While, of course, you could have students do an infographic with colored pencils, markers and foam core, keep in mind that we are not advocating that these are the only methods for the actual final draft. After the entire storyframe process is complete, introduce your students to tools like Easel.ly, Piktochart.com, and

Canva.com for web-based, easy-to-use graphic options for creating an infographic.

Conclusion

Structured effectively, the infographics process generates discoveries that make it all worthwhile because the product can engage many kinds of talents and interests. If students have had time to look at many examples of infographics, and through class discussion or small group work explored how data works, how memes exploit our emotions (for good or not-so-good reasons), how media persuades, and other data literacy processes, then the ability to make a compelling infographic of one's own can be engaging.

If we're lucky, infographic design encourages them to continue past their assignment into a real interest. Curating information has its own merits in teaching the skills of locating information, analyzing it, deciding what is important and what is less so, designing the story arc, the text, and the images to best tell the story. In designing an infographic, we not only use those skills but also help students understand why and how sources differ, think about points of view, reflect on their world and the world around them, and refine an idea that tries to answer a specific question.

I have been fortunate to be a part of the learning process in many of our health classes over the past few years. The assignment "Create an infographic designed to convince teens about the dangers of STDs" was designed to teach the research process as well as make connections with real issues in sexuality that teens need to know. In one class, students were madly getting ready to create infographics that might be invited to be posted in our local health clinic. One group discovered that the process of building a story — and one that might convince another teenager about the downside of STDs — could be quite frustrating. Their topic

regarding condoms was easy to research. They had good data and solid ideas of why condoms are useful in preventing STDs. But they could not come up with a title or a frame that matched their goal of convincing teenagers to think through their options before having sex.

They persevered, and they came to an “aha” moment as they discussed the title. Stymied by the thought of creating a great title, they spent much time dismissing several as too mundane: “Condoms are Important” or “Be Safe, Use a Condom.” They wanted something to grab attention.

Then, as teenagers often do, they started getting goofy and throwing out ideas, each, I’m sure more ridiculous than the previous. At some point their title emerged. They eagerly set to work on their draft, and created their frame and set their sticky notes where they wanted them. The design, a series of data points about STDs and condom use centered on the perplexed face of a teen under the title: “Don’t Be Silly. Wrap your Willie”.

Was the teacher aghast? A little. Were we unsure about its propriety? Yes. Was it effective? You bet. Their point was made, and it certainly wasn’t boring. In the gallery walk, other students paid attention and spent a bit more time reviewing this design, because they made a connection — that wacky title set their school expectations askew. Their fellow students were thrilled to respond to their infographic with positive and negative, but thoughtful, feedback.

These students, in dismissing the boring, the traditionally informative, and the most obvious titles, for the weird, off-kilter, but captivating title that captured the essence of what their message (or argument) was, discovered that through discussion, fact-gathering, consideration, and yes, silliness and play, they could hone in on what their message truly was rather than settle for just providing information. Their assignment was to instigate

change. They were on the road to understanding how design, data, and a compelling, eye-catching title work together to synthesize their message.

Resources

Abilock, Debbie, and Williams, Connie. 2014. "Recipe for an Infographic." *Knowledge Quest* 43(2), Nov./Dec., 46-55.

Abilock, Debbie. 2013. "Essentially a Multimodal Argument," August 22. E-mail received by the author.

Appendix A: Question Design Matrix Template

Audience	My interest/my problem	Choices/ possibilities for design frame	Thinking
Who is the audience for my project?	What is my compelling “aha!” argument?	What kind of frame might work?	What kinds of information do I need in order to answer my question?
<p>Working question:</p> <p>Audience:</p> <p>My argument:</p> <p>My frame:</p> <p>Further thinking:</p>			

Appendix B: Question Design Matrix Example

Audience	My interest/my problem	Choices/ possibilities for design frame	Thinking
<p>Who is the audience for my project?</p> <p>Audience: rock-and-roll musicians, music appreciation students, teachers, dulcimer players</p>	<p>What is my compelling “aha!” argument?</p> <p>Dulcimer music is just like other kinds of music!</p>	<p>What kind of frame might work?</p> <p>My frame: outline of a dulcimer or musical note (the musical note could be made to look like a timeline)</p>	<p>What kinds of information do I need in order to answer my question?</p> <p>Books about musical instruments History of rock-and-roll book or website</p>
<p>Working question: How successful could the dulcimer be as a part of today’s rock and roll/alternative music scene?</p> <p>Audience: High school classmates</p> <p>My argument: the dulcimer is a fantastic instrument for alternative music. There are many musicians that have used it in their songs successfully</p> <p>My frame: Comparison between Beatles and Ravi Shankar then, dulcimer and rock today?</p> <p>Further thinking: data that shows musicians who have used dulcimers in their music, timeline style; OR historical info on the dulcimer OR data info that shows the range of the dulcimer</p>			

