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## QUILT/CARTOGRAPHY: USING CRAFTIVISM TO EXPLORE FOOD INSECURITY ON A COLLEGE CAMPUS

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**Abstract:** Quilt/cARTography emerged from an arts-based inquiry method for research dissemination. I used quilt-making as an embodied craft and metaphor to illustrate how crafting research is similar to piecing together neighborhood food environment data in an undergraduate social statistics course. As an innovative pedagogical tool, cARTographical quilts transform data into accessible tactile mediums that cross disciplinary boundaries and educational levels to explore hunger on a college campus.

**Keywords:** arts-based pedagogy; embodied craft; quilting as a research metaphor; undergraduate social statistics education

**A**t the end of the day, do you want to spend all of your time and energy producing work that is consumed by only an elite few who are just like you, and likely only consuming your work to advance their own research agenda? (Leavy, 2015, p. 31)

Leavy's (2015) quote about the consumability of research inspired me to create the arts-based quilt/cARTography method for disseminating socially relevant data to build knowledge in a more digestible way than reading a technical thesis. Similar to Mol's (2002) vision of the body multiple and the way in which illness/disease is enacted, I theorize that epistemic access to statistical education also has multiplicities. From Mol's (2002) perspective, disease encompasses more than just the physician treated physicalities. Disease in a human body is subject to an "interpretive reality" by the physician(s) who enact disease and by the individual who experiences the illness (Mol, 2002). In the context of this paper, epistemic access to statistical education is experienced by the instructor/researcher

who wants to make her research findings more accessible so that students can engage with the data to make connections to course content. At the same time, students enrolled in a social statistics course experience varying levels of access to the statistical education. The objective of the quilt/cARTography method is to patch holes in traditional statistics pedagogy so that students can build their statistical

knowledge within a warm, supportive learning environment. Moreover, when enacted through craftivism, this arts-based method has the potential to not only facilitate access to knowledge building, but also serve as an instructional technique for enhancing student-instructor communication, rapport, and student self-efficacy.

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Within this case study, I approach teaching from an embodied arts-based craftivist framework. I accomplish this by using a handcrafted quilt and quilting metaphors to build epistemic access to statistical education and to disseminate food access data to undergraduate social statistics students. While completing my master's degree in 2014, I learned about the significant social issue of inequities related to food access and insecurity. I discuss my call to focus on this topic in greater detail within *the muse* section of this paper. Food access on a university campus and within a half-mile walking distance was the focus of my thesis and the data that I used to create the quilt/cARTography.

## The Muse: How I Came to This Project

For as long as I can remember, crafting has been a successful method for me to understand, discuss, and create solutions for complicated issues. I learned at an early age (as an extremely introverted adolescent) that when my words failed me, I could craft hand-drawn, painted, or collaged illustrations to facilitate communication with others. This skill set played a small role in the formulation of this project as it enabled me to conceptualize and create the quilt. However, it was not the driving factor. My impetus for embarking on this project, in short, could be described as a culmination of observations which evolved over approximately 4 years. The project officially started with my master's thesis and is now a significant part of my dissertation. At that time, I observed peers (graduate students who attended my university and the other university in our town) who were struggling to feed themselves and their families. In addition to taking graduate classes, most were also graduate teaching and/or research assistants. It was not uncommon to hear these graduate students discuss the different coping strategies (i.e., sharing books, dropping classes, taking out additional student loans, food banks, working multiple jobs, food stamps/WIC, participating in human pharmaceutical research studies, and donating plasma) they were using or had used in the past to access sufficient quantities of food. As an undergraduate adviser, I observed a similar pattern among undergraduate students as well: so much so, that I started to keep snacks in my desk for students to eat during their advising sessions.

During that time, I also began to notice a trend within the dominant cultural ideology that being an *impoverished-hungry-suffering-student* is a socially acceptable rite of passage into adulthood (Chaparro, Zaghloul, Holck & Dobbs, 2009). This ideology is commonly portrayed in pop culture television and movies as well as in the media. All too often we are socialized by the stereotypical "starving college student" persona portrayed by a group of individuals in their early 20's, sitting around a thrift store table eating ramen in their cramped one bedroom apartments (or dorm), studying in between working multiple minimum wage jobs. This negative stereotype pervasively dominates the current ideology by implying that hunger is just part of the long-standing tradition that all college students must endure while waiting for their dream career to materialize upon graduation. Over the last decade, statistics about the rate of food insecurity among college students and the negative educational consequences warrants the disruption of hegemonic beliefs which classify suffering and sacrifice as acceptable stages within the traditional 'hungry' student experience.

Student observations coupled with the dominant negative cultural ideology served as the foundation for a small-scale qualitative study that I completed with a group of peers during my last semester of Master's-level coursework. The focus of our

study was graduate students' perspectives about hunger and food insecurity. The findings from our qualitative interviews (which included students from multiple universities) were alarming. The finding of this class project resonated with me to such an extent that I was driven to explore this issue further by making food access on campus the focus of my thesis. After the thesis was completed, I used the data to create a quilt to disseminate findings. My theorization about the way in which a quilt as a dissemination method could also be used as a pedagogical technique evolved out of observations as a doctoral student while teaching social research and social statistics courses. Students made statements such as:

*I have dreaded this class so much, that I put off taking this class until my last semester.*

*I am only taking this class because it is required. I don't need it for my career. Honestly, I'm terrified. I've heard so many stories from other students about how hard and useless taking statistics is.*

*This is my third time taking this class. I suck at math, but I just need to graduate.*

*I know you did not make the rules; you are just a teacher. But this is such a waste of my time and money. I'll never need to use statistics when I graduate.*

These select statements represent a common pattern in responses uttered by students during the first week of class as they respond to a short list of questions within their in-class or online discussion board introductions. In my experience as a graduate teaching instructor who has taught both social research and social statistics courses, we are provided with an institutionally approved course description (i.e., course description from the course catalog), departmentally defined student learning objectives, and the departmentally selected (quantitatively focused) textbooks for our courses. From there, it is our responsibility as the teacher of record to design a course that facilitates building student knowledge to accomplish each of the student learning objectives. Typically, within undergraduate social research and social statistics courses, assessment of attained knowledge is centered on the students' ability to successfully communicate their analysis of socially relevant phenomena. Most often, this proof of knowledge is disseminated in the form of a written research paper or essay.

I discovered a disturbing phenomenon that is common among undergraduate students enrolled in both on-campus and on-line social statistics courses that appears to serve as a significant barrier to successful course completion: a lack of epistemic access. In other words, an epistemic access barrier exists that prohibits social statistics students from accessing the knowledge 'sold to them' when they enrolled in the social statistics course. I believe that the latter is an unintended consequence emanating from strategic planning initiatives of the university meant to increase access to higher education, consequences that can be minimized through instructional design.



## **Crafting a Quilt/cARTography Method**

Quilting as a social act of meaning making and quilts themselves as social artifacts are reported in the literature by researchers with multiple disciplinary perspectives around the globe. The objective of this brief review of literature is to situate the quilt/cARTography method within the broad field of arts-based inquiry.

## **Food Access and Food Insecurity**

Coleman-Jensen, Nord, and Singh (2013) write about food insecurity as follows: “at some time during the year household members were, at times, unable to acquire adequate food for one or more household members because they had insufficient money and other resources for food” (p. 8). Informally, the terms food insecurity and hunger are used interchangeably. However, most research conducted after 1995, uses the term food secure/insecure which is based on the USDA’s Core Food Security Module (an 18-item survey to measure food insecurity) (Eisenmann, Gundersen, Lohman, Garasky & Stewart, 2011). Fortunately, students’ access to food on the university campus that I originally measured in 2014 has increased slightly. Unfortunately, on a national-level in the United States, the rate of food insecurity among college students has increased. The detrimental educational and health consequences of food insecurity prompted me to use craftivism. Recently, Dubick, Mathews, and Cady’s (2016) seminal national study on food insecurity among college students who attended both 2-year and 4-year institutions in the U.S., found that 48% of student participants reported experiencing food insecurity within the last 30 days. Dr. Leslie Frank reports high rates of student food insecurity in Canada; 49.5% of Acadia University students who lived off campus were food insecure (McMillan, 2016). Researchers report that food insecurity negatively impacts students’ education in the following ways: inability to purchase required text books (Dubick, Mathews & Cady, 2016), impaired concentration (Gallegos, Ramsey, & Ong, 2014; Maroto, 2013), lower course grades (Maroto, 2013), lower overall GPA (Patton-López, Daniel, López-Cevallos, Cancel-Tirado & Vazquez, 2014), and higher likelihood of dropout (Dubick et al., 2016; Orszag, Orszag, & Whitmore, 2001).

## **Teaching and Learning Statistics in Higher Education**

Over the past decade, emphasis has been placed on statistical education reform in an effort to substantially improve the ways in which we educate undergraduate students. This call for action yielded a significant body of pedagogical research that identified problems for teaching and learning statistics and suggested instructional

interventions. The common practice among instructors of focusing on mathematical aspects of formula calculations and emphasizing the memorization of statistical rules and processes without using introducing real-world data was identified as a significant problem (Allen, Folkhard, Lancaster, Sherlock, & Abram, 2010). Researchers suggested that the disempowerment of memorization absent data resulted in students who could not access epistemic content knowledge and therefore lacked the ability to apply statistical processes to solve problems (Allen, Folkhard, Lancaster, Sherlock, & Abram, 2012). As such I embraced an experiential approach to learning which included the use of real food insecurity data.

## **Quilt as a Metaphor**

Within the past few decades, literature on the use of metaphors in teaching and in research has demonstrated a variety of ways in which metaphorical thinking can be a pedagogical technique to make knowledge more accessible. When incorporated into the instructional design as a linguistic resource, metaphors shape the discourse and facilitate the production of knowledge (Mouraz, Pereira, & Monteiro, 2013). Within post-secondary courses, access to course knowledge involves students' active engagement with the epistemic structure and discourse of the disciplinary field (Mouraz et al., 2013). In other words, instructors act as translators who clarify course knowledge by re-contextualizing it in an effort to build a common understanding. Ausband (2006) and Sommer's (1997) articles present compelling rationales for the effectiveness of quilting metaphors as a method for building novice researchers' knowledge about the research process. Ausband's (2006) article draws our attention to the advantages of the metaphor method; she elegantly simplifies the complicated processes of planning and conducting research by outlining the metaphorical connections between crafting a quilt and crafting qualitative research. She does this with illustrations and in-depth analysis of the way in which the different processes and methods for creating a quilt relates to processes and methods in qualitative research. Unlike Ausband's (2006) personal narrative, Sommers' (1997) approach incorporates narratives of Amish women who participated in a quilting bee to demonstrate the similarities between the quilting process and the experiences of qualitative researchers.

## **Quilt as Dissemination Tool**

Recognition is slowly expanding in the literature for arts-based quilts as an effective method to disseminate data. For example, quilts and quilting have been utilized as a dissemination tool to make broad societal connections with research focused on anorexia (Saukko, 2000), unwanted sexual experiences (Koelsch, 2012), and climate issues (Zaenker & Vladis, 1998). Koelsch (2012) suggested that when

presenting qualitative research findings, a quilt can be used to situate individual participant data as unique blocks but important components of the whole. Consequently, Koelsch (2012) created a web-simulated clickable cyber-quilt. Each block of the quilt represents participants' experiences with unwanted sexual activity, sexual assault, and/or rape. The craftivist method was also used by climatologists, Zaenker and Vladis (1998) to visualize global temperature data, to foster collaboration among academics, and to educate the public. The authors reported that the quilt enabled them to see connections between climate history and potential future climate trends (Zaenker & Vladis, 1998). According to Zaenker and Vladis (1998), a quilt is an ideal medium to make complicated scientific climate results more accessible to a broad audience, specifically those who are not familiar with academic writing and climate related statistics.

In addition to using a physical quilt or cyber-quilt, within the scholarship of teaching and learning, an abundance of current research supports the use of quilting metaphors as an effective pedagogical technique (Ausband, 2006; Koelsch, 2012; Lynch & Fisher-Ari, 2017; Mouraz, Pereira, & Monteiro, 2013; Navaneedhan, 2017; Saukko, 2000). According to Navaneedhan (2017), instructional designs which incorporate metaphors enable students to build skills in higher-order thinking (i.e. synthesizing and analyzing), an invaluable skill, particularly important to courses like social statistics. Additionally, Lynch and Fisher-Ari (2017) report a significant shift in student understanding, and interestingly, metaphor as pedagogy was also positively associated as a powerful tool for building nurturing relationships (Lynch & Fisher-Ari, 2017). A strong instructor-student relationship is a key factor in academic achievement in statistics courses (Waples, 2016). Stipek (2006) notes that secure relationships not only support persistence when students face difficult course material but also enhance communication, thus encouraging students to ask for help when they need it.

The technological advances in this century have revolutionized the way in which we live and learn. As a result, many college courses that were at one time only available on campus can now be delivered online, and maps that were at one time only available in printed form, are now available by accessing cell phone applications. The digitalization of maps has changed the way they are used. No longer are maps presented in static form; now they are interactive, and the content within the maps is updated with computer algorithms. So, why in the digital age, is a quilt a better vehicle for dissemination of information than a digital map, a pocket map, or a poster, which could be carried, distributed, or posted?

Unlike a digital map (viewed on a small cell phone or small computer screen) or a pocket map (printed on standard sized printer paper), the quilted/cARTography is a large four foot by five foot, simple but eye-catching tactile artifact of data-driven art.

Further, unlike complicated GIS generated data maps which require prior advanced knowledge to accurately read and understand, the quilted/cARTography is designed from a minimalist-modern perspective, making it an accessible alternative for people who are less quantitatively minded. Lastly, color posters and maps are not only non-sustainable since they are printed on paper which is easily damaged after multiple uses, but they are also extremely expensive to continually reproduce in large quantities for distribution. In other words, the quilted/cARTography is a tactile, engaging, sustainable, socio-spatial artifact that could last for a hundred years (if packed properly), as compared to the 50 inch by 44 inch professional presentation poster (see figure 1) that I had printed prior to completion of the quilted/cARTography. Unfortunately, the poster was significantly damaged in transit after my first presentation, and the cost for replacement would have been \$150 USD.



**TEXAS WOMAN'S UNIVERSITY**

Denton • Dallas • Houston



## Exploring Food Access within the Campus Food Environment: An Experiential Approach

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### Description of Experiential Research

Texas is the third-hungriest state in the nation, with 1 of 5 Texans living in poverty and at risk for hunger (TFBN 2015).

College students are not immune to the problem. The financial hardship from paying to attend a university can increase budgetary demands that compete with food buying power (Robb et al. 2012).

A scarcity of research at the campus-level, results in a limited understanding of local indicators of barriers to food access for college students who reside in campus housing.

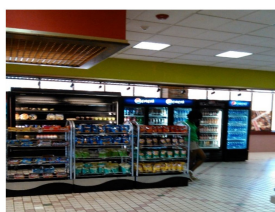
Describing access to food within the geographical constructs of the campus food environment is crucial for identifying structural facilitators and barriers to healthy food for students.



### Methods

We used ethnographic and socio-spatial methods to describe potential food access for residential TWU students. We explored the campus food environment in terms

- walking access within 0.25 miles
- structural barriers to physical food access.



### Reflexive Statement

As a humanistic sociologist, I am driven to examine and take action on issues that affect human freedoms. I believe that food is central to the dignity of all humans and is a basic human right.

I challenge scholars from all disciplines to embody the pioneer spirit by taking an active role in exploring food access and hunger issues in their classrooms and community.

### Results

The result of this project is a new data set that includes both quantitative spatial data as well as thick-descriptive qualitative data.

I am currently analyzing the data and will present the findings in my thesis.



### References

#### References

Robb, Cliff A., Beth Moody, and Mohamed Abdel-Ghany. 2012. "College Student Persistence to Degree: The Burden of Debt." *Journal of College Student Retention* 13(4):431-456.

Texas Food Bank Network. 2015. "Denton County, 76201." Retrieved August 16, 2015 (<http://www.feedingtexas.org/zip/76201/>).

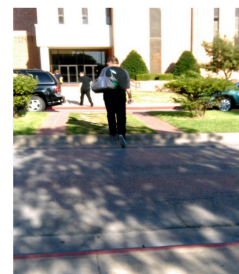


Figure 1. Poster to Disseminate Data

## **Realizing Quilt/cARTography Methodology**

### **Quilting on the Bias: Reflexivity**

In quilt making and research, bias is a significant factor that if not carefully considered can distort the project and make it unusable. In quilt making, fabric is the medium. Fabric is made by tightly weaving threads together crosswise and lengthwise. This process results in a grain within the fabric which is secured from fraying with two selvage edges. When cutting pieces from the fabric, the quilt maker cuts consistently by following either the lengthwise or crosswise grain, so that the piece will hold its intended shape. More often than not, quilt makers avoid crafting on the bias (i.e., bias grain in fabric) which happens when one cuts at a 45 degree angle across the length or cross grain of the fabric. Bias quilt pieces have a lot of stretch, and are easily mishandled by even expert quilters.

Based on an epistemic perspective that knowledge is gained through a dynamic process of experientialism (Savin-Baden & Major, 2013), I adopted a constructivist approach to creating learning environments by incorporating craftivism-based instructional design techniques to engender learning. Theoretically, a social artifact such as a quilt/cARTography when enacted by craftivism, is an effective method to engage students in a dynamic process of knowledge building. I acknowledge that some researchers will view my position as inherently subjective. In my work I use a reflexive research journal in addition to qualitative student data. I use the latter to document my thoughts and feelings each time I use the quilt/cARTography method in a classroom (Walker, Read, & Priest, 2013). In doing so, I follow Elliott, Ryan, and Hollway (2012), who use reflexive field notes to conceptualize data within a co-created space of researcher and participant.

### **Participants and Data Collection**

I have shared the quilt/cARTography as research dissemination in the community, at disciplinary conferences, in student research symposiums, as a guest lecturer, as well as in multiple sections of social research and social statistics courses that I have taught. The scope of this paper, which was reviewed by the University's institutional review board (Protocol # 20069), centers solely on classroom assessments within the settings of undergraduate social statistics courses where I am the teacher of record.

During the first week of class, I share with the students that I am a doctoral student who is writing her dissertation about the sociology of teaching and learning

undergraduate social statistics in higher education. Specifically, my focus is studying access (i.e., educational inequities, formal access and epistemic access), assessment (i.e., pedagogical strategies and innovative assessment to facilitate learning), and arts-based research methods. I also explicitly state that the classroom assessment data is collected, but that all of the data is de-identified, and that since the research involves normal educational practices, it does not require any out-of-class time commitment on their part.

## Crafting a Quilt/cARTography

Typically, the quilt-making process proceeds through the following stages. Something sparks the crafting urge. This can range anywhere from fulfilling a practical need (warmth, comfort, memorializing a life moment such as marriage or birth of a child) to creative expression. Then the project is usually followed with a pattern and fabric selection, along with determining the type of quilting method (hand or machine sewing). Fabric is then cut up into shapes which are basted or sewn together to follow the pattern to create a quilt top. The quilt is then assembled by layering batting (a type of supportive material that gives the quilt stability and body) and backing fabric which covers the batting under the quilt top. The three layers are quilted together with thread. Once quilted, the edges of the quilt are then covered with a thin strip of fabric and sewn down to prevent the raw edges from fraying.

Given that there are many similarities between crafting a map quilt and conducting socio-geographical research, and given that I have amassed a huge collection of leftover materials from previous quilting projects, I have the flexibility to use my leftover crafting materials and bricolage research findings to craft a new quilt. The process is illustrated in figures 2-6.



**Figure 2.** Crafting a Pattern and Refining Details



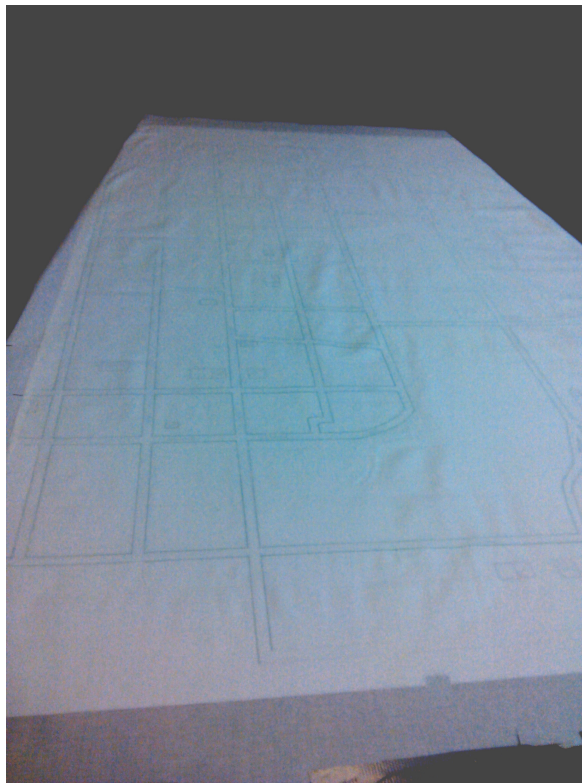
Like most academic research in my discipline, after an extensive review of the literature, I selected the research variables and defined measures so I could begin to collect data. While I used many more variables in the written thesis, the main spatial accessibility measures illustrated by the quilt included: existing pedestrian conditions, university sponsored housing locations, and *Campus Food Environment Measure* (an inventory that I created to collect density, variety and proximity data) (Ray, 2015).

In quilted-map-making and research, after the initial design process is completed, it is critical to then ground (i.e., define) each element of the design so that the viewer has a foundation to understand the work. I followed Griffin, Gruver, Dutton, College of Earth and Mineral Sciences, and The Pennsylvania State University (n.d) lesson on creating a visual hierarchy and selecting visual cues such as color and arrangement. My goal was to produce a realistic (accurately scaled) map of the food environment, so I



**Figure 3.** Composition and Color

composed the quilt with a traditional grid layout and then selected color and value contrasting fabrics. Griffin et al. (n.d) noted that the purpose of the map is closely tied to the intellectual hierarchy of construction. I essentially selected achromatic gray scale fabrics for the map base so that it would be easy to discern the city blocks. Further, according to Griffin et al. (n.d), the highest map layer is the one that typically stands out. Therefore, I planned to construct the walkways last and use a high contrast color to emphasize walking access to food.



**Figure 4.** Drawing the Neighborhood

For me, drawing the map to scale was the most difficult part of the quilting process. I spent days and days carefully drawing on each piece of the food environment because I did not want to lose any of that block's unique characteristics. This was important if I wanted to accurately depict a true metaphor for the way in which individual components within a neighborhood food environment can act as barriers or facilitators to food access for the whole community.

Light gray fabric blocks were added to represent non-university owned land while dark gray fabric blocks indicate land owned by the university. Even at this early stage, one can see that within the campus food environment, the college students are bound together with the local community which borders the university.





**Figure 5.** Piecing the Neighborhood Borders



**Figure 6.** Crafting the Last Layers: Student Housing, Food Sources, Campus Walkways

Next, I stitched blue scraps of fabric to represent the locations of student housing, then red fabric scraps to represent food sources, and lastly, yellow fabric strips to represent walkways to access food. As these concepts became more visually apparent through the fabrics, a clear pattern of food access inequities began to emerge.



**Figure 7.** The Completed Place-Based Socio-Spatial Quilted/cARTography of Food Access on Campus (Ray, 2015)

## **Craftivism in Action: Disseminating Knowledge in the Classroom Foundation**

Data from my thesis research is interwoven into the fabric of this paper. The main objective of my thesis research was to explore and describe the social structure of the campus food environment. I used bricolage research designed around a multi-methodological approach to inquiry, which included both quantitative and qualitative

methodologies (Denzin & Lincoln, 1999). Embracing the bricolage research approach not only enabled me to construct knowledge about the structural barriers to food access for students who lived in university housing, but also to create access to the data so that we as a university community could draw on it to inform policy to minimize food access inequity (Kellner, 1999). The next four sections of this paper outline the way in which this dissemination method was incorporated into the pedagogical strategy for undergraduate social statistics courses.

## Introduction to Quilt/Research Metaphor Enrichment Activity

I used personal knowledge about the quilting process and Ausband's (2006) advice for novice quilters to create an enrichment activity for my social statistics courses. During the first module, students are introduced to one of the most important concepts in the course, the research process. Understanding the research process is critical, because it serves as a foundation that is closely tied to most, if not all, of the course content. I begin by hanging the quilt/cARTography on the classroom wall and by placing a stack of worksheets and color pencils/markers on the front table. I use the following table (see Table 1) to serve as my notes to facilitate the discussion. Within the crafting research column, I note the corresponding content presented in the required textbook for the course along with page numbers. This helps me to quickly locate and reference the textbook. In my experience, students have enjoyed taking notes in different colors and doodling in the wide margins of the worksheet. I begin the discussion by asking if anyone in class quilts, sews, has any family members who quilt, or if they own a quilt. The discussion evolves from there to an interactive discussion about the similarities between quilt making and research.

**Table 1. My lecture outline that I used for facilitating metaphorical thinking in the classroom.**

Quilting metaphor	Application to course content and location of content within the course textbook
<b>Crafting a Quilt</b> Quilt making is an orderly process (Ausband, 2006) that requires the crafter to carefully make a series of choices, each of which can significantly impact the final product if not chosen and executed carefully.	<b>Crafting a Research Study</b> 1. The process of social research. (Frankfort-Nachmias & Leon-Guerrero, 2018, p. 2).

In general, the following are quilt making stages which each necessitate thoughtful, deliberate choices: identification of a reason for creating the quilt, pattern selection, construction method selection, skill/knowledge building, supply collection, quilting environment selection, quilt construction, dissemination, and reflection.

**Note:** Encourage student to touch and look at the different quilts on the front table of the classroom.

### **Reason for Making a Quilt**

The answer to the question of why a quilter makes a quilt is parallel to why an artist researcher/instructor might decide that a quilt is the best medium for disseminating knowledge. I've never just made a quilt for the sake of sewing. In my experience, since creating a quilt is a labor of love that is both time consuming and expensive, most quilters have a reason for starting a quilt project. These reasons can range anywhere from fulfilling a basic need (i.e., feeling cold and creating a quilt for warmth), celebrating an event such as a birth or wedding (i.e., creating a quilt as a commemorative gift), or as creative documentation (i.e., family tree quilt).

### **Purpose & Significance of Research**

1. This includes choices such as: identifying the problem, defining topic and research purpose, outlining the purpose and significance, determining research methodologies (i.e., quantitative, qualitative-contextual, explanatory, generative, evaluative, ideological), and defining research questions.

(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 2)

2. Theory

(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 3)

3. Hypotheses

(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 4)

### Pattern Selection

Quilters usually select a pattern based on the purpose of the quilt. For example, when making a quilt for a baby, you might select a simple pattern that will withstand many washings. Or, for an older child, perhaps you might select patterns based on their special interests, such as trucks, cats, dolls, etc. (Ausband, 2006).

**Note:** Encourage students to look through the quilting patterns on the front table and ask them to choose their favorite. Open discussion, and pose a few prompts such as: Who would the quilt likely be suitable for? How difficult is the pattern? What kind of tools would the quilter need?

### Choice of Construction

Hand sew or machine sew. Directly related to both is the purpose for the quilt and the intricacy of the pattern.

**Note:** Encourage students to discuss the possible methods of construction for their research and data analysis.

### Research Design

1. Unit of analysis  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 5)
2. Variables  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 5)
3. Dependent variable  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 7)
4. Independent variable research questions  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 7)
5. Collecting data  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 8)

1. Selecting appropriate methods for conducting research (Ausband, 2006).
2. Levels of measurement: Nominal variables  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 9)
3. Ordinal variables  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 10)
4. Interval-ratio variables  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 11)
5. Dichotomous variables  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 11)
6. Discrete and continuous variables  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 13)
7. Descriptive and inferential statistics  
(Frankfort-Nachmias & Leon-Guerrero, 2018, p. 15)

<p><b>Skill/knowledge building.</b> The choices may require acquiring more information to make an educated decision, for skill building to complete the process, perhaps taking a class or reading a quilting technique book.</p>	<ol style="list-style-type: none"> <li>1. Literature review</li> <li>2. Reading textbook</li> <li>3. Reading code book for the secondary dataset</li> </ol>
<p><b>Collecting Supplies</b> A quilter collects fabric, thread, batting backing fabric, binding materials etc. ...</p> <p><b>Note:</b> Show a quilter's color selection wheel.</p>	<ol style="list-style-type: none"> <li>1. Data collection- Researchers also make decisions about what to collect as their 'supplies' for conducting research.</li> <li>2. Population (Frankfort-Nachmias &amp; Leon-Guerrero, 2018, p. 15)</li> <li>3. Sample &amp; Sampling (Frankfort-Nachmias &amp; Leon-Guerrero, 2018, p. 15)</li> </ol> <p><b>Note:</b> show students the measurement wheel that I used to collect data and encourage them to walk around the class and take measurements.</p>
<p><b>Quilting Construction.</b> After a quilter knows the purpose, selects the pattern, decides how to construct the quilt, and learns how to perform construction technique, and collects supplies, she sews the pieces together to form the quilt top. Then she places batting between the quilt top and bottom fabric. Next, she quilts the three layers together and secures them all with binding.</p>	<p><b>Constructing a research report</b> Note: Use the department's module on reading and writing social research.</p>

### Quilt/Research Metaphor to Illustrate Variables and Levels of Measurement: Small Group Activity

An effective pedagogical course design strategy is the incorporation of learning objects to illustrate complex theories and foster student engagement (Signor & Moore,



2014). While reading the content of the textbook is a key component for meeting the student learning objectives of a course, its static nature may not engage all students in a course due to diversity in learning styles (Signor & Moore, 2014). In this context, the quilt/cARTography method is used as a learning object to facilitate active student engagement. This activity is a continuation of content coverage for Module One. We build on the quilting metaphor and add the following new concepts: unit of analysis, variables (independent, dependent, dichotomous, discrete, and continuous), causality, spurious relationships, data collection, and levels of measurement (nominal, ordinal, and interval-ratio). Building on the metaphorical quilt, I present the actual quilt and a brief overview of my thesis research including purpose, significance, research questions, hypotheses, design, and variable selection.

I save the technical details of the different data analysis techniques that I used for later in the semester. I simply tell the students that I used findings from analysis to craft the quilt. The student-centered lesson facilitates discussion about the module's concepts through a series of open-ended questions that I ask the students to answer within their small groups. For example, I ask the small student groups to look at the quilt and identify which variables they see represented by the map, and what level of measurement they think I used and why (i.e., student housing locations, food source locations, and walking distances). Then, after about 20 minutes, the small groups come together and, as a class, we discuss the groups' responses. This exercise introduces the students to the real-world social issues of food access inequities and challenges them to apply the concepts covered in their book. By actively engaging them, they have the opportunity to build epistemic access to the discourse of social scientists by doing social statistics instead of just memorizing term names and definitions. As an additional bonus to reinforce what we discussed in class, students are given the opportunities for extra credit points that will be added to Exam 1. If they choose to participate, they can select one of many different adult coloring pages that feature quilt tops. Each has instructions attached for coloring the individual pieces of the blocks with colors dependent upon on the level of measurement for the variable shown inside each space. For students that are not interested in coloring, the other option for extra credit is a narrative reflection on quilting a conceptualization of a social topic of interest.

### **Quilted/cARTography Data Visualization Enrichment Activity**

Within the social statistics course, the content of Module Two centers on organizing data and data visualization methods. I supplement the quantitatively-based lesson regarding the most commonly used methods for graphically presenting data in social sciences (i.e., statistical map, pie chart, bar chart, histogram, line graph, time-series chart) outlined within the course textbook. In order to create a supplementary

qualitative-based lesson, I incorporate the quilted/cARTography to open the discussion about arts-based methods for data visualization (given it is now familiar to them). We then watch a collection of different videos depicting different arts-based visualization methods such as dance, music, sculpture, painted art, and fiber arts.

## **Craftivism in Action: Quilt/cARTography Method as a Course Resource Tool**

Regardless of the primary course delivery method (online or on-campus) I have complemented all of my social statistics courses with an online course component on Blackboard. I will not list all of the features of the online course component but instead focus on one: the quilt/cARTography course resource tool. The decision to add this resource tool was based on data from my thesis, data from course introductions, and Thapliyal's (2014) suggestion for the inclusion of student support services in distance education. Thapliyal (2014) made an interesting observation when studying university infrastructural facilities. Instructors cannot assume that just because interventions are in place, students are aware that the student support service exists (Thapliyal, 2014). In my experience, students are only aware of the highly publicized support services such as Disability Support Services. However, the university provides a wide assortment of student support services such as statistics tutoring, free SPSS software, technical support (for SPSS and Canvas), food pantry, mobile food pantry, free counseling and more. I carefully crafted this course resource tool page as supplementary information for the data visualization enrichment activity. The web page includes a photo of the completed quilt, summary of data, and resources separated into three main categories.

- Food Access Inequities and Food Insecurity Research Resources: information and web links to local, national, and international food insecurity research organizations and data.
- Food Insecurity Advocacy Resources: information and web links about how to become an activist and where to volunteer.
- Food Insecurity Resources: information and web links to local organizations that help people access food (i.e., food pantries, soup kitchens, food banks, SNAP, WIC, etc.).

## **Reflections on the Implications for Crafting Pieces of Data**

I wanted to understand the implications of my instructional design decision to enact craftivism in undergraduate social statistics courses. Following Miles, Huberman, and Saldana's (2014) model, I analyzed students' end of semester reflective essays and



my teaching journal and noted emerging themes. Observations and student accounts indicate that some were affected on intellectual, physical, and emotional levels.

Academically, the quilted/cARTography engaged students to participate in intellectual conversations about arts-based-research, data collection, and data visualization techniques, within the content of real world social issues (such as food access inequities on campus and overall food insecurity). One student reported that, *“I could not just zone out and stop listening since you always had a way of drawing out attention.”* Another reported that, *“Using real life examples, was dope.”* A third student stated that, *“It felt more natural and easier to relate to than just reading an article or punching numbers in....definitely enhanced my learning over all.”*

Not all students are compelled to physically touch the quilt, but more often than not, at least two to three students per class touch the quilt. On several occasions, students took selfies pointing to where they lived. Usually, when they do touch the quilt, they locate the blue block that represents the university housing in which they live/lived and trace with their finger the pathways they walk/walked to the red blocked access food locations. A common pattern among students is that while their finger moved along the quilt towards red food access locations, the students and their classmates discuss how long the distance felt when walking, how safe they felt walking (especially at night and during peak traffic times), and the types and cost of food that was available at a particular location.

In one classroom presentation, a student became visibly upset when she traced her walking route to a gas station south of campus. She pointed to where students typically cross the street and shared that this was the location where her friend was hit by an automobile and killed. Two other conversations following presentations of the quilt/cARTography were emotional as well. During both of these discussions, the student-driven conversation centered around frustrations regarding the lack of affordable access to food on campus (in particular the c-store and meal plans) and what should/could be done about it. I have also had students contact me privately after class to say that they are food insecure and ask me where to get help. Both of these interactions occurred within the first year of me presenting the quilt in the classroom. The latter prompted me to create the student resource tool located within each course's online learning environment.

In response to soliciting students' attitudes about the use of arts-based-research visualization and dissemination methods to help them learn course material, the following selected de-identified responses illustrate the overall pattern of student attitudes.

*I thought the arts-based research approach helped me to think about taking statistics in a completely new manner.*

*Using Arts-Based Research methods throughout this course has, in my opinion, been a beneficial tool in assisting with statistics.*

*I just want to say this was my first time hearing anything about art- based research... My honest opinion about arts-based research was that I liked it! I'm a very visual person and it actually helped me learn a little better when it came to certain concepts in class. It definitely changed my thinking about statistics.*

*I am a very visual person so ABR was interesting to me because it wasn't just your usual numbers and equations. Sometimes the classes that were more visual or interactive in nature I felt more relaxing and laid back.... because sometimes all of the math we do gets monotonous... I am also very tactile as well. I like learning with a hands on approach because I feel I retain the information better. All in all I find Arts-Based Research very enjoyable and unique and hope to learn more about it later.*

## **The Magic Moment: Epistemic Access to Disciplinary Discourse**

A number of students' reflections (27 of 67) indicated that, after completing the course, their opinions about the applicability and/or value of statistics in the real world changed. The perceived changes most commonly fell into one of the following categories: application in other class(es), applications within current and/or future career path, applications as a member of society to evaluate statistics in the media, and also in discussions with family. One student reported having a magic moment:

*Now that I think about it, I remember sitting at the dinner table with my family and explaining what exactly lambda and gamma was. How they are measures of association and how lambda is to nominal variables as gamma is to ordinal variables. Also tying in bivariate statistics with it as well! My parents were so impressed and my brothers were like Thank God, I'm not in school anymore, but that's pretty dope. It was a magical moment. I felt so smart.*

## **“Snags” in my Application of the Quilt/cARTography Method**

**Stronger community threads.** As a novice researcher, who was conducting her first major study, I did not have the forethought to include into the original Institutional Review Board (IRB) application qualitative interviews with community participants who viewed the quilt. This data could greatly enhance not only understanding of the social issue, but also the way in which the method impacted the community discussions. Therefore, I would recommend that future community-based research using a quilt/

cARTography method of dissemination include the following for IRB review: (a) semi-structured interviews and/or questionnaire distribution to all participants who view the quilt (i.e., students, community members, local organizations, activists, academics at professional conferences); (b) within the interview/questionnaire ask the following questions: Did the quilt invite conversations? What were the reactions of viewers? Did viewing the quilt lead to a change in their food security status? Did viewing the quilt lead to awareness of food insecurity? Was viewing the quilt a call to action to volunteer, become an activist, and/or conduct food security research? Were viewers impacted by the quilt on an emotional, intellectual, physical, and/or spiritual level? Finally, I recommend a follow up study that includes qualitative data reflections about the responses that a researcher receives when sharing the quilt in the community, in the classroom, and in academic presentations. Such discussions about the potential implications for a quilt/cARTography as a craftivism method would help produce an even more robust study.

**Stronger threads for online social statistics students.** In this article, I discuss the ways in which I used the quilt/cARTography method in face-to-face social statistics courses. With the growth in distance learning, future research could include ways to incorporate the method in online classes. For example, future researchers might use technology such as Blackboard Collaborate to create interactive online activities similar to those I used in the on campus class. Alternatively, online students could be assigned to small groups where they participate together in a series of 2-3 discussion boards. Then, they could collectively create a presentation for the class that would be posted to a new discussion board that is accessible to all students.

## **Binding the Quilt: Finishing Thoughts**

I experienced quilt/cARTography as a useful method where my researcher/self could stitch together pieces of data to create fabric blocks within a university food environment. Unlike disseminating data with an academic thesis that few people will read, the quilted map (simple tactile snapshot of data) has been viewed by hundreds of people. In addition to disseminating food access and food insecurity data within the community, I also used this bricolage project as a creative arts-based pedagogical tool to facilitate student's epistemic access to knowledge construction (Denzin & Lincoln, 1999; Kellner, 1999). Arts-based methods are particularly useful when we as researchers are trying to explore and also describe an issue within our problem-centered research (Leavy, 2015). Arts-based methodology can be used to not only conceptualize research, but also as a method for dissemination of data in an accessible way in social science research (Gullion & Shaefer, 2017).

In addition to pedagogical implications of using craftivism to disseminate food insecurity data with a quilt/cARTography, I posit that the quilt metaphor has the following practical implications. The quilt/quilting metaphor is a valuable structurally pluralistic pedagogical approach for connecting research design and real world issues (Koelsch, 2012). Further, when used in conjunction with the finished quilt, individuals can experience how the piecing together of individual neighborhood blocks depicts a snapshot in time of the campus food environment (Kellner, 1999; Sauuko, 2000). Additionally, the quilting metaphor is useful for simplifying conversations with non-academics about the ways in which we can build knowledge through conducting academic research (Ausband, 2006; Sommers, 1997).

My final few finishing thoughts are similar to the final strip of fabric that a quilter stitches around all four edges of the quilt to secure the three layers from fraying. First, this method is accessible for all skill levels (from novice quilter/researcher to expert quilter/researcher). Second, while I did note a few snags, they were not significant enough to tear gaping holes that leave future researchers out in the cold. Findings from this qualitative study support use of this method as an effective dissemination method and pedagogical tool for use in undergraduate social statistics classrooms. Lastly, food insecurity and food access inequities run rampant across most college and university campuses, like an insatiable moth that slowly chews tiny holes in an old quilt which begins to fall to pieces over time. Food access inequities can affect anyone at the university including students, staff, adjuncts, and professors and can significantly deteriorate not only individual educational experiences but also future opportunities. I encourage everyone to advocate for food security policies in your community and on your campus, because access to adequate quantities of nutritious food is not a privilege, it is a basic human right.

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