2022

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Tammi Owens
University of Nebraska at Omaha, tammiowens@unomaha.edu

Camille Hawbaker Voorhees

Recommended Citation

Owens, T.M., & Voorhees, C.H. (2022). What fascinates you? Infographics as research-based inquiry for artists. In S. Higgins & N. Tran (Eds.), Embracing Change: Alternatives to Traditional Research Writing Assignments. ACRL: Chicago. pp. 205-225.

Chapter 12

What Fascinates You?

Infographics as Research-Based Inquiry for Artists

Tammi M. Owens and Camille Hawbaker Voorhees

Introduction

While student artists can usually articulate their personal motivations in artistic production, they often do not place their work within the context of research that can add complexity, nuance, and generalized perspective until later in their careers. To help students develop this practice, a librarian and a studio art instructor created and co-taught one assignment in 2D Foundations: Color and Visual Literacy, a required two-dimensional (2D) art studio class for all art majors at the University of Nebraska Omaha. In this chapter, the authors share the infographic assignment, which takes inspiration from information-based art generated by artists such as Laurie Frick, Giorgia Lupi, David McCandless, and Mark Dion who base their creations on scientific data and historical or social context in order to present visually pleasing and nuanced information for the general public. In this case study chapter, the authors explain the assignment, share student work and anonymized research reflections, and reflect on assumptions, challenges, and successes experienced while designing and teaching this nontraditional research assignment.

Literature Review

This project and the general trajectory of the course are motivated by the concept that "what is most personal is most general," a concept first proposed by Carl R. Rogers in 1961.[1] This turn of phrase has been generally turned into an aphorism that "the personal is universal" and is a guiding principle in teaching creative storytelling. As applied to this

assignment, Rogers's concept leads students to understand that the personal is universal through creative associations between information generated by students and universal information acquired through some form of academic research. Additionally, the authors are motivated to inculcate in students Graeme Sullivan's concept of art practice as research early in their undergraduate careers so students may be masters of information retrieval and use in their creative fields by the time they undertake their thesis work.[2]

Studio art students have different information needs and ways of understanding research. The authors began their collaboration on a hunch: first-year studio students may not know how to conduct library research at the university level, and if they did, they were not seeing it as a part of a studio process. Bennett notes that students typically browse the library for inspiration, writing that "students often do not regard the library as logically fitting into their studio projects or coursework, and as a result do not recognize their own valid and extremely challenging research needs."[3] In the authors' experience and in the experience of many other art and architecture librarians, this unique and creative library use may be a symptom of discomfort with conventional methods of explaining research and library concepts. Biases of librarians toward more traditional library searching methods may drive studio students and practicing artists to other information sources.[4] Studio art students may not learn library research techniques because they are spending their time looking inward, creating art, and developing themselves as artists. Greer writes that

> studio art students who are just beginning to formalize their personal concepts and oeuvres may neglect the library and the practice of academic research in favor of more time spent in the studio, despite the benefit such activities may have on their creative output and the ability to express their artistic goals in writing.[5]

This is the one thing the authors seek to communicate to students: one does not have to give up one's practice to incorporate research at the university level and beyond.

As educators and practitioners, both authors believe that research is essential for sustaining one's creative practice. At the undergraduate level, research can begin with the students' own experience and then shift to become part of a robust, high-quality media diet. Skains discusses how artists may begin with themselves in their artistic practice. Using Sullivan's conceptual category within the art practice as a research model, Skains urges artists to choose an auto-methodology, or reflective process, from which to begin their practice. That is, "begin with a familiar activity that has arguably been mastered," in order to advance their practice by building on what is already known. Skains specifically notes that autoethnography, or a sort of self-study, is most critical to art practice as research as the artist uses personal knowledge to make wider claims about the world.[6]

An implicit concept in this practice-based research model is that of embodied knowledge, or information that is seated in the body as opposed to the mind. This concept was first proposed by French philosopher Maurice Merleau-Ponty in *Phenomenology of Perception* and is employed in neuroscience, robotics, linguistics, sociology, feminist theory, and performance-related art forms like dance and theater.[7] Visual artists often begin from this intuitive place of knowing, and the process of making their art externalizes their ideas.

By asking students to mine their own interests and experiences, they may source knowledge that is seated in their body and is incongruous with external norms or perceptions. This is especially likely for students whose life experiences do not align with cisgender, heterosexual, or Eurocentric cultural conventions. Most students are still learning about the ways in which their personal experiences connect to broader themes, and even which personal experiences, interests, and media outlets are significant as sources of inspiration. Therefore, this assignment encourages students to take some initial steps toward that sense of self-awareness for creative purposes.

Reliable information from reputable external sources is equally necessary for one's creative practice. This includes scholarly publications in addition to all other kinds of media. In a four-part Medium essay, Yakob makes the case for a mindful media diet, with a clever "Media Pyramid" infographic based on the classic food pyramid. Yakob writes that he feels compelled to use the food pyramid as an analogy that shows how media consumption affects his sense of well-being. He describes how his wellness has been negatively impacted by "a confluence of attention economics, political actors optimized to harness it, and our own smartphone behaviors."[8] As cultural producers, artists should produce the type of nourishing and high-quality media listed at the base of Yakob's Media Pyramid. In order to provide this nourishing content, artists must consume quality, unbiased information that does not distort their perceptions of reality. By pairing embodied knowledge with scholarly information, students are less likely to perpetuate misinformation. This pairing also provides students with the opportunity to suss out details and concepts that are unique, interesting, or otherwise notable for the artist and the viewer.

To combine practice and research the authors use the infographic as their pedagogical tool. The terminology surrounding "infographics" is complex; at times the authors will discuss infographics while referring to images or projects that could be better described as data visualization. Crane writes that data or information visualization should not be conflated with infographics; the former presents large sets of complex data in a visually pleasing and understandable manner while the latter tells a story about a specific topic.[9] For the authors, there are three elements to the infographic as it pertains to this project: information, design, and narrative. The assignment is to create an infographic, but the greater learning outcome for the class is to encourage the students to engage with all the information encountered in everyday life. Therefore, the class engages with both infographics and data visualization alike.

Crane includes prehistoric cave paintings and maps in the history of infographics and considers these visual representations the first efforts at infographics,[10] but many consider William Playfair to be the father of modern infographics. In the late eighteenth and early nineteenth centuries Playfair produced the first published versions of graphs that are widely used today, such as the pie chart. Playfair's work was revolutionary as it "provided proof that presentation of evidence could be beautiful."[11] In 1858 Florence Nightingale was one of the first to create an infographic with a call to action. Nightingale designed a diagram of the causes of soldiers' deaths during the Crimean War, clearly proving to Parliament and the Queen of England the gruesome results of poor hygiene

on those recovering from war injuries.[12] W. E. B. Du Bois likewise used design to great effect when he utilized pictographics and charts in his data portraits for the American Negro Exhibit at the 1900 Paris Exposition to present a visual representation of the color line in nineteenth-century America.[13]

More recently, statistician and artist Edward R. Tufte has been influential in his arguments for presenting data truthfully in order to convey information accurately and thoroughly so that bias, editorializing, and misinformation are minimized and the "wonder of the data" is revealed.[14] Crucial to the purposes of the assignment, Tufte outlines the efficacy of the interplay between micro and macro information. Macro information, such as an aerial view of a city, provides viewers with a broad overview of the area while micro information, such as names and appearances of buildings or locations of trees and walkways, makes the information more tangible on a human scale. Thus, the micro/macro combination allows viewers to process information hierarchically through multiple layers of detail. Simply stated, Tufte writes, "To clarify, add detail."[15] A notable example that Tufte cites is the Vietnam War Memorial by Maya Lin. Lin's decision to organize the names of soldiers in chronological order of their deaths on black granite elicits emotional impact and places individual sacrifices within the larger context of the war's progression.[16]

Infographics are part of the curriculum in many disciplines at the K–12 and university level to help students establish a narrative framework for their learning. The STEM Literacy through Infographics project encourages secondary school teachers to incorporate infographics assignments into their classes to encourage students to undertake creative work that bolsters engagement, authenticity, and pride.[17] Grodoski discusses examples of art educators who have used data visualization in their secondary classrooms to help students make their thinking and knowing visible.[18] At the university level, Wolfe uses a data visualization assignment to teach students in a technical and professional communications class how to select, aggregate, and communicate data in order to "tell an interesting, credible, and ethical story about their findings."[19] Storytelling was also a key outcome for Wang, Bach, and Dingwall, who hosted data comic workshops at Edinburgh University to challenge illustration students to engage with large data sets and develop their narrative skills.[20] In the library, Waddell and Clariza engage in critical digital pedagogy as they teach first-year global environmental science students research methods to complete an infographic assignment,[21] while Anderson, Bishop, and Cross use a scaffolded set of four infographic assignments for sociology students to develop their quantitative reasoning and critical analysis skills.[22]

By applying concepts such as autoethnography, information diets, and information visualization to their coursework, students learn more about themselves, their creative process, and the ways in which intuitive, embodied knowledge can be a source for their inspiration. Their inspiration is then backed by academic knowledge and other more conventional ways of learning, knowing, and articulating complex ideas. Students will leave the class with more confidence in their creative intuition and tools for investigating their preliminary intuition and putting it into the context of the vast breadth of knowledge and understanding they have access to in academia.

Project Background

The University of Nebraska Omaha (UNO), a metropolitan university with strong ties to the community that surrounds it, is a PhD-granting institution known for its strong teaching values and small class sizes. At UNO Libraries, collaboration is a large part of the organizational culture. Librarians, who have faculty status, have liaison responsibilities based on specializations in their undergraduate and graduate coursework. It is common for librarians to develop active learning information literacy activities together with teaching faculty or instructors to fulfill course learning objectives. Often, the information literacy activities are incorporated into the syllabus as point-bearing assignments.

The Art and Art History program offers students three majors and two minors. Studio art majors may complete a concentration in two-dimensional art, three-dimensional art, graphic design, or media arts. All studio art and BFA majors are required to take the 2D Foundations: Color and Visual Literacy course as part of a core foundations of design series, with the course being open to nonmajors as well. Students in the 2D Foundations class receive an introduction to the elements and principles of design in 2D formats and create and manipulate 2D images to explore color physics and visual perception as well as design elements and principles. In addition to gaining technical skills, students also develop research strategies, idea development, and critical discourse over the course of the semester.

The Collaboration

The authors' collaboration began in 2017 after a library orientation for new adjunct faculty. The instructor e-mailed the fine arts librarian to request a meeting to discuss library resources for an infographic assignment. As this was the first time a studio instructor had e-mailed the librarian about the intersection of research and design, the librarian saw it as an exciting opportunity to meet a cohort of studio students to discuss how research could supplement their art practice. At the first meeting, the authors discussed their understanding of how art students did, or did not, incorporate research into their art practice and what may, or may not, encourage students to understand and integrate research practices into their creative practice. Both were inspired by the possibilities of the medium of an infographic as a creative exercise and a teaching tool to show students they can use their own expertise and passions to complete any research assignment they would encounter in their university coursework to come.

The instructor and librarian brought their own backgrounds and expertise to the team-taught assignment. The instructor, a practicing fine artist who uses information about her art materials, chemical processes, and traditional methods of textiles or printmaking production to represent metaphors for inner transformation, wrote the assignment to ensure that it was appropriate to and integratable into the course. In class, the instructor introduced students to the concept and medium of the infographic and delivered a lecture on artists who use information or data in their work. The fine arts librarian, who holds degrees in art history and is a fiber artist, selected the information literacy components and taught research skills in class. Both the instructor and the librarian mentored students

in their respective aspects of the assignment, with the instructor also delivering design feedback and graded student work. This collaboration continued for three years with the assignment and information literacy session changing each year to incorporate student feedback.

The Assignment

Description

In the assignment, called "Psychology + Data Visualization," students apply research methods to visual imagery (appendix 12A). The goal is for students to place their personal experience into the broader context of its role in the world at large. They are reminded of their roles as information creators as they are asked: What fascinates you? What is something you want to learn more about? How does it relate to your own life? Students are encouraged to think about how their own interests and passions align with broader ways of knowing and being, in order to explore how creative presentation of fact-based information can enrich their own creative practice and understand how fact-based information can be presented in creative ways to heighten the importance of the information.

The project is designed to be as broad as possible while providing some tools, structures, and guidelines for a successful information-based or data-driven project. The format of the assignment, an infographic, gives students a range of introductory-level visual tools like charts, symbols, research, and text. Students first explore examples of published infographics and data-driven art projects. Next, they learn how to study their topics from a macro and a micro level during a library instruction session. At the macro level, the students conduct library and internet research to find out how the world, country, or community understands their chosen topic. At the micro level, they conduct independent research to communicate how their topic affects or is integrated into their own lives. The students then produce a creative infographic digitally or manually to communicate the macro and micro information in one work of art. To do so, they use data discovered online, in library databases, and through primary source research to tell a story about information in a visually interesting and insightful way.

Learning Outcomes

The learning outcomes for the assignment are communicated to students as essential skills. These skills include

- contextualizing personal experiences within larger systems (social, economic, environmental, psychological, political, historical, industrial, etc.)
- organizing and displaying information in a visually engaging format that enhances the viewer's understanding of the subject
- using research (factual and experiential) for creative output
- curating factual information for a focused conceptual framework
- incorporating text or data as an element in visual design

Students demonstrate mastery of these skills with a work of art showing how their personal lives intersect with larger systems of knowledge in a visually compelling or meaningful way.

For the library instruction session, the learning outcomes are broad and closely align with the assignment requirements. After the library session, students should be able to

- give examples of macro and micro experiences regarding an object
- explain their personal connection to, and knowledge of, a potential infographic topic
- identify potential information sources for their infographics

Students demonstrate mastery of these skills through an in-class group exercise, completion of a worksheet in class, and a one-on-one research or design consultation. Although standards and frameworks may be more difficult to align to art practice–based outcomes,[23] the information literacy portion of this assignment is structured around the Association of College and Research Libraries *Framework for Information Literacy for Higher Education*.[24] Specifically, in this assignment students use the Searching as Strategic Exploration frame as they identify their information needs and search for appropriate information, and the Research as Inquiry frame as they learn the circular and iterative process of research.

Framing the Assignment

Before the library session, students are introduced to the general idea of infographics via examples of graphic designers, fine artists, and illustrators who create infographics. The goal is to show students how information can be presented for different purposes such as emotional impact, humor, social commentary, or advocacy. Specifically, students watch a segment of an *Art:21* episode on ecology that includes Mark Dion's ambitious *Neukom Vivarium* project, a mixed media installation of a fallen Western hemlock tree as a nurse log in a large greenhouse in Olympia Sculpture Park in Seattle, Washington.[25] In this clip, students hear Dion's explanation of how his research informs the placement and contexts in which his archives-based work is made. Students then watch the segment featuring Iñigo Manglano-Ovalle to understand how he uses humor, irony, scientific data, and social commentary in his art. Students also read an interview with data designer Giorgia Lupi to discover how Lupi uses information to develop her artwork.[26] Lupi has a background in graphic design, a popular concentration among students in this course. The interview gives students a glimpse of Lupi's creative process as well as an understanding of how information can be beautifully organized to understand larger patterns of behavior in places like Starbucks or a hospital.

The instructor then gives a presentation of infographics created by previous students to facilitate students' understanding of the level of investigation, quality of work, and range of possibilities needed for a successful project outcome. Students have a strong response to seeing these works; these examples are essential to helping students make connections between the professional works presented and the expectations for the assignment. By seeing aspirational professional examples such as Dion's, Manglano-Ovalle's, and Lupi's along with previous student projects, students understand how far information-informed

or data-driven work can take them in a wide range of projects. The intention is for students to feel challenged by this assignment but also for them to understand that they are only at the very beginning of their artistic journey and may at this point be limited by time, knowledge, skill, or resources. The goal is to give the students a bigger vision of possible directions they could take as they move out of the university and onto other professional contexts, such as well-researched grant proposals in public art, or data visualization as a tool for compelling design, advertising, and video game or comic design.

In the class session directly prior to the library session, students listen to a *99% Invisible* "Articles of Interest" podcast on the history of blue jeans.[27] Blue jeans are a universally familiar object, and the audio format challenges students to translate audio information into visual information. Students listen to the thirty-minute episode, gather facts from the narrative, and use them to make a quick sketch in their sketchbook that visually represents the information they found the most interesting. Students find this exercise to be a helpful, low-stakes practice for their own infographic project.

Establishing Personal Expertise as Research Topics

In the library information literacy session, students learn how to interrogate objects to create research questions. "Life is full of information," the librarian reminds them. "We get to process it, define it, and visually present it." Students claim and mine their personal knowledge expertise through questioning each other about their personal fascinations. Finally, they turn to new data sources for answers to their research questions and the macro information they needed to complete their infographic.

At the beginning of the class, students revisit some infographics on two websites: Information Is Beautiful (https://informationisbeautiful.net) and the Pew Research Center (https://www.pewresearch.org). After situating life as a fountain of information, as well as a source of inspiration and beauty, students, in teams of three to four, brainstorm answers to questions designed to help them conceive of everyday objects as carriers of information. Each team receives a well-worn T-shirt and is asked to list on a whiteboard the potential personal (micro) experiences associated with that T-shirt and the different ways the clothing item could be studied from a macro, data-based approach.

First, students study the micro perspective: What experiences has the shirt been through? What does it say about its owner? Why does the owner have that particular shirt? Where might they have worn it? Then, students think about the macro: Where was the shirt produced? How many types of jobs played a part in the production of this shirt? What cultural associations could be associated with this shirt's design? Was there an environmental life of the shirt? After brainstorming in small teams, the class collates their responses on a whiteboard at the front of the class. Everyone discusses the common answers and the outliers: What are the assumptions and creative interpretations an artist can make about a T-shirt? What information do we need to make macro and micro claims about T-shirts?

Students then turn their guided brainstorming to themselves and their potential projects. In pairs, they interview each other using questions listed on a worksheet (appendix

12B). Brainstorming answers to a modified Five Ws series of questions prompts students to begin thinking of themselves as content creators and requires them to articulate what legitimate information about their topic might look like.[28]

After the brainstorming sessions, students spend time in library databases. In the first iteration of this assignment, students explored industry information in IBISWorld; social and demographic trends at the Pew Research Center website; and facts, market information, and survey results at Statista. In later versions of the assignment, students were mentored in how to think about the information needed and where that information might live. Instead of teaching specific databases, the librarian shows students the A–Z Databases listings and helps them decide where they might begin their search for macro information. The librarian typically explores a few places to begin with the class, such as Academic Search Complete, Credo Reference, or Statista. While students search for information on their own laptops, the librarian conducts on-the-spot check-ins and consultations with every student, giving everyone in the class the opportunity to see the investigatory research process modeled with different topics.

Mentoring Students in Research and Design

Students have the opportunity for mentorship in research and design at several stages throughout the project cycle as they propose their topic, complete their research, and wrap up their design. The first mentorship opportunity presents itself early in the assignment as students are required to submit a project proposal after they attend the library information session. The instructor approves project proposals that show narrowly focused topics and a clear connection to the student's personal interests. Students without a clear personal connection to their research topic tend to gather a surfeit of academic information and struggle to provide a connection between the macro and micro. At that point in time, students are encouraged to identify their project's purpose, for example, to inform, convince, express an emotion, or push against assumptions. Proposals that lack specificity in their topic or a clear personal connection to the student are likely to be returned for further revision. The purpose of the proposal is to ensure that the student has a level of comprehension of the project's goals; individual conversations with each student are opportunities to clarify, guide, or enhance the student's project from the start.

In the first few weeks of the project planning process, students are highly encouraged to make a consultation appointment with the librarian for research help. Those who voluntarily take advantage of this opportunity tend to find macro information from a wider variety of resources. The consultation takes place in the librarian's office and generally takes one of two paths: a high-level discussion of how and where certain types of information may be gathered and presented, and by whom; or a traditional research consultation to fulfill the student's specific information needs.

The final opportunity for mentorship occurs at the in-progress check, which is required one week before the final critique. At this time the instructor discusses the project's development with each student with a specific focus on visual design considerations like composition, color palette, imagery, or style choices. It is generally expected that most of the research needed for the project is resolved around this time.

Results

As with any creative assignment, results have varied within and among student cohorts. Over time, the authors found the most notable distribution of student work is typified by the presence or absence of text in the final design. The use of visual cues versus language tends to impact the overall experience of viewing the student's work. Additional themes include the use of contemporary visual culture and the juxtaposition of types of information for emotional impact.

Absence of Text

Students who did not use any text were more likely to synthesize their results into one finished art piece based on their research. One of the earliest projects of this non-textual type presented a synthesis of micro and macro information in a simple and elegant color-driven solution (figure 12.1). The student researched the Pantone Colors of the Year for six consecutive fashion seasons over two years and then compared the dominant colors of the clothes in his closet to see how his taste aligned with trends. He found a notable progression in which his clothing colors lag about a season behind the trends of each Pantone color. He represented each color as a bar in a unified and elegant way that erased the original information but resulted in a visually compelling presentation that referenced bar charts without appearing too didactic. This work was submitted to and accepted into that year's juried student art show.

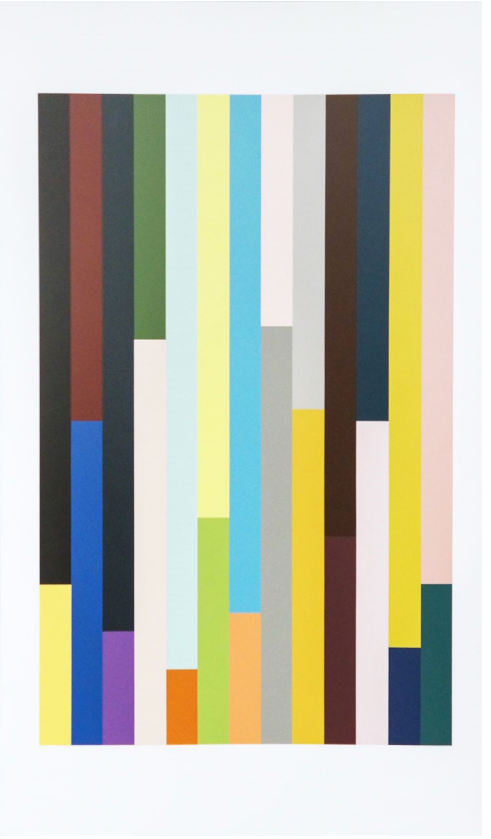

Figure 12.1
Peyton Pearson, *Infographic*, archival digital print, 2017.

Other work that can be characterized as this type includes

- A design created for one student's younger brother, who is autistic, inspired by their brother's interests of Ninja Turtles and comics, the brother's favorite colors, and traits of the brother's autism, with particular attention to nonverbal communication. The piece was made to affirm the student's brother as a whole person and an individual with autism. The student pulled from their lived experiences growing up with and caring for him.

- A series of black and white graphic illustrations depicting various emotional or psychological impacts on survivors of childhood abuse. The student read academic publications about symptoms in adult survivors of childhood abuse to inform her illustrations of twelve different impacts she had learned about in her research. This piece held emotional weight in the absence of language and the tension of the visual elements of the design.

Inclusion of Text

Most of the student work incorporated the use of text in the form of titles, labels, and short descriptions. Students also used graphics like bar charts, percentages, arrows, maps, flowcharts, and diagrams, as well as compare-and-contrast scenarios. Students who included text typically organized the charts so the information would provide visual cues alongside verbal ones. One project of this type was a scroll-like poster for self-care that featured different suggestions for helping one student cope with depression (figure 12.2). The suggestions were organized hierarchically with the most accessible or achievable short-term solutions, like playing uplifting music, at the bottom and the more challenging but longer-term solutions, like seeing a mental health care provider, at the top. The student used her favorite colors and made an attractive design so it could also function as a decoration in her living space.

Other examples of text-based design include

- A design for a video game cover that incorporates the most common features of the best-selling video games from a whole year. He made a generic title: "Gun-Man" with a painting of a generic white male in street clothes standing in front of a generic city scene. This student used information from Statista and video game sales sites to inform his design.

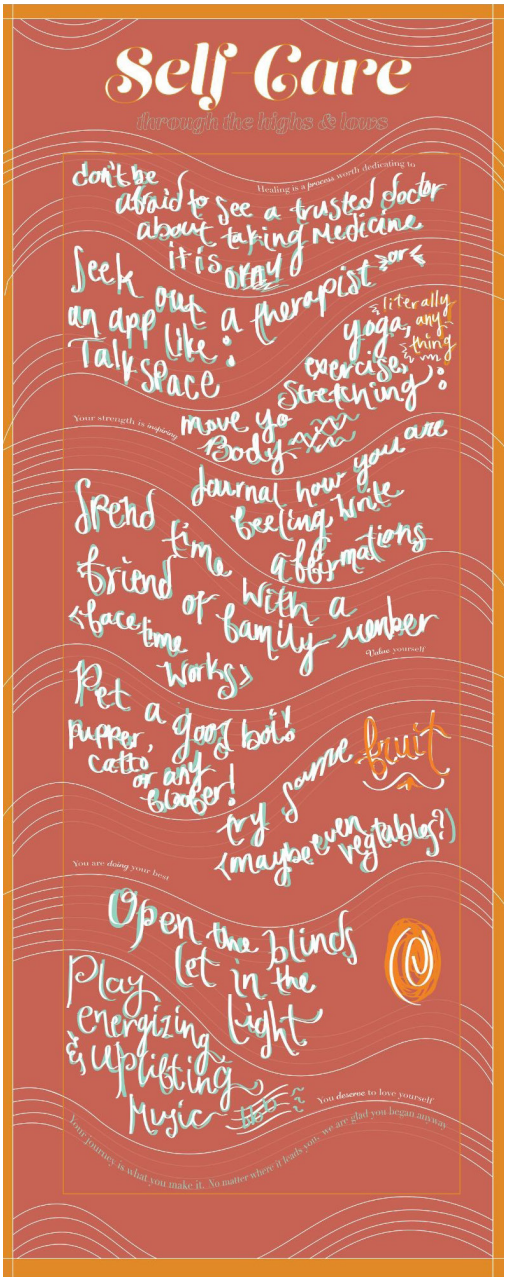

Figure 12.2
Isabel Kratville, *Self-Care through the Highs & Lows*, archival digital print, 2019.

- Cutouts of newspaper articles that were color-coded to match a chart about the content of the articles. This student used NexisUNI to research articles in a certain time period from the *New York Times* and her hometown's newspaper.
- A figure sitting in front of a mirror with beauty products around it and facts about how popular each item is nationally. The student used information from Statista and online research with a special focus on YouTube beauty blogging.
- A chart of different fossils a student had found in eastern Nebraska with archaeological facts about each one and Nebraska's fossil-rich record, as well as ways to legally hunt for fossils in the area.

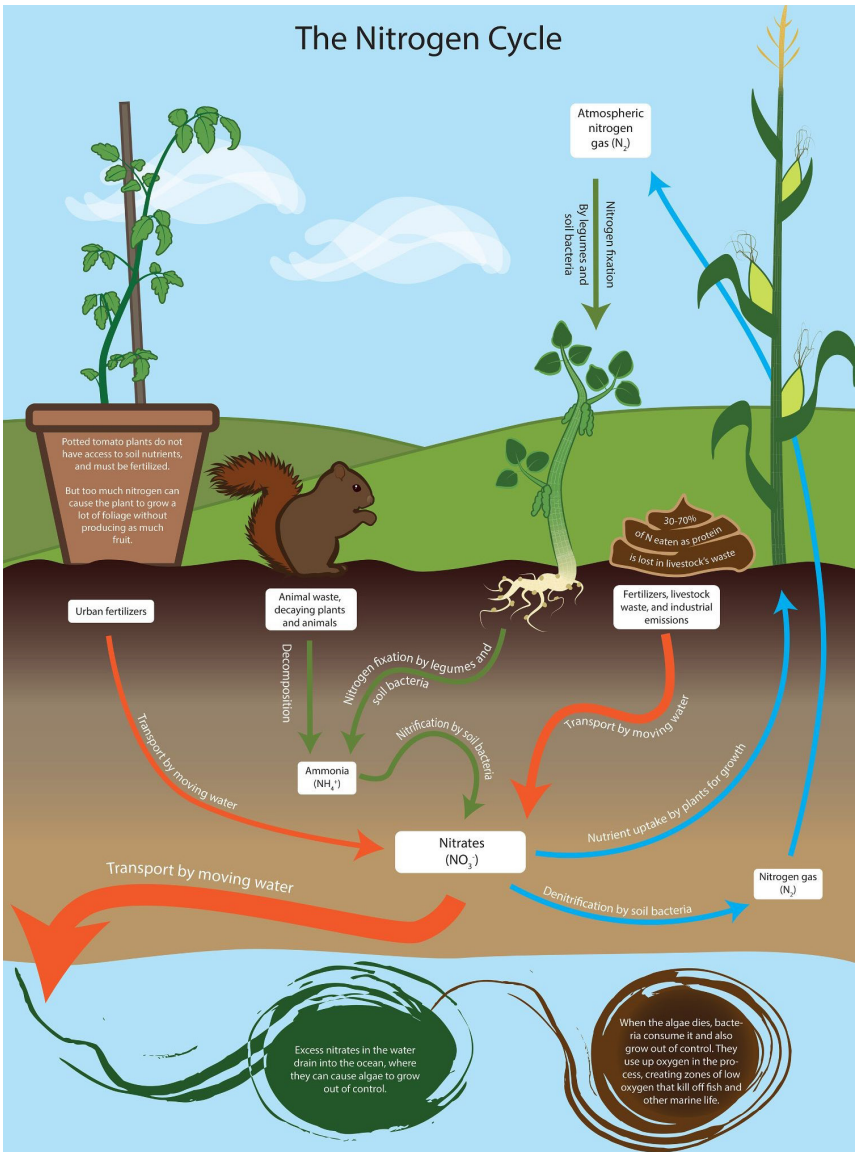

Figure 12.3

"Kathleen Thompson, The Nitrogen Cycle, archival digital print, 2018. The image is a flowchart of the cycle of nitrogen moving through the environment with images of plants, soil, and groundwater."

- A time line of the evolution of hip-hop music and fashion with images of the most famous artists from each decade as well as lists of defining stylistic features. This student conducted library and internet research.
- A flowchart of the cycle of nitrogen moving through the environment with images of plants, soil, and groundwater. This student researched environmental facts online and in library databases (figure 12.3).

Use of Contemporary Visual Culture

Some students derived stylistic inspiration from contemporary visual culture such as the use of poorly photoshopped, overdramatic memes. One student highlighted the contrast between the public perception of a popular bakery-café chain with his lived experience as a part-time employee at one of their busiest franchise locations. The student arranged a generic red devil, stick figures, and repeating flames around a stock photo of one of the bakery-café stores, incorporated sad quotes from his coworkers into speech bubbles above the depressed looking stick figures, and added mean statements from managers and the corporation itself. The juxtapositions highlighted the contrast between the oppressive bakery-café management, the exhausted workers, and the naivete of the customers enjoying their sandwiches.

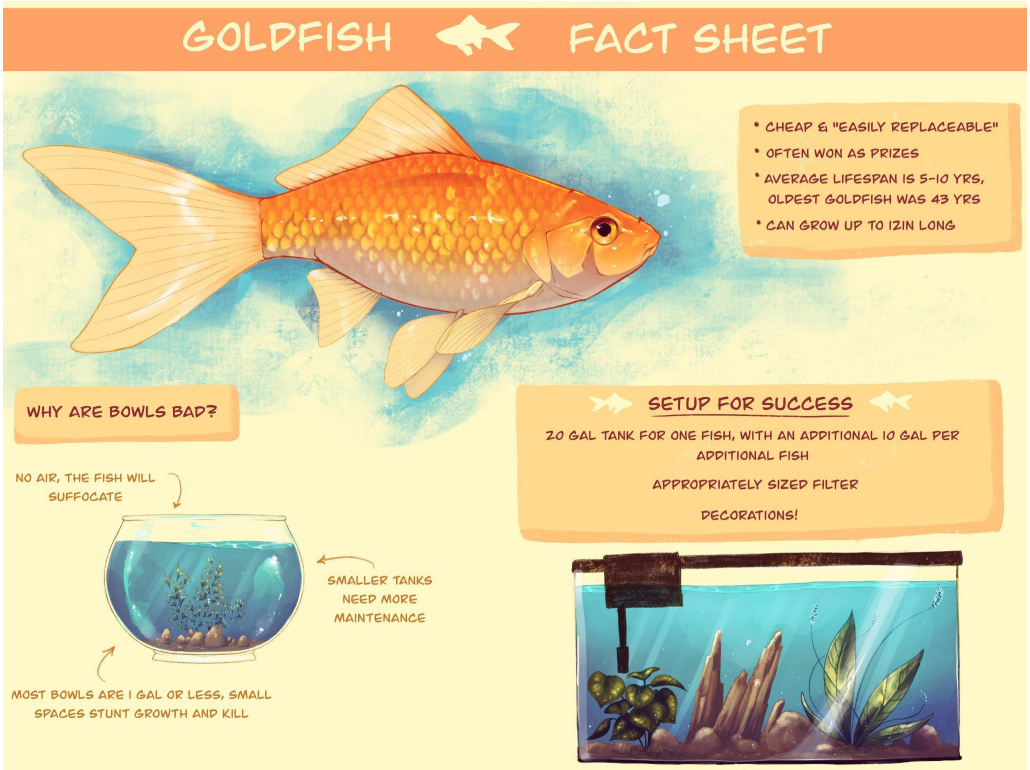

Figure 12.4
Andrea Ramirez, *Goldfish Fact Sheet,* archival digital print, 2019.

Contrasting Information Types

Several students contrasted types of information for emotional impact. Some gathered numerical information that was perceived as neutral to contrast with emotional or qualitative information. For instance, one student tracked the number of times her cat went in or

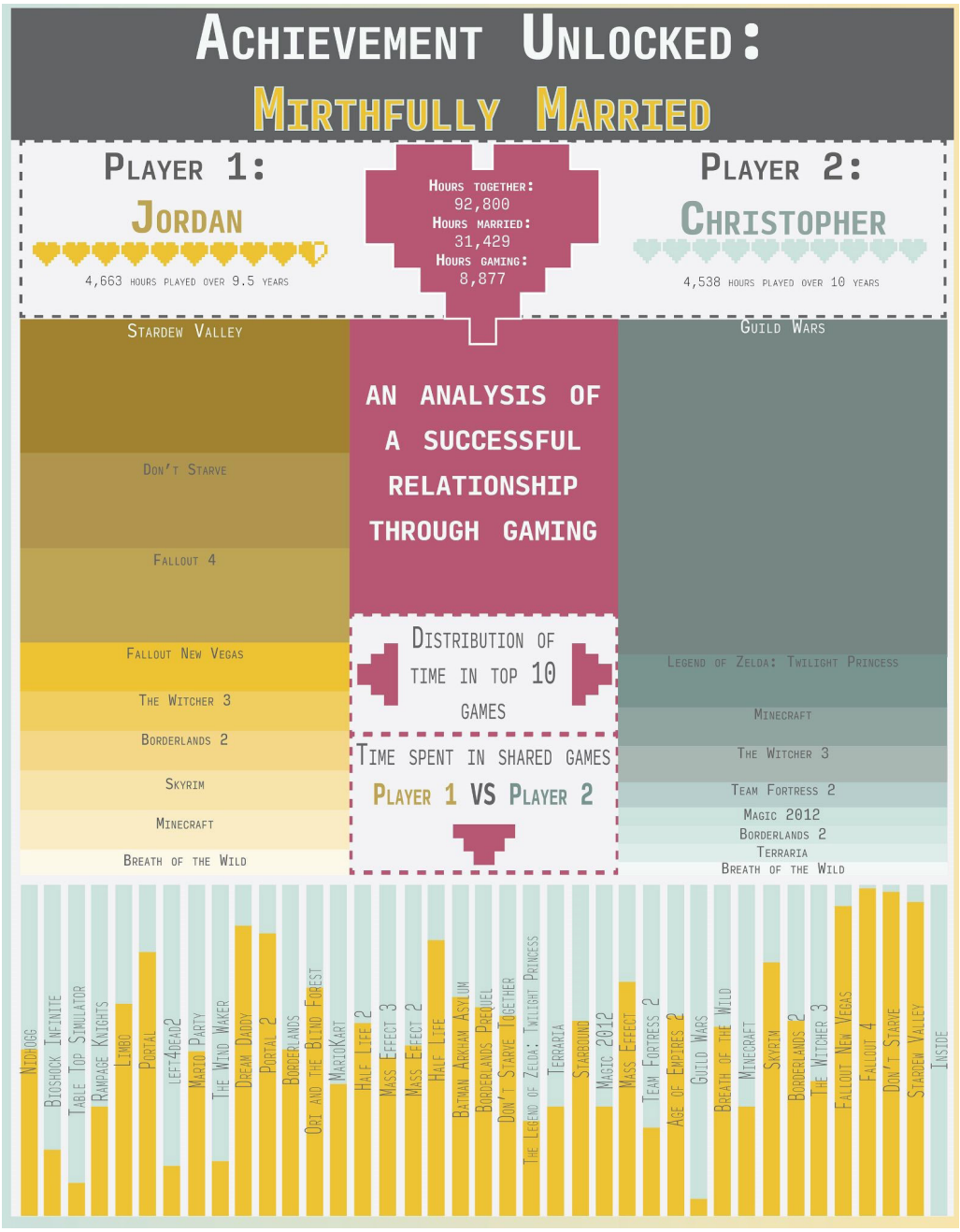

Figure 12.5

Jordan Sutherland, *Achievement Unlocked: Mirthfully Married*, archival digital print, 2019.

out of a certain door for one week and compared that with the lovability of her three cats. The least loveable cat went in and out of the door the most frequently. Another student used the data gathered on her smartphone to identify the amount of time she spent on her phone each day for a month, which she then cross-referenced with her memories of how she felt each day of that month.

Other students used fact-based information to contradict public misinformation and negative social biases against groups like video gamers and cosplayers. One student worked at a popular pet store where she stated that she commonly dealt with customers buying the wrong aquarium supplies to care for a goldfish, which would sometimes lead to confrontations with the customers (figure 12.4). Her infographic explained the problems with traditional goldfish bowls and why they need a larger tank with a filter to survive.

Another student explored the ways in which video games were an important part of her happy ten-year relationship with her husband and how this contradicted negative assumptions in academic articles on healthy marriages, which asserted that video games harmed relationships (figure 12.5). She compared the time they spent individually versus together playing their favorite games on a platform that had tracked their time spent playing games for many years. She twined her knowledge of their game preferences along with the macro data from the platform to support her case study.

The Challenge of Research

As many of the above examples reveal, most students incorporated primary research sources like interviews with coworkers and family, polls on social media, data from online platforms, smartphones, and Fitbits, as well as knowledge gleaned from lived experience. Students who met with the librarian and expressed frustration at a lack of secondary source information were also encouraged to do their own information gathering. This kind of research offered a defining moment for students in their processes because it helped them, as artists and researchers, to move only slightly outside of themselves and into the community for more of a micro/slightly-less-micro perspective, mining their own surroundings for information that revealed larger patterns and structures shaping their everyday lives. For instance, in their research reflection one student noted,

> It was a little frustrating [doing research], because I still could not find what I was really looking for. I wanted the weird facts. What is the craziest thing people eat with fries? What is the most popular condiment to go along with it? What percentage of people pour ketchup all over their fries (gross), versus pouring a dollop in one section and then dipping their fries in it? This was the kind of information I could not find.

Many student artists were frustrated by the fact that macro-level information often meets goals for distinctly nonartistic outcomes. Traditional sources included company information and business statistics, but "weird facts" were more difficult to define and find. In retrospect, the librarian might have suggested a more inspirational source. For

instance, could the student above have found information about french fries in creative work like poetry or fiction? Could they have found videos on YouTube? Perhaps if these types of information were discussed in the consultation, the student would have had a more successful macro search. The chasm between traditional information like company information and sales figures—which are suitable for sales and marketing projects but less satisfying for this project—and the information the student wanted to acquire as inspiration did spark some discussion during the consultation about how to find "weird" information and resulted in the student polling Instagram followers for direct, primary source information from people who eat french fries.

Reflections

The authors taught four iterations of the infographic assignment. Each new cohort of students brought new assumptions, challenges, and triumphs. The main tenets of this assignment became more robust throughout the collaboration as the authors assessed student work and evaluated input from students' research process papers. In the first iteration, students seemed to be intimidated and occasionally lost. The instructor added the study based on the *99% Invisible* podcast and scaffolded segments with step-by-step guidance so that the quality of student work could improve. In the last iteration, diverse examples were given at every stage so students could understand the breadth of their options. The podcast-based study and other very specific examples helped students see the general principles being put into practice.

Throughout the scaffolded lesson plan the authors found it essential to consistently reiterate the creativity of research. The actions of conception, digging, action, inquiring, investigating, uncovering, and inspiring are not foreign activities to artists, and both instructor and librarian modeled and stated this in class. While the active learning activities of the library session encouraged creative thinking and reflexive behavior and aligned with the spirit and letter of the *Framework*, the librarian found it challenging to resist thinking of information as a specific, definable unit to acquire, rather than a swath of knowledge to inspire. . In the first iteration of the assignment the librarian was training them to "do research" the way one would do it as an art historian, rather than as an artist. She was preparing students for their classes outside their concentration, rather than preparing them for this assignment and for their lives as artists and designers.

One method of turning away from an "acquired" mode of information behavior was to deprioritize a formal relationship with the librarian. In the first iteration of this assignment a consultation with a librarian was part of the final grade. It soon became apparent that many students either came to the consultation to be explicitly instructed where to look for research materials or came with their project already completed. In both cases, there was little integration of library skills or curiosity about information. In subsequent iterations of the assignment, the research consultation requirement of the assignment was relaxed. In-class discussions about how to identify and find the information specific to their own projects appeared to help students more than required meetings. Students needed to understand how to swim in their information sea, identify what *could* be out there in the

world, and identify where it might be if it existed. This liminal space of research creation was one that students had to understand as being as comfortable a space as their artistic creation. In this context, students who came in for consultations were more apt to be open to conversations about their creative process, what they perceived to be the macro idea to their micro experiences, and were excited to investigate other avenues of information.

The authors now see that in some ways the framework of infographic and data visualization in this assignment functions as a loose guide rather than a rigid formula. As this assignment was designed for an art studio class, the primary motivation was to teach students an essential component of being an artist: that placing oneself in the context of the greater world is an ongoing investigation. The most successful projects came from students who mined primary and personal sources before accessing scholarly ones. Ephemera from past travels, data accrued on apps or platforms the student used regularly, and anecdotal information gleaned from community engagement, for example, offered students entry points for reflecting upon their data-based information. Familiarity with the topic let students pass the hurdle of gathering and digesting new information and enabled them to spend more time expressing intangible metrics like "lovability," "weirdness," perceptual incongruities, gaps in information, and other areas of wonder that artists are known to explore. At times, the students were asked to more closely consider the audience they were addressing or the assumptions they wanted to challenge. As a result, students had a more specific information need when setting out to gather scholarly sources for their macro perspective. By pairing the aspects of wonder or fascination with information gathered from scholarly sources, students were able to express information with a compelling fact-based narrative and produce work with a focused creative voice.

Future Plans

Although the authors are no longer teaching this course, they recommend posing the question of "What fascinates you?" to students early on in the semester. Doing so would address the idea that research is nonlinear and ongoing, incorporating the Searching as Strategic Exploration frame more fully into the course and allow students the opportunity for their research to unfold more organically over time. Regular sketchbook entries and image gathering could help students to collect fragments of primary source data so that, when the time comes to pair intuitive research with more scholarly work, the students have a better sense of their own perspective to build upon. The library information literacy instruction session can be scheduled at the start of the assignment and students will have mined their sketchbooks for patterns and themes beforehand.

For other courses, the authors are working toward a more mindful integration of art practice as research that students may draw upon when they reach a more advanced level of their creative practice. The studio instructor is developing an end-of-semester discussion about art practice as research model to help students understand how research is applied in creative fields and how research is essential to a mature creative practice. The librarian is brainstorming ways to adapt database demonstrations and information literacy instruction for artists, actors, and musicians using terminology and processes

more familiar to fine arts students. Undergraduate fine arts students are still finding their creative style, learning new mediums, and absorbing primary tenets of visual art. With these familiar discussions integrated into the curriculum, students will understand that information gathering, inspiration, and artistic creation are continual acts. As studio art students progress in the program and move into various professional creative fields, the ability to employ this model of practice-based research will improve their opportunities to create, improve, and contribute to new knowledge in their chosen fields.

Acknowledgments

The authors would like to thank the students of Camille Hawbaker Voorhees's 2D Foundations: Color and Visual Literacy courses for their thoughtful approaches to this assignment. Special thanks to Peyton Pearson, Isabel Kratville, Kathleen Thompson, Andrea Ramirez, and Jordan Sutherland for permission to reprint their artwork in this chapter.

APPENDIX 12A
Psychology + Data Visualization Assignment

Objective: What fascinates you? What is something you want to learn more about? How does it relate to your own life? For this project, we will learn about applying research methods to visual imagery. Use the data you discover to create an infographic that shows the information in a visually interesting and insightful way. The goal is to put your personal experience into the broader context of its role in the world at large.

Create one infographic that contains two kinds of information:

1. Your individual connection to the topic (we will call this the "micro" perspective)
2. The role of the topic in the broader perspective ("macro" perspective)

Note: The infographic should explore the ways in which the "micro" and the "macro" information overlap.

For this project, we will use traditional 2D media. The design may employ any of the methods covered in this course (painting, drawing, ink, marker, colored pencil, collage). The design should use color as a primary element to set the tone and visual path of each piece. The scale and format are to be determined by the student. However, it should not be smaller than 18×24".

Concepts:

- Contextualizing personal experiences within larger systems (social, economic, environmental, psychological, political, historical, industrial, etc.)
- Using visual metaphors to express ideas and create imagery
- Using information to create a visual narrative, point of view, or argument
- Organizing and displaying information in a visually engaging format that enhances the viewer's understanding of the subject
- Using research (factual and experiential) for creative output
- Curating factual information for a focused conceptual framework
- Incorporating text or data as an element in visual design
- Using handmade and digital techniques for a digital design

Relevant artists:

- Giorgia Lupi + Stefanie Posavec (Dear Data)
- Mona Chalabi
- Laurie Frick
- Wendy MacNaughton
- 5W Infographics
- Barbara Tetenbaum
- Pop Chart Company
- David McCandless
- Eleanor Lutz (http://tabletopwhale.com/)
- Ward Shelley
- Simon Evans™

- Steven Blankaart
- Justin Amrhein
- Paula Scher

What to submit:

- Infographic study based on *Articles of Interest: Blue Jeans* (9×12" sketchbook paper)
- One infographic design on 24×30" paper (or similar scale, in any shaped format)
- A written summary (2 pages, double spaced, 12pt Times New Roman font) of the information gathered and how you decided to organize the information. Any information sources should be listed in MLA style citations. *See statement guideline handout for further details.*

The finished research paper and infographics are *due on Tuesday, December 3rd, at 11:30 a.m.* for critique.

Materials:

- Rives BFK paper 22×30" (or a similar sized piece of paper of your choice)
- Paints
- Markers and pen
- Collage materials
- Glue
- Watercolor pencils
- Drawing tools

Unit Schedule, Day-by-Day

Class Session #1

Introduce Unit Project 4: Data Visualization + Digital Design.
Presentation of professional artworks and examples.
Presentation of student work examples. Student examples are viewed only in class and are not available for online access.
Homework: Read an interview with Giorgia Lupi: "Reclaim Your Data" from *Fukt Magazine*. Check out Lupi's project (http://www.dear-data.com/theproject). Come to class with a few ideas of topics for your infographic design.

Class Session #2

Exercise on infographic design: Listen to *99% Invisible* podcast on blue jeans and develop an infographic design using information from the episode + any additional information you can find.
Handouts: Unit 4 exercise worksheet for *99% Invisible,* "Blue Jeans," and transcript of episode.
Homework: Write a draft project proposal on your topic (see Proposal Guideline Handout).

Class Session #3

Presentation: How to Research for Information Visualization—Meet with Tammi Owens in Criss Library.
Discuss project concepts individually with Tammi and possibly Camille.

Research time.
Homework: Complete project proposal, develop infographic design sketches, and gather needed information and materials for in-class work time.

Class Session #4

Presentation: Text and Image in Visual Design.
Work time.
Homework: Begin written statement and bibliography of research sources.

Class Session #5

Instructions on written statements. Read: Unit 4 Statement Guidelines handout.
In-progress check for infographic design and peer feedback. Project should be ⅔ complete.
Homework: Continue working on infographic design.

Class Session #6

Work time and individual feedback conversations.
Homework: Finish infographic design and written statement.

Class Session #7

Infographic projects due + critique.

APPENDIX 12B
In-Class Worksheet

Topic

1. Brainstorm five potential infographic topics that are biographical in nature.
2. Circle the one you are most interested in right now.

_____

_____

_____

_____

_____

Questions

1. Workshop your topic with a partner by asking the following questions.
2.

Why did you choose the topic? What is your opinion about it? Why does this matter to you?	
Who would publish or have information about your topic? Who is affected by it? Are there any organizations or institutions affiliated with it?	
What do you already know about this topic? What other viewpoints should you consider?	
Where is your topic important (specific place, local, national, or international)? Where can you go to look for information about it?	
When is/was your topic important? Is it current or historical, or both?	

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