(C)ART THERAPY:

Sketch Mapping Workshops for Early Teens as a Case Study in Post-representational Cartography

by

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ABSTRACT

In this study, I considered the *process* of mapping as art intervention programming for individuals to uncover the important role that place plays in life's experiences (affective geographies), specifically the emotions related to the creation of maps towards this purpose. I ask the following three research questions: 1. What impact does the process of mapmaking have on the emotional discovery of the mapmakers, and how can the mapmaking process better serve as a productive, therapeutic experience? 2. What are best practices for using the mapmaking process as an artistic, emotional, place-based research method and pedagogical intervention, in this case with specific regard to adolescents? And, 3. What other benefits does the process of mapmaking have on both map and mapmaker? To answer these questions, I designed a workshop that used the process of cognitive sketch mapping as research method, educational activity, and therapeutic-like experience, enrolling early teenagers from the Bridge Lakepoint Waunona Neighborhood Center (BLW) of Madison, WI.

A key insight from this research follows: the process of mapping can do tremendous good as an art-therapy like intervention if the participants (teens) are thoughtfully considered and included at each stage of planning and conducting a mapping workshop, and that cartographic researchers should work in the field getting to know participants in order to best mold a beneficial experience, both emotionally and pedagogically.

Keywords: teenagers; cognitive mapping; emotion; art intervention; pedagogy; creative cartographies

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CHAPTER 1: INTRODUCTION AND SIGNIFICANCE

1.1 Theoretical Context: Re-Thinking Maps through Post-Representation

Cartography is in an era of the "re-". The prefix abounds in contemporary cartographic literature, signifying a fundamental return to our central assumptions and frameworks. One line of this *re*-thinking embraces a **post-representational** approach to cartography, which emphasizes the critical importance of mapping processes over map products and views the map as ontogenetic—never secure in its status and always *re*-becoming through the map users' *re*-discoveries with the map (Kitchin and Dodge 2007). Rather than a specific moment after an instance of a representation, post-representation describes a general movement away from a focus on representation to a focus on the processes involved creating and re-creating those representations. Ontogenetics is a biological concept of organic growth, but I evoke it here as the process of an individual mapmaker *re*-imagining of geographies as they explore their emotional relationships with space through the creation (and *re*-creation) of maps, both cognitive/mental and material/tangible. I consider **cartographic ontogenetics** as a human unfolding of events as maps and map users gradually make and *re*-make each other. While this conceptual framing has its limits (and I do not claim otherwise)—as certainly maps exist and do work as representational artifacts—post-representationalism *re*-frames the object of study from the map as artifact to the cartographer as being. It is within this theoretical context that my research is situated.

This shift towards post-representation is transformative. It follows a half-century of

cartography dominated by discourse on and practice of a presumed objectivity in mapping, both by mapmaker and map user (e.g., Robinson & Petchenik 1976). But there always have been alternative narratives and subjective positions in mapping (e.g., *The History of Cartography Project*), and post-representationalism as an active research thrust reveals new and old opportunities to transform and expand cartographic practices and considerations beyond the "Robinson Era" conventional design tenets (Kitchin and Dodge 2007, Caquard 2015). Rather than a dismissal, this shift is a revisiting of cartographic considerations that have been overlooked or considered diminutive (Crampton 2010). Accordingly, I seek in this project how treating mapping as process rather than the map as product opens new avenues of cartographic research and teaching as well as map design and use practice.

In particular, post-representational cartography "provides an original framework to envision our mental, emotional, and embodied relationships with maps and with places through maps" (Caquard 2015: 225). As both process and products of our lives, mapping(s) can be emotional, a way to be vulnerable without being verbal. This research takes into account what we know from the complementary fields of cartography, art, psychology, and geography to propose a productive consideration of mapping as an art therapy-like intervention, focusing on the emotional process that mapping can support. It integrates themes that are repeated across fields, namely: emphasizing the value in imaginative and creative processes, empowering research participants by acknowledging their dignity as individuals, legitimizing affective and emotional experiences, and embracing mapmaking as a process through which empowerment and emotional fulfillment/humor strike a balance. The ultimate aim of this research is to provide insight into the emotional design process to

inform a post-representational cartography, to expand our considerations of the possible applications of maps, and perhaps even to contribute in meaningful ways to the understandings and practices in art therapy.

Post-representation *re*-centers mapping as a practice-oriented method for doing research (Boria and Rossetto 2017), wherein a rethinking of what it means to map through theoretical and methodological hybridity occurs (Perkins 2008). Scholars in cartography and the related field of information visualization increasingly are seeking diverse methods to better conduct research (see Powell 2010) following themes of pluralism and situated knowledges central to feminist interventions on design (D'Ignazio & Klein 2017). Trending in contemporary works are recognitions of reflexivity through every stage of research (Ricker 2018) and, increasingly, presenting research outcomes alongside the *mess* inherent in research methods and processes (Law 2004); in other words, a recognition and consideration of the human element of the mapping process.

1.2 Research Questions and Approach

This research contributes to the growing body of critical and creative research on mapping that is forwarding cartography's post-representational transition towards the processual. While prior cartographic studies have considered the intersection of emotion and maps (see Griffin and McQuoid 2012 for an overview), no study has explored the creation of a map as an emotional process for the mapmaker specifically. I investigate how the **mapping process**—that is, the actual creative creation of the map and the mapmakers' experiences therein—has an inherent emotional dimension that can do (some sort of) good for individuals

participating in the process. Specifically, I respond to three calls from the cartographic literature:

- Kitchin and Dodge's (2007: 343) call to "rethink cartography as a processual, emergent endeavor" by situating this work within a post-representational, ontogenetic framework;
- Perkins' (2008: 157) call for "different ways of approaching mapping and its use, that reflect this complexity and which are beyond the narrow hypothesis-testing of most contemporary mapping user studies" by looking to art therapy as a potential application and method, which appreciates and emphasizes the importance of qualitative data like self-reporting; and
- Boria and Rossetto's (2017: 1) related call for "an enhancement of new practice-oriented methods of analysis" by integrating elements of ethnography and psychology into a creative spin on traditional cognitive sketch mapping studies.

In combining these threads, I seek insight into three research questions:

1. EMOTION/THERAPY: What impact does the process of mapmaking have on the emotional discovery of the mapmakers, and how can the mapmaking process better serve as a productive, therapeutic experience?
2. RESEARCH/PEDAGOGY: What are best practices for using the mapmaking process as an artistic, emotional, place-based research method and pedagogical intervention, in this case with specific regard to adolescents?

3. UNEXPECTED BENEFITS: What other benefits does the process of mapmaking have on both map and mapmaker?

To answer these questions, I designed a workshop that used the process of mapping as research method, educational activity, and therapeutic-like experience. The workshop enrolled teenagers from the Bridge Lakepoint Waunona Neighborhood Center (BLW) of Madison, WI and utilized **cognitive sketch mapping**, or the representation of an individual's mental maps through artful practices (Gieseking 2013), as a means of productively exploring their place-associated emotions. Cognitive sketch mapping has been employed in cartographic research at least since the 1960s (e.g., Lynch 1960). Where my research differs from others is in what is measured: rather than quantifying the content of participant's maps and verbal reflections as is typical with this practice, I used mixed methods to capture the affective, emotional dimensions of the process, which included observation and psychological surveys (outlined in detail in Chapter 3).

Cognitive sketch mapping as a research method can gain insight not just into the spatial structures of place, but also emotional connection to place (Szegö 1984). Furthermore, select moods and memories can be given material form when individuals recognize the value of movement through "personal spaces" (Iturrioz and Wachowicz 2010: 75). The workshop sought so-called "useless maps" (D'Ignazio 2016: 38)—using the process of mapmaking to serve the emotional needs of the mapmaker rather than meet an externally-defined need or complete an artificial instructional exercise—to contribute to research deploying mapmaking for personal rather than public purposes.

Far beyond material production, the mapmaking process is valuable for the cartographer as a therapeutic-like practice (see A Cartographer's Story for testimonials). The workshop focused on the artistic aspects of cartographic process, e.g., how maps can be reworked by individuals to give rise to affective experiences, with specific interest in the emotional content and consequences involved, and how those emotional moments might be recorded. To this end, I drew from **art therapy** to inform the workshop, defined by the American Art Therapy Association (AATA, 2017) as the process of creating art and reflecting on this process and its products, with the following requirements: situating art making as therapeutic practice, using visual imagery as the foundational tenet, setting art making within a professional relationship, and combining multiple approaches. Like mapmakers, art therapists have called for a "revisiting" of community-based studio programs to consider "not art therapy" programs as potential sites of innovation for the field (Kapitan 2008: 2). A large part of the reinvigoration taking place includes situating work within everyday lives, bridging academic platforms with community spaces. Thus, this workshop employed a quasi-ethno-methodological research design doubling as an approachable, process-based cartographic pedagogy.

One might be surprised to find that for at least 100 years, "many hundreds" of artists have been appropriating cartographic techniques, producing various strains of art-map practices (D'Ignazio 2009: 190) and the term intervention has made its appearance, notably in the Common Ground project's initiative for Parish Maps that, since the 1980s, has produced "[s]ocial intervention in continually creating and recreating the particularity of

place" which empowers individuals to "liberate all kinds of quiet knowledge, as well as passion, about the place" (Common Ground accessed October 7, 2017). Emotion is a prime playing field upon which we can further collaboration among fields.

Emotion itself is an "elusive aspect of being human" (Griffin and McQuoid 2012: 298) and the concept has been variably deployed in theoretical applications across art, design, and geography (e.g., Thrift 2004, Thien 2005, Anderson and Harrison 2006). Furthermore, biological and social distinctions between the concepts of *emotion* and *affect* are uncertain and require attendance. In the following, **affect** is considered the prerequisite to a feeling registered by a sensing body (McCormack 2008: 414). Affect is an increasing topic of interest in geography (e.g., Rose 2016), and aligns with ontogenetics, with affective force as both product and producer of individuals, given that affect involves the relations between and within bodies, forces, environments, and materialities (Woodward 2011: 331). As described below, affect often is described in psychology as having two core dimensions: hedonic tone/valence (or unpleasant-pleasant) and arousal (or activation-deactivation) (Barrett and Fossum 2001: 334). **Emotions** are defined as "short-lived experiences that produce coordinated changes in people's thoughts, actions, and physiological responses" (Fredrickson et al. 2000: 1), and are influenced by affective experience as well as other cultural constructs that code affective experience into feelings or moods. In this research, surveys of general core affect (PANAS and BMIS) are used as proxies for emotional expression.

1.3 Case Study: Children's Geographies

I designed and conducted the Mapping Workshop using a case study of children's geographies. Spatial cognition and mapping abilities feature as one of three prominent research foci on children's geographies (Holloway 2014: 378), accompanied by the biological, social, and psychic natures of childhood as well as the child's role as a social actor (Holloway and Valentine 2000b). While my research does not grapple with all geographic dimensions of childhood (see McKendrick 2001 for an annotated bibliography containing essential works and Holloway 2014 for an overview of the history and the current state of research), it does coordinate with these efforts in appreciating the child's active and ever-evolving role in mapping research.

Lynch (1977) was among the first to pioneer use of sketch mapping for understanding children's experiences in place. Since, scholars in environmental psychology (e.g., Driskell 2002) and urban planning (e.g., Chawla 1998), among others, have taken up the challenge of developing more comprehensive methods to involve youth in shaping community development. This focus has been on what it means to be truly participatory, transforming participation rhetoric into action (Chawla 1998). Geographers have taken up sketch mapping with children as well, making the point that children are incredible geographers in their own right, in that they identify and understand aspects of their environments that adults cannot or do not (Aitken 2001a, Katz 2004). Still, the concept of childhood has been charged as an "adult abstraction" (Aitken 2001b: 119) and "spectacle ... in whose name much is done" (Katz 2008: 5). Care must be taken to not erase the individual as a "bearer of experience" or

to impose through definition the limits often accompanying this label (Katz 2008). To avoid this, a challenge put forth to researchers is to "authentically" situate themselves within the lives of children (Aitken 2001a: 500). Spending unstructured time "hanging out" while making informal observations (Aitken 2001a: 502) is the way to get to know children, and superficially, can help to develop prerequisite communication pathways for comfortable and meaningful participation in the process for all parties (Driskell 2002). Art therapists and geographers alike conclude that facilitators or researchers should be quiet observers and assistants, rather than unprompted suggestors, affirming the importance of a participant's decision process at all stages (Aitken 2001, Ziff et al. 2016).

The stakes concerning emotion are high. Having a limited understanding of emotion can contribute to a child's emotional difficulties (Pons et al. 2003), though it is possible to help children develop their emotional understanding through instruction by providing interventions as opportunities for children to express or discuss emotions, individually or in groups (Pons et al. 2002). Recent investment by the U.S. Department of Education into innovative approaches to **social and emotional learning** (SEL) has lead public classrooms across the nation to renew focus on emotion in youth. SEL recognizes that, in education, fulfilling the social and emotional needs of youth is as important as academic achievement, and hundreds of SEL programs to-date have been reviewed to be effective in this way (Durlak et al. 2011).

Despite adolescence being a major turning point in development, often including emotional upheaval (Crawford 2008), reports substantiating the utility and effectiveness of

art therapy interventions with adolescents are far fewer than the number of reports involving young children (Crawford 2008). The few studies that do exist argue that expressive arts-based therapies are less threatening to adolescents than are verbal therapies (Natale 1996, Riley 1999, Crawford 2008; see also Kahn 1999), and are better adept at working through adolescent resistance to participation because they allow for non-verbal expression of thoughts and emotions (Papalia et al. 2004, Gladding 2005, Crawford 2008). Cartographers have found that children cope well with free recall mapping and other unfamiliar mediums, and should be offered the opportunity to experiment with a wide range of spatial stimuli and techniques that may better their understanding of their own interactions in environments (Matthews 1984b), though these studies often are based on how best to engage youth in using maps as tools for environmental, not emotional, learning.

Illustrating the affective value of place is considered to be "one of the most important contributions that geography can make to the new social studies of childhood" (Holloway and Valentine 2004: 8). How better to *illustrate* the importance of place than to have children *literally* illustrate personally meaningful places? If maps are one of the ways by which we can communicate our geographical imaginations (Aitken and Craine 2015), might mapping first prompt imaginative encounters? Mimicking free exploration of place through free exploration of mapping may impact how children interact or perceive places as they later explore them given that geography is one route through which the environmental experiences of youth can be enhanced (Matthews 1984: 335), and "[t]he childhood experience that determines spatial practices" can later recreate place (deCerteau 1988: 110), further informing an ontogenetics approach to cartography.

Instructional programming needs to be flexible. Children's emotional understanding increases as they grow in age, though there are documentable differences between individuals (Pons et al. 2003), implying a persistent and variable-dependent state of emotional re-becoming. While specific descriptive characteristics of adolescent thought have been proposed (Elkind 1984, 1998), other researchers have highlighted the variability in adolescent development (Papalia et al. 2004**),** reminding us of the importance of discrepancy. The immediate relationships we cultivate with children are as important to consider as the outcomes of our research endeavors (Aitken 2001a citing Herman and Mattingly 1999). These insights are particularly valuable when planning intervention-like work with adolescents, lending the researcher perspective that emphasizes both *flexibility* and *empathy* in research interactions, foremost requiring *listening* and *appreciating*.

These are but a few of the challenges and contexts confronting the case study selected for my research, which aims to encourage youth to critically engage in reflection of their lived experiences in place (renewed) through artful mapping practices and then capture emergent emotions connected with the full mapping experience.

1.4 THESIS ORGANIZATION

The thesis proceeds with four additional chapters. Chapter 2 discusses the literature grounding this paper and justifies choices made according to the methods described in Chapter 3. Specifically, it explores ideas presented involving art therapy and education, the psychology of emotion, and mapping as method (specifically cognitive sketch mapping) both useful to and complicating this line of research. Chapter 3 details the case study while

Chapter 4 provides a summary and critical review of the case study results. Finally, Chapter 5 provides conclusions and offers possible next steps.

CHAPTER 2: LITERATURE REVIEW

In this chapter, I present a condensed review of the literatures this research draws from. Section 2.1 introduces the complexities of affect and emotion, and how cartographers are and might draw from this complexity to inform a better cartographic process. Section 2.2 integrates lessons from art therapists and arts educators used to inform the workshop design. Section 2.3 introduces and complicates the method of cognitive sketch mapping employed in the workshops.

2.1 Affect and Emotion

Affect and emotion here are treated with understandings from geography/cartography and emotion science. From emotion science, this thesis adopts psychological constructionist understandings. Modern psychological constructionism addresses the varied perception of, experience of, and response to emotion (Lindquist 2013)—or, how emotions "look and feel" (Niedenthal and Ric 2017: 15)—with emotions resulting from a process of categorization driven by associative learning in place and time (Niedenthal and Ric 2017). Thus, these understandings align with the post-representational, feminist, and alternative perspectives on cartography informing in this research.

Emotions are responses to our interactions with the world (things, people, events, and our own thoughts), that construct and carry meaning during our experiences (Niedenthal and Ric 2017). Core affect is the "innate component" or biological basis for building emotions (Niedenthal and Ric 2017: 16), representing both internal and external sensations experienced as a process of symptoms in the body (e.g., pulse quickening) (Lindquist 2013).

Changes in core affect, called affective states, are transformed into emotions in part through the cognitive processes related to categorization that apply structure and meaning to emotional experience through environmental learning, and thus the interpretation of affective states as individual emotions are highly dependent process upon an individual's personal present realities (cultures, contexts, and knowledges) (Posner et al. 2005, Niedenthal and Ric 2017). Thus, emotions are occasionally labeled "situated conceptualizations" because they respond to specific situations (Lindquist 2013: 360). Thus, unlike core affect, emotions are not elicited simply by signal stimuli, but result from this complex process that involves perceptual, cognitive, and cultural dimensions, with all dimensions together described as our "total emotion" (Niedenthal and Ric 2017: 18).

The terms "emotion science" and "affective science" are themselves used interchangeably to describe the scientific study of emotion (Niedenthal and Ric 2017: xi), and this mixed terminology creates a minefield of uncertainty through which non-domain experts must navigate. Given this complexity, I choose to regard affect as an indicator of *general* emotional experience throughout this work and will use emotion wherever affect is not specifically required by theory, collapsing all understandings down to the essence of *total* emotion, as described above.

Affect and emotion are topics of increased interest in both geography and cartography under more general definitions (e.g., Manzo 2003, Thien 2005, Kwan and Aitken 2006, Nold 2009, Ortag and Hoasheng 2011, Woodward 2011, Huang and Gartner 2016, Campos-Delgado 2017). Treatment of affect in cartography has focused on how individuals are

impacted by different mapping contexts or environmental settings, which then influences the ways in which we differentially experience and consider these contexts and settings, essentially producing emotion as a place-based, "situated conceptualization" described above. These contexts, settings, etc., are then ascribed affective meaning, producing personalized affective geographies (representations of space and place, in this instance cognitive sketch maps) that call forth and visualize the prescribed affective meaning (Giaccardi and Fogli 2008). Work on affective geographies is relevant to the practices of mapping (Dodge et al. 2009), given that affective geographies themselves are maps that allow for the re-production of "richer and multiple readings of the same territory" (Giaccardi and Fogli 2008: 173). In further bridging emotion science with contemporary cartographic applications, individuals create affective geographies as "living [accounts] of space as a social product of individual embedded knowledge, daily practices, and concerns" (Giaccardi and Fogli 2008: 175). Accordingly, affect and emotion increasingly are recognized as essential themes in cartography alongside other perceptual, cognitive, and cultural dimensions of mapping (see Richards 2004, Aitken and Craine 2006, Griffin and McQuoid 2012, Griffin and McQuoid 2014).

Griffin and McQuoid (2012) outline some of the challenges of spatially representing affective and emotional experience by discussing three recent thrusts in practice and in discourse: (1) the representation of emotion in maps, (2) the use of maps to collect emotional data, and (3) the role of maps in evoking emotions in the map reader. While maps have been used to gain insight into the emotional associations individuals have with places, the focus predominantly has been on the characteristics of the place that produce those emotions (such

as Gartner 2012). An ontogenetic approach to mapmaking as introduced in Chapter 1 extends affective and emotional considerations to the process of mapping by additionally interrogating: “the emotional capacity of maps to do work in the world”; “the kinds of action and affect enabled in everyday mapping activities”; “the role affect might play in enacting solutions to spatial problems”; and, “insights in how people map, by focusing attention on the relations between design and its deployment” (Dodge et al. 2009: 324). Emotion, however, still largely finds a home in the expressive realm of the artist, and psychology (including art therapy and counseling) offers companion perspectives for cartographers to consider emotion.

Emotion research is complex and mired in lively debate, leaving emotion scientists without the ability to make clear measurement recommendations (Barrett 2016). A century of scientific inquiry has left emotions still “mysterious and deeply perplexing” (Barrett 2016: 35; see full text for a general overview of disaccord within the field), with “an absence of an objective, external way to measure emotional experience” (Amabile et al. 2005: 398). This confusion generates a research context in which: measures do not work as well as expected or at all; emotions do not predict behavior as well as they could, or at all; studies do not replicate; and—of utmost concern—scientists have yet to discern whether reports of emotion are presentation, representation, or actual felt experience, leaving scholars to conclude that “variation is the norm” (Barrett 2016: 52), both the content and form or expression of emotional experiences are “varied and variable” (Lambie and Marcel 2002: 107). Mental representations of emotion also likely are determined by many, interconnected factors (Barrett and Fossum 2001: 358). Given this complexity, psychological understanding of

emotion is reliant upon inferences generated from individuals' self-reports of emotions, which vary according to any number of different scales of judgments (Feldman, Barrett and Fossum 2001: 333) or perhaps reflect understandings of emotional language rather than actual emotional experience (Barrett 2004).

Within this complexity, Barrett (2006a) considers the currently optimal way to know how others are experiencing emotions (essentially, feelings) is to ask them. Self-reporting is one of the most common, most reliable (despite the uncertainties noted above), and inexpensive metrics to glean insight into an individual's conscious and subjective emotional experience (Barrett 1996). Even cartographers confirm the need for self-reporting, cautioning against confusing technological insight with a clear vision of what is in users' minds (Nold 2009), again referring to the complexity of human experience and emotion: affective meaning with a map only can be accomplished if the cartographer-participant's subjective interpretations of their experiences are offered. Otherwise, meaning cannot be read from the maps (Griffin and McQuoid 2012 referring to Nold 2009, and in agreeance with Giaccardi and Fogli 2008). In other words, individuals make meaningful maps of emotion by sharing their associated subjective experiences with other people.

Emotion scientists have established several graphic models that offer visual representations for marking self-reports (see Yik et al. 2011 for a comprehensive listing of the model variations). Each of these models integrates two components of core affect, using placing the emotional affective states of **hedonic tone/valence** (or unpleasant-pleasant) along a horizontal axis and nonemotional affective states of **arousal** (or activation-deactivation)

along an intersecting vertical axis (Barrett and Fossum 2001: 334). Words describing the range of the basic emotional states are placed around this circumplex according to degrees, creating what some refer to as the **Wheel of Affect**. The emotion words and their placement around the circumplex can differ between models (Barrett 1996: 48). Figure 2.1 shows the refined version of this circumplex (Yik et al. 2011: 706). Although a "primitive representation or cognitive map of affective space", the circumplex is generally considered to be robust and is widely employed (Feldman Barrett and Fossum 2001: 334).

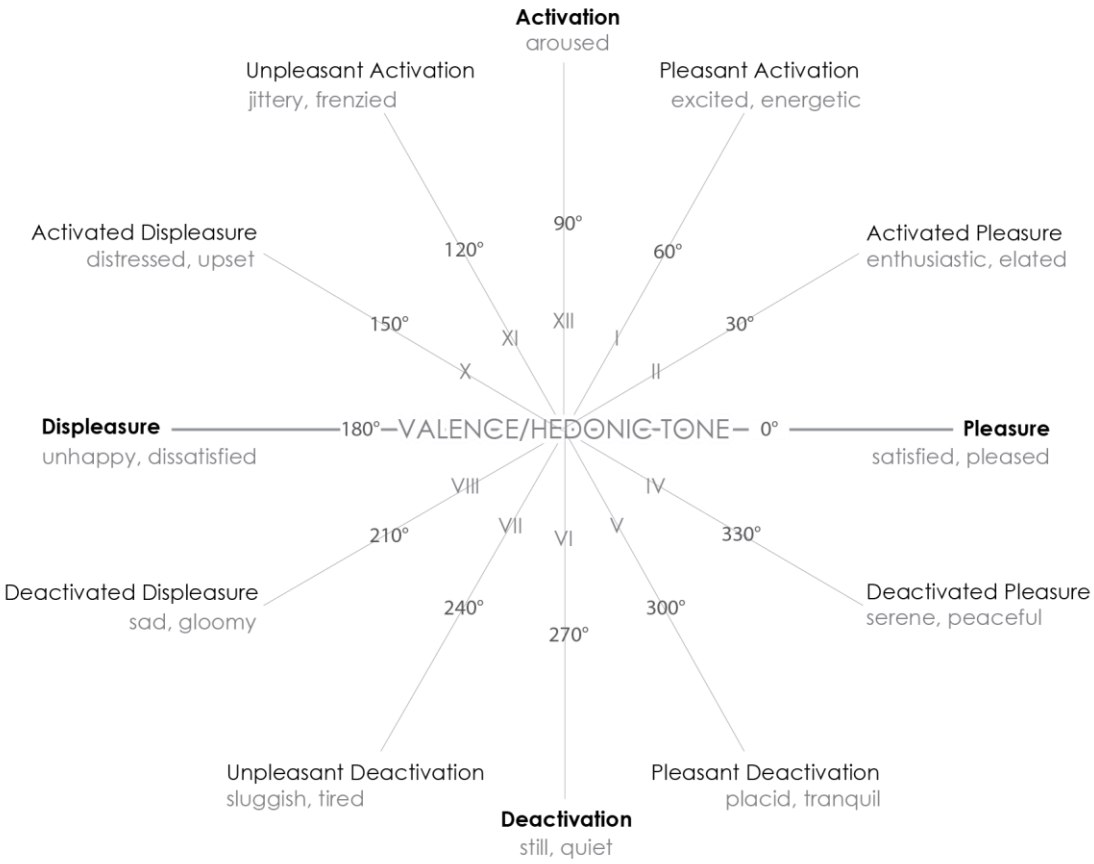

Figure 2.1: The Affect Wheel or 12-point Circumplex remade (Yik et al. 2011: 706), with descriptive emotion word examples spread around the wheel according to its relation to the two primary axes. While impossible to define with certainty, the relative likeness and

difference between how emotions are experienced produces this relational map-like figure. Researchers use this wheel to approximate the general emotive condition of an individual at a specific time.

Measures of core affect are collected through standardized verbal questionnaires, typically the Positive Affect Negative Affect Scale (**PANAS**) (originally developed by Watson, Clark, and Tellegen 1988), which requires participants to rate on a continuous numerical scale how much they are feeling a particular emotional state during a specified time frame. PANAS is considered "brief, reliable, and valid" (Niedenthal and Ric 2017: 36). By averaging responses to words categorized into either the negative feeling or positive feeling word selections, scores can be acquired that give insight into the general (negative and positive) affect as well as the arousal/activation underlying participant's emotions. The Brief Mood Introspection Scale (**BMIS**; Mayer & Gaschke, 1988) also can be used to measure general positive/negative affect and high/low arousal (Niedenthal and Ric 2017). Research across geography, environmental psychology, and feminist theory have used assessments of affect (often along a didactic valence model of positive and negative affect, such as PANAS) to discern peoples' attachments to place (Manzo 2003). Yet, while useful, assessment of core affect alone is not a sufficient measure of emotion (Yik et al. 2011: 725), and it is advisable to triangulate other measures, like research observations and open responses, which allow for different and more natural explorations of emotions.

Expressions of instances of emotional experience are difficult to capture solely through observation, however, given the variability between individuals. For example, an individual experiencing happiness does not need to be smiling or laughing to be feeling that

way. An external indication of a specific emotion need not exist, but often emerges if the individual assesses that communication of that specific instance of emotion is ideal. For instance, if an individual wanted to communicate their experience of happiness to someone else, say, a parent indicating that they were enjoying a certain activity, they might signal this emotional experience through smiling (example from Niedenthal and Ric 2017: 17, citing Lindquist 2013). Thus, I have attempted to build in as many opportunities for emotional expression into the workshop, including through open responses, informal conversation, and mapping prompts, to get closer to what might be considered the total emotions evoked throughout the mapping experience.

2.2 Lessons from Art Therapy and Arts Educators

Art can be thought of as "a container for emotions too intense to be acknowledged and owned by the conscious awareness" (Crawford 2008: 173, from Franklin 2000). As introduced in Chapter 1, **art therapy** describes the use of the creative process of art-making to enrich the physical, mental, and emotional health of all individuals (Gusak and Rosal eds. 2016). An art-therapy intervention approach provides verbal encouragement to individuals that they have the right to express their emotions (Degges-White and Colon 2014) and visual expression of emotions through art-making can evoke cognitive reward pathways and a sense of pleasure, improve self-perceptions of creative abilities, regulate addictive behaviors, improve attention, regulate mood, and improve health and well-being (Kaimal et al. 2017). Thus, many of the inherent benefits of art-making activities are distinct and independent of the art products themselves (Kaimal et al. 2017). As Halprin (2003: 90) writes:

> Art making … is about experimentation, exploration, and play. It is about working with sensory experience and then working with what arises. The material we are working on speaks for itself in the poetic language of feeling and imagination. It meanders and unfolds in a mysterious and spontaneous way rather than according to formula or protocol.

As an art form, what emotions and benefits can the process of mapmaking evoke? Maps specifically can serve as media for recovering "values, meanings, and personal feelings that have spatial loci" (Beck and Wood 1976: 230), prompting hopeful visions of the future (Hutchinson 2005, Kwan 2007) and fulfilling needs that fall "well beyond the practical" (Richards 2004: 11). Thus, mapping can fill the need for non-verbal expression of thoughts and emotions evoked with geographical associations, inviting and encouraging individuals to participate in art therapy and art-therapy like programs.

In charging individuals who have never made a map to suddenly make a map, or the beginnings of a map, it is first and foremost charging them to be *creative* (Kitchin and Dodge 2007). There are calls for creativity from the cartographic community: "we ought to not separate the analytical from the creative…People who study maps in creative ways also need to be more creative in their mapping activities as well" (Dodge et al. 2009: 332). Being creative also means opening mapmaking to influences from other domains, as well as to the unexpected or imaginative solutions and innovations of participants. Such transdisciplinarity is of particular importance for art interventions with adolescences and art education generally, given that young participants have very little experience with maps and certainly less with mapping, and instead will be drawing from knowledges derived from other learning experiences.

Creative, arts-based practices (or, interventions) have been a focal point in social work education, gaining traction in the last few decades to "communicate…experiences more powerfully", with an emphasis placed on embracing pluralism and promoting diversity (Hafford-Letchfield et al. 2012: 683-684). Creative—rather than formal (i.e., cognitive and rational)—modes of teaching, learning, and assessment are encouraged (Simons and Hicks 2006), and include co-production of knowledge, learning engagement within the wider community, reflective processes, and kinesthetic or non-verbal (tactile) methods (Hafford-Letchfield et al. 2012). Employing techniques that "mobilize imagination and creativity through artistic expression" as having "transformative potential for learning" is highly encouraged (Hafford-Letchfield et al. 2012: 684).

Art instructors write of cultivating creative environments that fully commit to artistic process—the movement from the birth of an idea through its visual expression—because it is within these environments where individuals can cultivate the positive qualities of creative people (Becker 2009). The qualities include: a high level of concentration, an unrelenting obsession with detail, a trusting of one's intuition, a giving of oneself over to the process of making, the patience to really see the obvious and the extraordinary in the ordinary, the ability to locate themselves and their activities in the everyday present, and the ability to navigate the turmoil and uncertainty of the emotive psyche.

These seemingly "impractical" or "nonutilitarian" qualities of art making are in reality "the most practical and potentially liberating of all if one is to achieve a creative life, accomplish meaningful work, and help to encourage the evolution of a sane society—which

can only come into being if it is imagined" (Becker 2009: 58-59). This line of thought coordinates with projects involving so-called "useless maps", or those that serve purposes outside of the dominant Robinson-era cartographic design conceptions around functionalism and the average map user (D'Ignazio 2016: 38). Artists and non-artists alike can derive the same benefits of art making activities (Kaimal et al. 2017), and researchers are challenging the misconception that only gifted individuals are afforded the privilege of artistic expression (e.g., Hafford-Letchfield et al. 2012). This, too, should be extended to mapmakers at all levels—or, c(art)ographers—whose mapmaking practice can lead to benefits that are unexpected and to processes that are valuable even if they are not derived a priori.

Correlations between affect and creativity have been established (Nadler et al. 2010), with emotions found to be causes, co-occurrences, and consequences of creativity (Amabile et al. 2005: 367). Though a prior positive mood can induce a "creative thought event", often the influence of this affective event on an individual's creative thinking is not consciously recognized (Amabile et al. 2005: 367). This insight emphasizes the value of triangulating methods while probing for emotions that may not be consciously realized at the time of self-reporting. **Pre- and post-session surveys** allow researchers to probe into a participant's self-perceptions of ability and creativity, prior experience with art-making or visual self-expression, and their experiences with different tasks during the session.

Despite the potential for art therapy interventions and education, few published art materials and media are available for reuse and extension (see Moon 2011 for a summary). Materials and media are known to significantly affect the outcome of the mental sketch

mapping exercise (see Section 2.3), and yet they are generally not reported in sketch mapping studies (Gieseking 2013: 715).

The three-tiered theoretical framework known as the **Expressive Therapies Continuum (ETC)** (Figures 2.2) was developed to inform the therapist on what media to offer during art-making sessions (Figure 2.3), to provide insight into the client's media choices, and to guide the therapist's interpretations of both process and product (Lusebrink 2017; originally, Kagin and Lusebrink 1978).

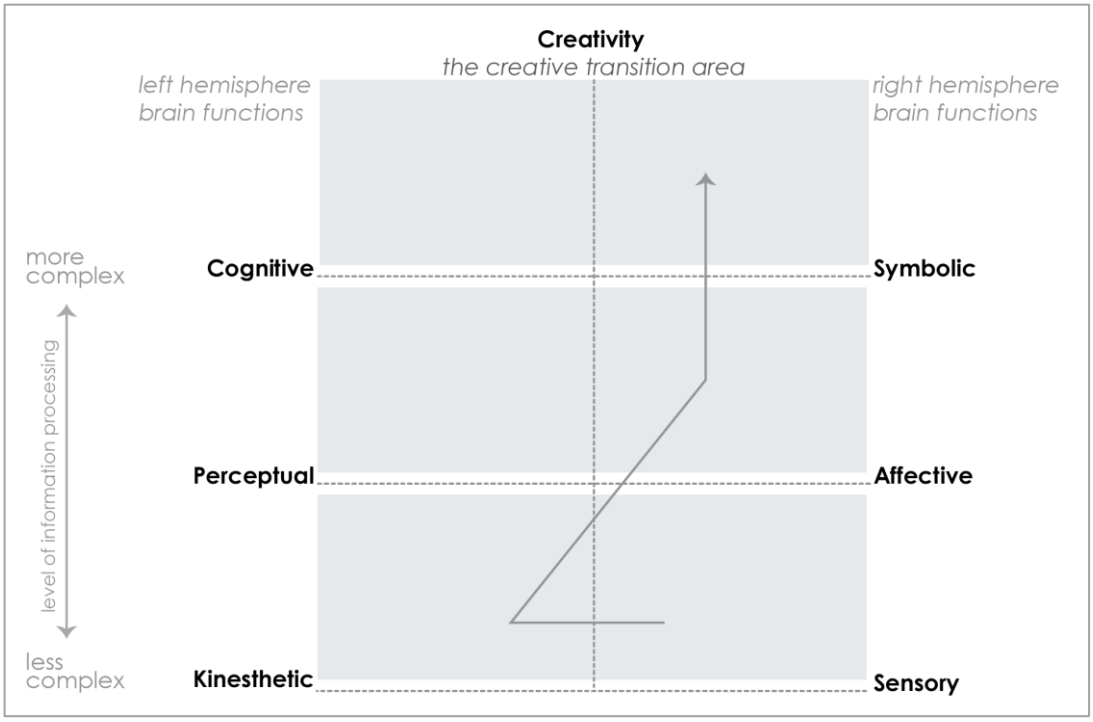

Figure 2.2: The schematic representation of the ETC (Lusebrink 2010 and Lusebrink et al. 2013) remade, compiled, and annotated. The arrow signifies one example of how an individual's process may transition between and among the levels.

In its entirety, the ETC is a stepwise sequence of three different but interconnected levels (or continuums between two polarities) that reflect the development (both mental and graphical) of information processing from simple to more complex forms during art making. Each level of the ETC is definitive in the support of specific social/emotional goals, born from the interaction between the artist, a medium/material, and the product: the **Kinesthetic/Sensory (K/S)**, which focuses on the how much energy is manifested and/or how much sensory exploration takes place; the **Perceptual/Affective (P/A)**, which focuses on the development of and amount of differentiation between forms, as well as the presence, differentiation, and change of affect in the expression; and the **Cognitive/Symbolic (C/Sy)**, which focuses on the cognitive operations required of the experience and global processing of input from the current and two previous levels (Lusebrink et al. 2013). While several of these levels may be apparent in an artistic expression, one is often predominant (Lusebrink et al. 2013). These parallel horizontal axes are connected through the center by a perpendicular axis referred to as the **Creative Transition Area** (Ziff et al. 2016), which can be a "dynamic integration of the qualities of each pole" on a single level or between all levels (Lusebrink 2010: 171). Though comprehensive explanations of ETC exist (see Kagin and Lusebrink 1978, Hinz 2009, Lusebrink 2010, Lusebrink et al. 2013, Hinz 2015), I limit my discussion here to direct notes on art media/materials according to the specific social/emotional goals they support.

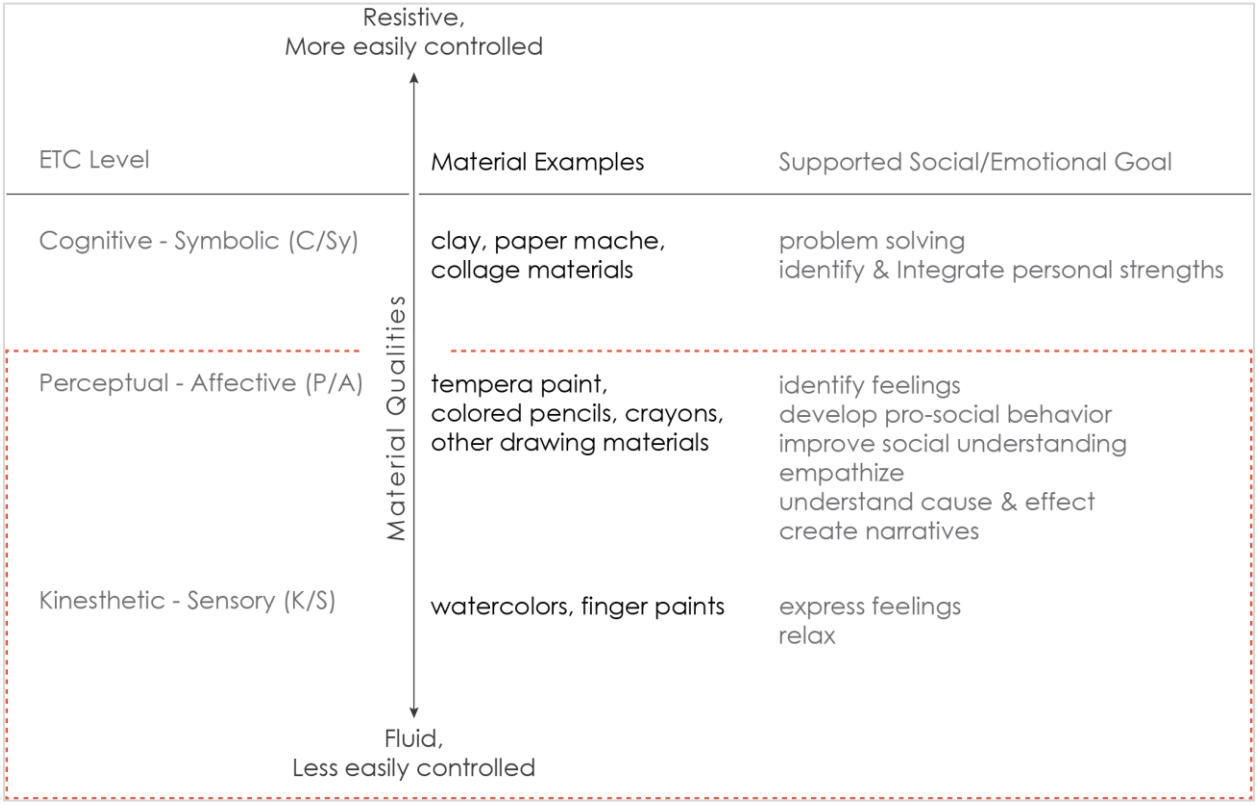

Figure 2.3 ETC material qualities differ between levels with coordinated social and emotional goals.

There are several important aspects of the three ETC levels worth noting for this research. The emergent functions of the K/S level include awareness and experience of emotion, and at this stage the art process often trumps the product in terms of importance to the individual, frequently resulting in the choice to discard the art product immediately following its creation (Hinz 2015, with reference to Snir & Regev 2013). Here, media are fluid, lacking resistance, but less easily controlled, including watercolors and fingerpaint. Next, emergent functions of the P/A level include identification of feelings and creating narrative. Media at this level are semi-resistant and familiar, including common drawing and coloring media as well as tempera paint. Lastly, emergent functions of the C/Sy level include

problem solving and identifying personal strengths. Media at this level are resistant, more easily controlled, and often require a process of two or more steps, including collage and sculpture (Lusebrink 2017). Accordingly, my research focuses on the K/S and P/A levels.

Additional considerations of the ETC, which mention materials, include: **mediators**, or tools defining both physical and psychological distance between the creator and the work (prompting either immediate felt sensation or evolving mental reflection), **limits**, or amounts of available materials/media, and **complexity**, or the number of steps and materials/media required in the process. These factors all combine to influence the cognitive process (Ziff et al. 2016). **Color** is yet another factor influencing/influenced by emotion, with the ability to affect participant's reflective processes, learning, and behaviors (Giaccardi and Fogli 2008). Individuals' needs for different materials/media are derivative of their needs for certain emotional expression (Hinz 2009). However, individuals have unique responses to art materials and processes (Hinz 2015) and the "possibility for tactile reminders of trauma" exists with the use of different materials, including finger paint and clay (Ziff et al. 2016: 81).

Additionally, freedom during the art making process is often, though not always, encouraged. Self-selection of materials/media and the content of the expression are considered essential according to some art therapy practice (Hinz 2009). Having "free reign to create with art materials" renders the resulting product to "inevitably [take] on the image of its maker" (Hinz 2009: 25, quoting Kramer 1971: 29), and this freedom over both material and content is thought to encourage more meaningful art making (Hinz 2009, citing

Ellenbecker 2003). Art therapists disagree on some of these considerations, however, noting that culture can play a role in certain media/material interactions, with some suggesting a narrowed scope of materials/media and clear directives so as not to overwhelm individuals (see Moon 2011 for an array of opinions).

A careful balance also must be struck between the amount of imagination required of an exercise and the level of engagement with that exercise. An experiment wherein participants were directed to engage for three minutes apiece in three artistic endeavors—coloring in a mandala (a structured activity), doodling within or around a provided circle on paper (semi-structured), and free-drawing (unstructured)—sought to determine details of this relationship with regard to their associated reward pathways (Kaimal et al. 2017). All three activities resulted in an activated brain state and created "significant activation" of feelings of reward, including an improvement in self-perceptions of creative abilities, problem solving skills, and the generation of good ideas (Kaimal et al. 2017: 85). However, some self-identified artists indicated that color was disengaging and restrictive while some self-selected non-artists indicated that free drawing was intimidating (Kaimal et al. 2017: 90), indicating that an accessible medium should be sought. Doodling was found to be particularly engaging and capable of evoking positive emotions, given its accessibility to both artist and non-artist.

A related issue is boredom, the antipode on the arousal affect scale. The occurrence of boredom resulting in mind-wandering episodes during activities can influence emotion: Letting the mind wander can result in negative emotional consequence such as a worsening mood (Franklin et al. 2013, Killingsworth and Gilbert 2010). This change in mood, however,

is circumstantially dependent: if the mind wanders into episodes of topics interesting or engaging to the individual, rather than into episodes concerning the past or topics of disinterest, an elevation of mood occurs instead (Franklin et al. 2013). Also, if the mind-wandering is associated with an advance in creativity, mood may be enhanced (Baird et al. 2012). These insights can inform planning by encouraging researchers to notice and direct participants away from or to certain topics of interest after acquiring personal knowledge of an individual's likes and dislikes. Given that mapping often is a novel form of expression for individuals, boredom can be overcome with careful and aware guidance.

Finally, and most notably, while creating, artists and designers can "get stuck fixating on a sense of inadequacy", sometimes requiring researchers to intervene with positive encouragement (Becker 2009: 57-58). Turmoil and uncertainty are inherent elements of the creative psyche, referred to as "creative features" or "barriers" that, in the process of learning to overcome them, can produce valuable life-skills in individuals (Becker 2009: 57-58). It is economy— "the desire for material or financial success"—that often derails imagination and creativity, prompted by not only parental figures but also educational figures working within (even arts) institutions focused on "successful" production (Becker 2009: *57*). Thus, the process should focus on the moment over the future, redirect individuals through their self-conscious moments, and emphasize experiencing rather than producing.

2.3 Cognitive Sketch Mapping (Process)

Mental sketch mapping (sometimes described as "cognitive" sketch mapping) describes the representation of an individual's mental maps through artful practices

(Gieseking 2013). Mental sketch mapping is an example of a **participant visual research method** that addresses both material and emotional knowledges of place (Curtis 2016, Campos-Delgado 2017), empowering research participants through the active expression of their own experiences in and with place (Dorling 1998, Packard 2008). Empowerment is considered the **"**main relevance of mental mapping methodology" given the "central interest is the actor, the story, and the parts of it that she/he wants to tell... that, perhaps, with other more intrusive/direct methodologies could remain undisclosed" (Campos-Delgado 2017: 188). With a long tradition and varied applications in modern geography (for an overview, see Boschmann and Cubbon 2014), mental sketch maps have become foundational to many development and research projects (e.g., Hart 1979, Chiodo 1993, Saarinen and MacCabe 1995, Dorling 1998, Cieri 2003, Herlihy and Knapp 2003, Matthews, Detwiler, and Burton 2005, Pain, MacFarlane, and Turner 2006, Dongus et al. 2007, St. Martin and Hall-Arber 2007, Brennan-Horley and Gibson 2009, Fielding and Cisneros-Puebla 2009, Gillespie 2010, Wridt 2010, Coulton and Mikelbank 2011, Bee 2013, Pearsalletal 2015, and Campos-Delgado 2017).

Lynch (1960) often is attributed with the first popular use of mental sketch mapping. The famous Lynchian model calls for **free sketch mapping** from memory using pencil and paper, absent of the assistance of a basemap. This tradition was later challenged by a method that asked participants to **annotate** (add information to) a pre-drawn basemap, requiring fewer or accordant cognitive operations as well as reducing error in the resulting map (Beck and Wood 1976). However, the presence, and especially the complexity in detail, of the basemap is thought to "heavily influence the mapper" (Beck and Wood 1976: 230). Today, a

compromise is recommended using material techniques of **layering** to build a map of elements drawn on separate sheets of tracing paper, at once allowing for free sketch mapping while reducing the complexity of information called for on a single sheet (e.g., Beck and Wood 1971, Beck and Wood 1973). Mental sketch mapping also can include experimentation with collage, photography, and other artistic approaches (Gieseking 2013).

The process of creating maps can improve the cognitive development of mental maps (Chiodo 1997). Developing mental maps is powerful and valuable, because "Mental maps serve as effective links between…geography lessons and the real world" (Comenetz 2005: 117). Map literacy has been recommended as "an educational tool for envisioning and advocating social change" (Krupar 2015: 92). Further, creating from mental maps can enhance perception, deepen connections with place, foster reflections and awareness, as well as support behavioral change (Giaccardi and Fogli, 2008). Our mind as a mapping mechanism is not a communication with oneself rather than a mirror of the world (Horowitz 1970, Beck and Wood 1976). The subjectivity present at each stage in the production of a map has led some scholars to claim that every map is a mental map (Axelsen and Jones 1987), or simply the representation of what is contained in one's mind about a place (or this self-communication) rather than a direct representation of the place itself.

In mental sketch mapping studies, concern exists over the drawing ability of the individual participant acting as an "intervening variable" on the resulting map, though researchers noted that its effect should not be overly stated (Murray and Spencer 1979: 391). Personal anxiety about drawing abilities also can be a concern when sketch mapping

(Gieseking 2013, Campos-Delgado 2017), although both experienced and inexperienced individuals alike can become stressed during the same art making activities (Kaimal et al. 2016). In fact, most practicing artists experience a sense of inadequacy during the creative process, and this "intervening variable", when seen as a naturally occurring and valuable part of the process, can help to develop a creative psyche capable of meaningful contributions to society (Becker 2009: 58).

Being ontogenetic, maps are continually re-created during each new engagement with individuals according to their own "milieu" (Kitchin and Dodge 2007: 338-339), with the map reading producing a desired "fiction" (Jacob 2006: 285) that the map user "leverages" to *re*-create a story serving their own purposes (Denil 2016: 11). If (under)writing mental sketch maps is the skeleton or diagram of a story that can help others to understand a person's experience in space (or what that individual selects to share), it is not so that the map reader will read the same story the map maker wants, means, or believes it to tell, but rather the story that fits the map reader's own understandings; individuals read from the map what they themselves think or want the map to tell (Denil 2016). These points, if accepted, complicate the common practice by which mental sketch maps and other cognitive mapping products are evaluated, which is to aggregate all of the maps produced to create an average or general picture of comparable spaces, and often logging types, presences, and absences of features. Traditionally, aggregation of cognitive maps to reveal agreement and disagreement among spatial narratives has produced interesting but superficial representations of the complexities of uneven emotional experiences (Nold 2009, Griffin and McQuoid 2012). Thus, the only case wherein aggregation of individual maps is useful is if the goal of the research is to create

a collective vision (Gieseking 2013: 716). Even so, after a scholarly editing process including simplification and emphasis, “The end product is a new artifact, which owes to the researcher's imagination as much as it does to that of the respondents” (Matei 2003). In an effort to overcome these subjective difficulties, some contemporary scholars have turned to GIS and mathematical operations to average precisely scanned and georeferenced basic sketch maps and then convert them into geographic matrices (Matei 2003). Still, though the reader’s task is to inhabit the map, rather “he occupies the page and asserts their mastery over it”; the mapmaker alone exists as “an inhabitant of the page myopically entangled in its inky traces” (Ingold 2005: 32).

Finding Lynch’s method—as well as the many studies that followed—scattered and insufficient, Gieseking (2013) conducted a content analysis of contemporary literature using mental sketch mapping as a method. Alongside the often confusing lack of distinction between the use of terms in this realm (i.e., the interchanging of mental and cognitive), most studies have been vague in articulating the particular techniques used. Thirty-one analytic techniques were drawn from pre-existing literature and 21 analytics were developed from the author’s own case study, resulting in identification of 57 analytic techniques and components that produce data in counts, percentages, yes/no answers, and/or qualitative trends, with encouragement to adapting and adding to fit one’s own research interest. And still, Gieseking (2013: 720) remarks that “It is essential to listen to each participant’s own analysis” given the author discovered insight largely through the participant’s revelations while they created the maps. In addition, the shortcomings of traditional aggregation can be overcome in part by other analytical techniques, including review of free-written responses (e.g., Giaccardi and

Fogli 2008), measures of "cartographic competence" (e.g., Matthews 1983: 90-91), and documentation of the methods (Downs and Stea 1977, Powell 2010) or the technical components (e.g., labels, colors, and symbols) (Campos-Delgado 2017) of a representation.

Thus, in all, groundings from emotion science and geography/cartography integrate with the expressive realm of the artist and the psychologist (art therapy and counseling) to offer companion perspectives for cartographers to insightfully consider emotion.

CHAPTER 3: METHODS

3.1 Case Study

I conducted a three-day Mapping Workshop with adolescents at the Bridge Lakepoint Waunona Neighborhood Center (hereafter referred to as the **BLW Center**) in the City of Madison, WI (USA). Relative to other Madison communities, the BLW neighborhood is isolated geographically and underserved by the city. The shores of Lake Monona form its northern and western borders, enclosed to the south by a major byway, and to the east by an outlet forming the border with the City of Monona (Figures 3.1 and 3.2). Million dollar properties line the lakeshore, juxtaposed against modest mid- and low-income housing that supports a higher percentage of non-white residents than most neighborhoods in Madison. The neighborhood is a food swamp, with its only services a gas station and fast food options and the nearest grocer—a Walmart—across the busy byway overpass. Residents wait at bench-less bus stops for sparse service, reducing access to other neighborhoods.

The University of Wisconsin Applied Population Lab (APL) Madison Neighborhood Indicators Project (https://madison.apl.wisc.edu/) paints a picture with data from the 2010 Federal Census, Madison Metropolitan School District, and other sources with which to compare demographics across the various Madison Neighborhood Associations and Plan Districts. In 2010, 63 percent of the BLW Neighborhood population identified as White, just under 14 percent Black or African American, just over 4 percent Asian, and just under 3 percent Other Races or Multiracial, with just over 16 percent Hispanic or Latino. The most recent census data available are the American Community Survey 5-year estimates (separate

from the APL website), which estimate that in 2017 just under 78 percent of the population identified as White, 12 percent Black or African American, 1 percent Asian, and just over 9 percent Other Races or Multiracial, with just under 10 percent Hispanic or Latino—indications that the Neighborhood remains among the south and north-side neighborhoods where racial and ethnic diversity is concentrated alongside female-headed households, poverty, and indicators of disadvantage. The isthmus splits these areas, with higher concentrations of Caucasian individuals, college students, and government/other professionals. Of the 62 Madison Plan Districts, not only is the BLW Neighborhood the fourth rated in the most Economically Disadvantaged Students (e.g. it falls well within Federal poverty guidelines), at 84.7 percent, this figure has been steadily climbing (in 2008, the figure was 72.7 percent). The BLW Center primarily serves individuals and families of mixed racial and ethnic backgrounds as well as economic disadvantage.

The BLW Center was established in the 1980s during the formation of the last (and most recent) neighborhood plan. At the time, a ‘temporary’ location was established that split BLW between outdated apartment buildings (Figure 3.3). The main building shares a small parking lot with the upstairs resident neighbors, as a few apartments remain in the facility. The Youth Program building sits across the street from the primary center location. The BLW Center’s extensive programming is stressed further in its service to the Owl Creek neighborhood, a remote location in the City of Madison disconnected from bus routes. Waitlists for the programs grow long as the community's pleas for a new center have been ignored for three decades.

Despite the lack of resource investment from the City of Madison, the BLW Center plays an essential role in filling many of the needs of the neighborhood as the only polling place, food bank, community meal provider, library, and resource center. Most importantly, the BLW Center serves the neighborhood as a child, adolescent, and adult educational center. Despite this systematic disparity, the perseverance and commitment of an inspiring staff and community has fueled the success of the BLW Center and bolstered its place as one of hope toward a better future. For example, through their participation in the Latino Academy of Workforce Development currently housed in the BLW Center, a total of 53 Latino adults obtained employment and 125 participants obtained a technical skills certification. Through the adult educational programs, 73 adults are on track to receive their GED and 25 have successfully enrolled into technical programs at Madison College. Through the youth programs, 70 percent of the middle and high school students that participated in the college preparatory program either boosted or maintained a GPA of 3.0 or higher (http://www.blwcenter.org/about.html, accessed May 30, 2019). Figure 3.4 illustrates the floorplan of the BLW Youth Center, making visual their rich usage of limited space.

Figure 3.1 Locations of the BLW Center within its neighborhood (the dark blue polygon on the map) and the Owl Creek community (to the east, in blue) in Madison, WI (the cross-hatch textured polygon).

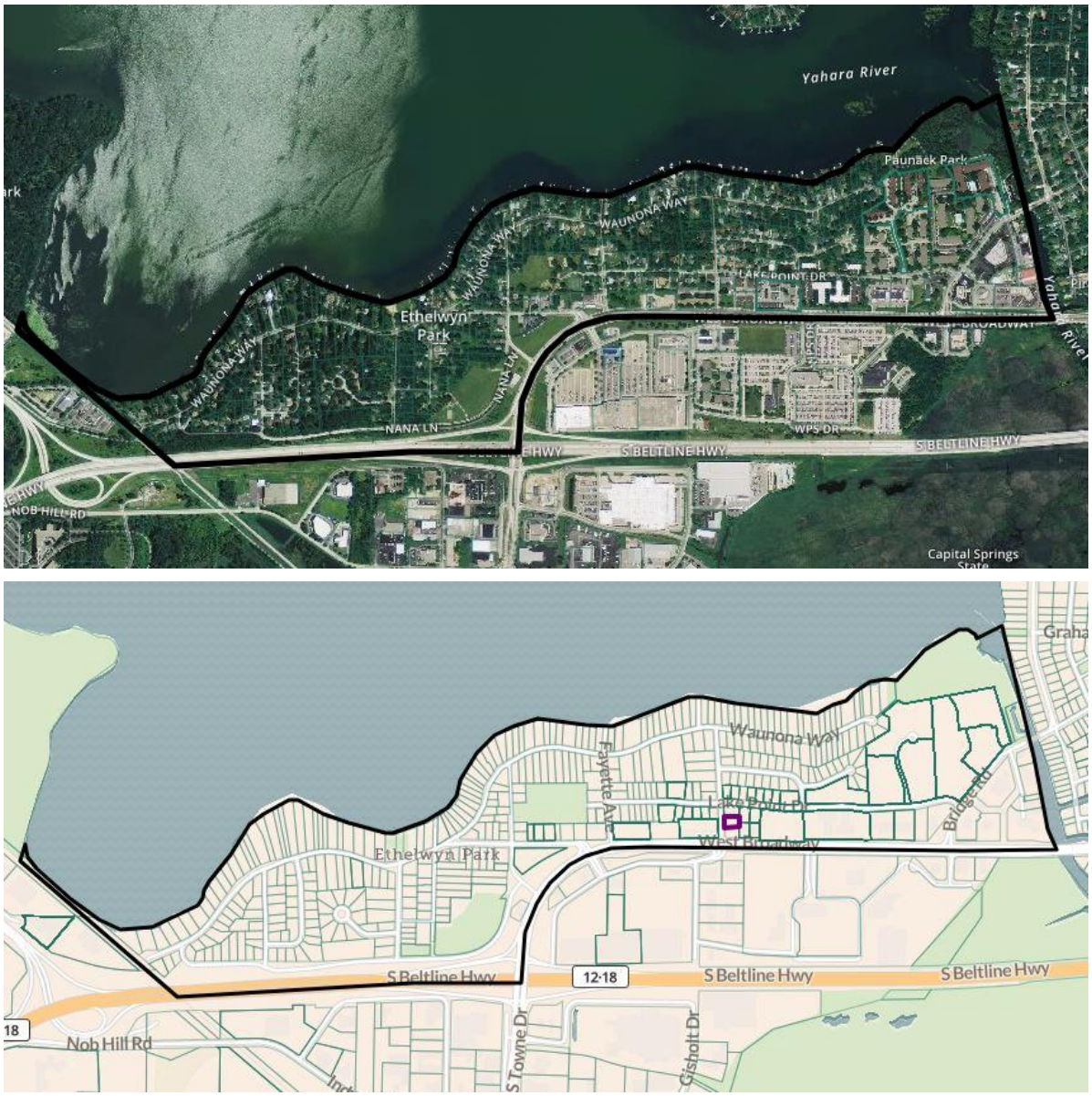

Figure 3.2 Satellite image of the BLW Neighborhood (top) and map of the property boundaries (bottom). The location of the BLW Center's main building is indicated by the purple stroke.

Figure 3.3 The BLW Center's main building (top) consists of the converted first floor space that sits below occupied apartments. The apartment residents and the BLW Center share a 10-car parking lot and a small playground. Across the street sits the BLW Youth Center (bottom), which occupies the full 2-story apartment building with basement, 3-car parking lot in the rear, and small play yard.

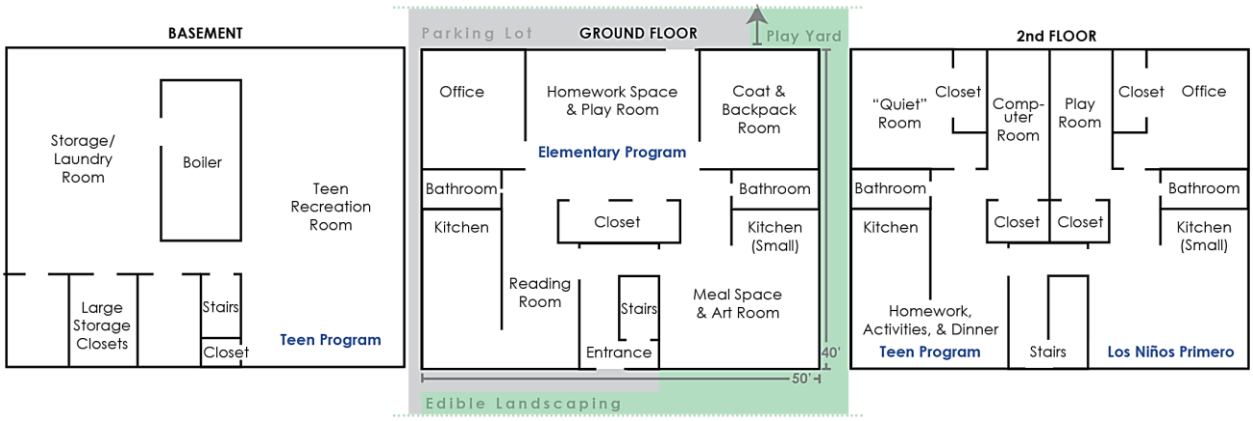

Figure 3.4 The BLW Youth Center program building uses every inch of its 2000 ft^2, 3-story floor plan for 3 regular programs—the Elementary Program, the Teen Program, and Los Niños Primeros—as well as nightly childcare service for parents who participate in the BLW Center's main building adult educational programs.

In 2016, a proposed housing development reignited conversations between the BLW community and the City of Madison, presenting the case for a new center under the careful direction of the BLW Center volunteer staff and neighborhood residents. Maps played a major role in the argument for a new center. In March 2017, the University of Wisconsin Cartography Lab hosted its third annual Design Challenge in partnership with BLW neighborhood stakeholders and volunteer staff from the Center. The **Design Challenge** is a day-long volunteer Mapping Workshop that focuses on the process of transforming (more traditional conceptions and paths of inquiry around) data into unique, context-rich visual stories (see Moore et al. 2017, which describes the First Annual Design Challenge). The objective of the 2017 Design Challenge was to generate spatial and visual arguments that: (a) depict the uneven distribution of services across the City of Madison to identify all underserved neighborhoods (not just BLW) and (b) make a special and accurate case for the new BLW Center to policymakers and potential funders alike. The BLW Center staff and the

neighborhood continue dialog with the City of Madison and maintain fundraising efforts, bringing new hope and opportunity to this relatively neglected and isolated corner of Madison.

My involvement with the BLW Center began with preparation for the 2017 Design Challenge, as I served as the Project Assistant to the University of Wisconsin Cartography Lab (https://geography.wisc.edu/cartography/) at the time, and continues through regular volunteering in child and adolescent programming following the event. With permission and support from BLW Center staff, I designed a **Mapping Workshop** to supplement the adolescent afterschool programming. The BLW Center is a quasi-educational, quasi-recreational setting and, though more real than a laboratory setting, it is not necessarily a natural place where teenagers would interact closely with maps. The majority of the teens in the Middle School Program *choose* to attend the program, which indicates an experience with the BLW Center that is more positive than alternatives such as home, school programming, sports, etc. Thus, the BLW Center was a reasonable case study location for the Mapping Workshop.

I conducted the Mapping Workshop over three consecutive days for four hours a day. I chose this timeline as an extension of the regular BLW Youth Center programming hours, which serves participants Monday through Friday directly after school until 7pm. This research provides a timely opportunity for members of the BLW teen community to explore and express how they feel about place in general, learning to see maps as embedded with meaning and power so they ultimately can make spatial arguments on their own.

My goal towards a "re-visioned ethnographic practice" (Katz 1992: 500) required an awareness of the context, of the daily lives—social, emotional, etc.—of the youth: *What is their reality and how does it feel?* Given concepts from child geography introduced in Chapter 1, I needed to get to know the youth personally by "hanging out". This preparatory work informed how I should prepare for the workshop pedagogically. I volunteered with the Middle School Program (hereafter—and popularly—referred to as the **Teen Program**) from October 2017 into May 2018, which serves adolescents in the sixth through eighth grade. This programming is particularly crucial, given the consistently poor (and ever decreasing) performance ratings of the local schools, as shown in Figure 3.5 (School Performance Measures). During this time, I also volunteered with the Elementary Program to get a sense of the BLW Center's priorities and overall program styling, and with the staff to create maps for the Center's development.

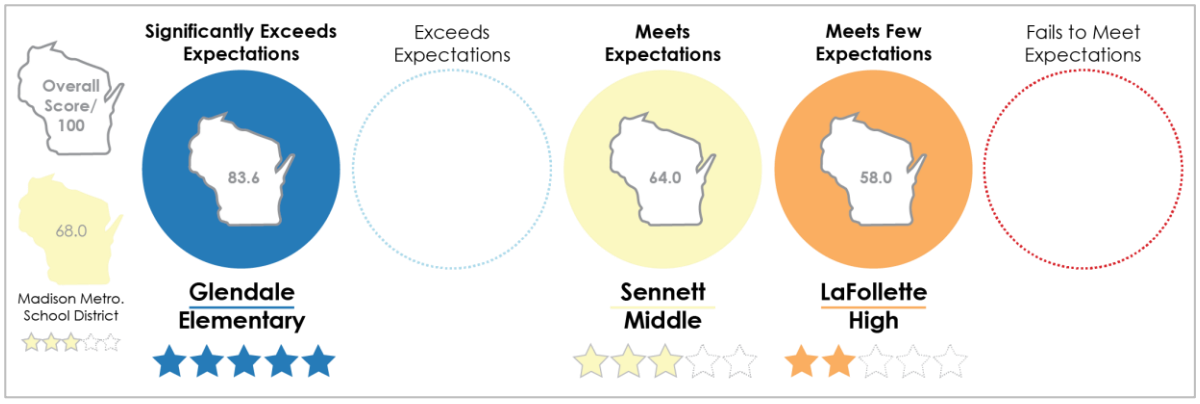

Figure 3.5 Educational quality drops as participants move up through grades at designated public schools.

Teens in the BLW neighborhood are served by Sennett Middle School, which is designated among the "highest poverty schools" in the state. The school's self-purported

goal is to be a “working model of technology”, to help participants develop skills that “are used across the curriculum for activities in locating information and developing charts, *maps*, graphs, research papers or multimedia presentations using a variety of technologies” (my emphasis) (https://sennett.madison.k12.wi.us/about, accessed February 10, 2019). Unfortunately, the BLW Center currently cannot support a high school program, arguably where the need is greatest given the school performance ratings and in a state where high school participants have experienced statistically significant increases in feelings of unsafety, hopelessness or sadness, and serious considerations of suicide (Summary Report: 2017 Wisconsin Youth Risk Behavior Survey: 15). A high school program has been delayed until a new center is built, further adding to the urgency.

BLW’s Teen Program offers consistent and quality programming, including daily tutoring, college exploration, community service, meals, transportation, and fitness activities. An especially notable quality of the programming is its culture of **flexibility**: participants are free to attend part or all of the week’s activities according to each family’s particular needs, which can vary day by day, and many neighborhood families have children enrolled in both the Elementary and Teen programs. This holistic approach is special and supports the full needs of families in the community.

Over these 13 months, I began to envision my role in the workshop as a co-discoverer rather than as an authority figure, in keeping consistent with my presence over that time and in following the Teen Program leader’s example. I also gleaned that variability among activities would be vital to keeping participants engaged and in establishing the environment distinct from a school-like atmosphere, for which the participants had particular disdain.

Finally, through this deep contact, I was able to gauge experience and feelings towards maps and mapping in conversation well before the workshop.

3.2 Participants

Five participants (hereafter referred to as Participants A – E) of ten total adolescents in the Teen Program elected to participate in the Mapping Workshop. Inclusionary factors for the workshop required participants to be enrolled in the Teen Program at the BLW Center, therefore middle school participants (grades 7-8, ages 12-14) and fluent in English.

Over time, character profiles emerged for each of the individuals: Participant A is regarded as an informal leader among the group, with a reserved general attitude, most often engaged, though proudly announces verbal dissent and assent whenever feeling the need (i.e., free-thinking), and is constantly drawing. Participant B is active physically, even rambunctious (especially with Participant C), but participates with enthusiasm when focused. Participant C also is highly active (again, usually with Participant B) and excited to participate, although more stubborn about ideas and more resistant to outside input (which at times was a positive, not giving into pressure). Participant D is self-driven, open, concentrated, engaged, and slightly excluded from the others, sometimes the victim of taunts by the Participants B and C, though able to speak up for themself. Participant E was the most reserved, difficult to read or predict how they were feeling, often fatigued, quiet but when verbal would influence others, and though not intrinsically motivated to participate still concentrated on each activity with thoughtful contributions when prompted. These character profiles were helpful in assessing the emotional observations and reports, especially given

characteristic differences in both physical and verbal signals of emotional experience (see Section 2.1).

3.3 Workshop Procedure and Materials

For the purposes of this research, I limited my treatment of art therapy to the conception of an "art-based therapeutic intervention" (Edwards 2014, 6), alternatively referred to as "expressive arts interventions" (Degges-White et al. 2014, 6) or ***creative arts*** in counseling texts. These differ from formal art therapy in that sessions conducted within a professional therapeutic relationship. School counselors and others often borrow or hybridize activities developed by art therapists to gain similar results in their interactions with participants (such as Degges-White et al. 2014), and thus I paired psychological considerations of art therapy with insights from arts counselors, educators, and cartographers. In (re)forming a "maker space" through instructional and environmental design, I was focused on offering a creative experience that was: (a) novel, unlike school, (b) empowering, and (3) affective.

In assessing when it is appropriate to teach mapping and at what level of complexity, I adopted a combination of two frameworks (Sobel 1998 and Golledge et al. 2008). Given that the case study participants had relatively little experience with a mapmaking curriculum overall, I addressed primary concepts before advancing to the intermediate or advanced topics, as coordinated with their ages and grade levels.

Post-representational cartography has its own important implications on how to approach the teaching of maps. Student processual learning of map-making concepts should

follow the natural progression of their affective experiences of the world:

> In the beginning, children's maps represent their experiences of beauty, secrecy, adventure, and comfort. With these affective endeavors as a foundation, I then gradually start to focus on scale, location, direction, and geographic relationships. The development of emotional bonds and cognitive skills needs to go hand in hand … (Sobel 1998; abstract)

I emphasized hands-on activities with a balance between art and mapping, separating map lessons from the creative exercises (following Trifonoff 1999). I also encouraged participants to create map presentations through competitive events (ibid), as the importance of playful competition was reinforced through my own observations with the participants. To provide learning breaks, avoiding the Mapping Workshop to feel like school, I included creative (non-map) Ice Breaker activities and improvised break activities when participants seemed exceedingly unfocused. Spontaneous activities reinvigorated the sense of play, performativity, and fun, and these moments of humor also reminded participants that I was a co-participant in the activities. To this end, I also recruited a second UW research facilitator for the entirety of the Mapping Workshop so that I could remain engaged during the Mapping Workshop while still capturing observations.

A final challenge was establishing balance between the natural setting in which the participants were intrinsically motivated in a "collective ethos of production" (Perkins and Dodge 2009: no pagination) and the formal mapping lessons needed as "antecedents of creativity" (Shalley 2004: 953). The BLW Center does not offer formal lessons, and thus I designed the mapping activities as comfortable and self-chosen expressions under a flexible structure that encourages participant input. To this end, I allowed participants to sit and work

wherever they liked, as it did not impede negatively on other participant's experience.

Procedure

I negotiated the workshop schedule with BLW Teen Programming leaders, ensuring it included the 45 minutes of homework time, snacks/dinner, and transportation home that the BLW Center guarantees. The Mapping Workshop was semi-structured: I set a general agenda each day, but was flexible according to the needs and preferences of participants to allow for a creative, imaginative, and participatory process. Each day had a different overarching theme with coordinated goals. Figure 3.6 presents the regular BLW Teen schedule alongside the general Mapping Workshop schedule, as detailed below.

Mapping Workshop General Daily Schedule		BLW Regular Daily Schedule	
3:00-4:00pm	Arrival & Snack Emotion Survey 1 Homework Time	3:00-3:15pm 3:15-4:00pm	Arrival & Snack Homework Time
4:00-5:00pm	Material Selection & Ice Breaker Emotion Survey 2 & then Dinner	4:00-5:00pm	Free Choice
5:00-6:15pm	Map Lesson Mapping Warm-Up & Mapping Exercise	5:00-5:30pm 5:30-6:30pm	Dinner & Group Meeting Group Activity
6:15-6:30pm	Emotion Survey 3		
6:30-7:00pm	Finish Up: Clean Up, Eat Dessert, & Go Home	6:30-7:00pm	Finish Up

Figure 3.6 The Mapping Workshop planned schedule was more structured with defined activities compared to regular daily scheduling, but included the Teen Program's required hallmarks and general flexibility.

- **3:00-4:00pm:** Participants arrived by bus directly following the end of the school day. During snack-time, I greeted participants and directed them to complete the first Emotion Survey. The **Emotion Survey** comprised the aforementioned PANAS-X and

BMIS overall mood scores as well as a free response question, and was distributed strategically at three points during each day. The first emotion survey (**Emotion Survey 1**) provided a baseline of affective experiences before arrival at the BLW Center. Participants then had **Homework Time**, during which the Teen Program leaders and I worked to help participants with their assignments.

- **4:00-4:20pm:** Following homework time, I gathered participants for the Mapping Workshop. I first directed participants to explore the material table and choose from the selection of offerings. Participants then completed an **Ice Breaker**, which I designed as creative art-based and non-mapping exercises that introduce concepts later covered in the Map Lesson, with an emphasis on the benefits of play (e.g., Katz 2013) and competition (e.g., Trifonoff 1999).
- **4:20-5:00pm:** I administered **Emotion Survey 2** after the Ice Breaker activity and before the lesson content, making it possible to tease out the affective consequences of non-map creativity. The dinner break followed Emotion Survey 2.
- **5:00-6:15pm:** The mapping content followed dinner. I began with a **Map Lesson** that provided instructional material about a fundamental mapping concept. I limited the Map Lesson to 20-minutes to avoid a pedantic atmosphere and to mitigate fatigue. The Map Lesson was followed by a **Mapping Warm-Up** designed to prompt creativity and get students working with the physical materials again while introducing application of the language and concepts from the Map Lesson. The Mapping Warm-Up then was followed by the **Mapping Exercise**, which was the culminating 30-minute activity encouraging participants to integrate everything

discussed and practiced beforehand, with the available selection of materials, into the final formative mapping experience of the day. The Map Lesson, Mapping Warm-Up, and Mapping Exercise were themed by day and were cumulative conceptually across the workshop. I photographed the maps and artwork at this time to capture a visual artifact of the activities, allowing participants to keep their original artwork.

- **6:15-6:30pm:** The mapping context was followed by **Emotion Survey 3**, the primary indicator of the emotional experience participants had with the mapping activities.
- **6:30-7:00pm:** Upon completion of the third and final emotion survey, steps for ending the day began: chores that involve preparing the 2nd floor Teen Space for use by Los Niños Primeros the next morning, enjoying dessert, and either awaiting pick-up from the BLW Center or loading into the Center's van to be dropped off at home by the Teen Program Staff. Depending on their daily needs, teens would leave at various times during this period.

In addition to the consistent daily schedule, I administered a short survey before and after the Mapping Workshop, described as the **Pre-Workshop Survey** and **Post-Workshop Survey** (refer again to section 3.2). The surveys included: prior experience with maps (Kwan 1999), general self-perception, creative activity preferences, and motivation for attending the BLW Center in general and the Mapping Workshop specifically. Figure 3.7 describes the Pre- and Post-Workshop Surveys.

Pre-Workshop Survey Questions	Post-Workshop Survey Questions
Experience with Maps Have you ever made a map before? How do you feel about maps? Do you use maps often? If so, for what? Would you choose to make a map at home or in your free time? If so, what would your map show? (What would you include on it?)	**Experience with Maps** How do you feel about maps? Will you use maps more often now? If so, for what? Would you choose to make a map again at home or in your free time? If so, what would your map show? (What would you include on it?)
Self-perception Would you consider yourself an artist? Do you think your ideas, opinions, and perspective matter/are important to others?	**Self-perception** Would you consider yourself an artist? Do you think your ideas, opinions, and perspective matter/are important to others?
Preferences Do you like to participate in creative/art activities? What kinds? Do you prefer to write/speak in Spanish or English?	**Preferences** Do you like to participate in creative/art activities? What kinds? Making maps? Others? (Anything new from this Workshop you hadn't tried before?)
Motivation Why do you come to BLW? Why did you choose to participate in Map Club?	

Figure 3.7 The Pre- and Post- Surveys used to measure change over the entire workshop.

Materials

I employed art techniques (e.g., free drawing, coloring, and doodling) in coordination with mental sketch mapping techniques (e.g., free sketching, annotating, layering, and overwriting) in workshop activities following the ETC material considerations recommendations described in Section 2.2 (Figure 2.3): Day 1 materials coordinating with P/A level, Day 2 with the addition of K/S materials to the P/A materials, and Day 3 provided both with the addition of white paint markers and professional-quality Micron pens. Together, these levels support relaxation, expression and identification of feelings, improvement of social understanding, awareness of cause and effect, and narrative creation. I excluded the C/Sy level given that the social/emotional goals of that particular stage do not

coordinate with the goals of this workshop, as well as the limited timeline making art processes requiring two or more steps infeasible. I made a diverse collection of fluid and semi-resistive media and material available within these levels, varying in color, texture (material feel), shape, and size in accordance with art therapy recommendations, and I allowed participants to choose the specific materials/media within these levels that best fit their in-the-moment emotional needs. Aside from the materials noted in the figure, a large array of different papers, cardboard, weighted card stock, wood, etc. were available to participants for use. Figure 3.8 presents the material guidelines per exercise per day.

	Day 1 – Map Basics	**Day 2 – Mapping Meaning**	**Day 3 – The Power of Mapping**
Materials	***Perceptual/Affective (P/A)***	***Kinesthetic/Sensory (K/S) & P/A***	***K/S & P/A +***
	Tempera paint Regular paint brushes Fine & ultra fine felt pens Uniball pens Calligraphy pens Ballpoint pens Markers Crayons Colored pencils	Finger paint Watercolors Tempera paint sticks Paint dobbers Special paint brushes	White paint pens White paint sticks Micron art pens
colors ***limits*** ***complexity***	*Multi-colored* *Sharable quantities of multiple packs of pens, individuals quantities of everything else* *Low complexity (few steps, free choice of materials)*		
Ice Breaker	1x1" & 5x5" white printer paper sheets (free-drawing, unstructured)	*Complete material choice* (free-drawing, unstructured)	*Complete material choice* (free-drawing, unstructured)
Map Lesson	Globe ball & oranges	Day 1 review sheet (Appendix _)	A wide selection of diverse map/map art examples
Mapping Warm-Up	Blank coloring sheet (doodling, semi-structured)	Polygon outline provided on white parchment tracing sheet 9x12" (doodling, semi -structured) (annotating, layering)	Three 9x12" tracing sheets with the building footprint outlines by floor (doodling, semi-structured) (annotating, layering)
Mapping Exercise	Blank "worksheet" on 17x24" heavy weighted white plotter roll paper (doodling, semi-structured) (annotating)	Basic Madison reference basemap to use & remove (free-drawing, unstructured) (annotating)	Dark and circular reference basemaps of Madison at different scales and sizes (city, mid-city, and neighborhood) 11x11", 17x17", 34x34" (annotating, structured to doodling, semi-structured to free-drawing, unstructured)

Figure 3.8 Materials offered and utilized per themed day.

3.4 Day 1 – Map Basics

The Day 1 schedule (Figure 3.9) varied from the General Daily Schedule in that it included the **Affective Qualities of the Environment Survey** (Huang et al. 2014, following the suggestion of Russell 2003). The survey consisted of 7-point Likert scales regarding participant feelings about their environment (specifically the BLW Youth Center teen spaces) as a baseline to better understand their emotional relationship with the space. The survey typically also includes questions about perceived safety, but I removed these to avoid potential concerns of public misrepresentation of the BLW Center as unsafe.

Day 1 (Map Basics) Schedule

* *Unanticipated Activity*

3:00-4:00pm	Arrival & Snack Emotion Survey 1 & Affective Qualities of the Environment Survey Pre-Workshop Survey 1 Homework Time
4:00-5:00pm	* *Animal Game* Material Selection (P/A materials) Ice Breaker (Scale Character Draw) Emotion Survey 2 Dinner
5:00-6:15pm	Map Lesson (Basic Map Concepts) Mapping Warm-Up (Coloring Sheet to Map) Mapping Exercise (Single Day Route Mapping)
6:15-6:30pm	Emotion Survey 3
6:30-7:00pm	Finish Up: Clean Up, Eat Dessert, & Go Home

Figure 3.9 A descriptive schedule of the Mapping Workshop Day 1, including an unanticipated activity in response to the participants' of-the-moment apparent need for a physical activity.

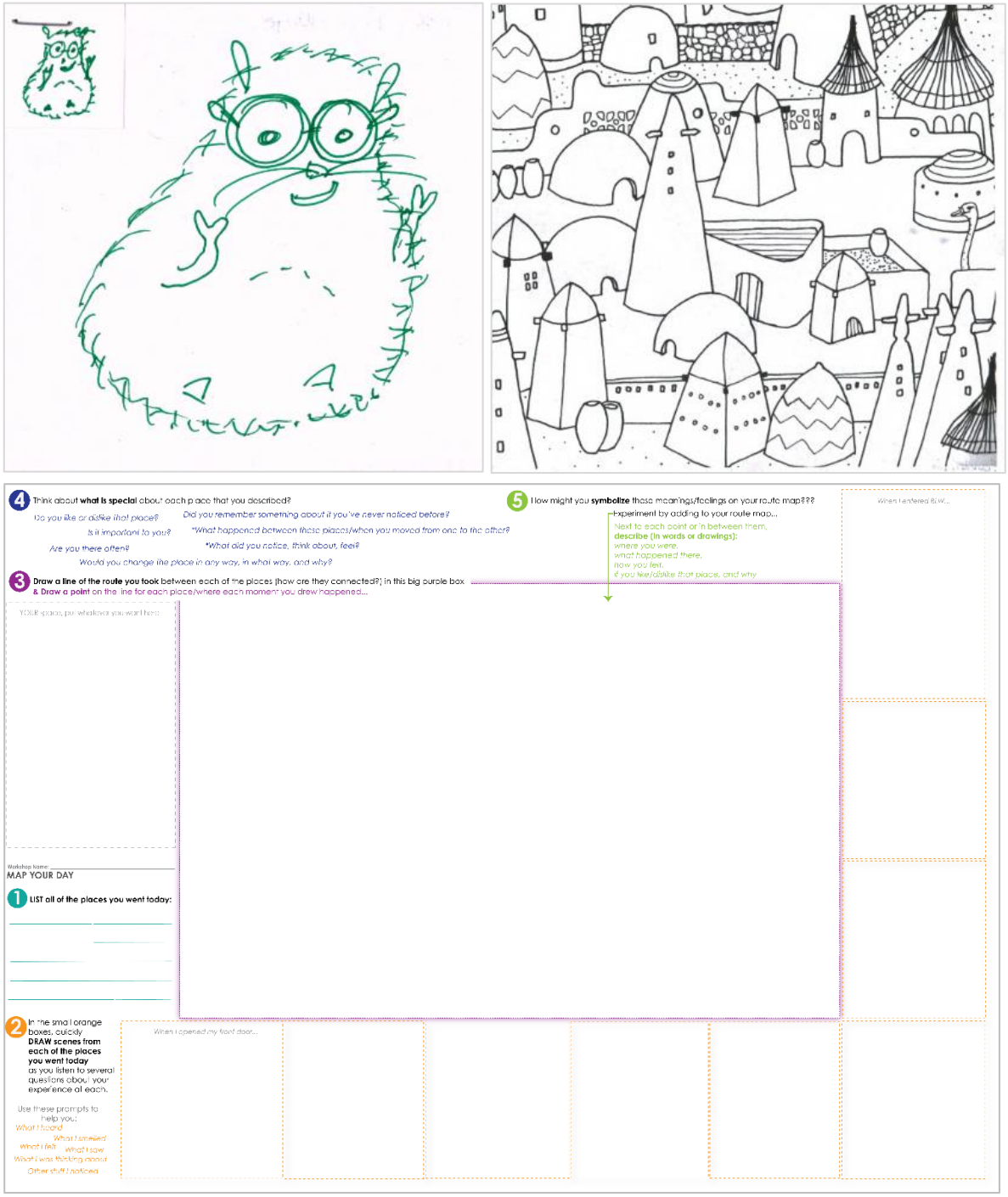

Figure 3.10 Day 1 Ice Breaker activity (top-left), Mapping Warm-Up (top-right), and Mapping Exercise Worksheet (bottom).

Day 1 focused on the map basics, exploring "What are maps?" by introducing the concepts of scale, generalization, projections, and symbolization. The Map Lesson focused on the following instructional questions: *What does your map of the world look like?* and *Why?* The goal of Day 1 was to get participants to think about these questions by drawing maps and related graphics in an open and exploratory way. Figure 3.10 depicts examples and materials from the Day 1 Ice Breaker, Warm-Up, and Mapping Exercise.

I began the Day 1 Ice Breaker by asking participants to establish how they would like to represent themselves throughout the workshop. They began by choosing a character name, in response to the following prompt (modified from Dr. Lynda Barry's comic course, original accessible at http://out.easycounter.com/external/thenearsightedmonkey.tumblr.com): *If you could give yourself any fun, silly name, what would it be? Choose a name you'd like to use during this workshop. It can be anything other than your real name. You may be as creative as you like*. Participants continued by drawing their character at two different scales: first on a 4x4" and then a 1x1" white printer sheet. With three minutes for each drawing, they were asked to: *Retain only the essential details, those which make your character your unique character*. This exercise addresses the concepts of scale, generalization, and symbolization without directly referring to maps.

Following dinner, I began the Day 1 Map Lesson with a review on scale and generalization from the Ice Breaker exercise and a discussion of projections using a participatory exercise in which participants sliced a plastic pool globe ball and unpeeling oranges to illustrate projection distortions and the control the cartographer has over managing

these distortions. I integrated age-relatable content as often as possible, such as using Emoji's to describe symbolization. I continued the lesson by discussing with how maps can tell parts of stories or communicate specific experiences.

The Day 1 Mapping Warm-Up required participants to transform a coloring sheet into a map, integrating the previously covered map concepts (including essential map elements) with the creative use of familiar and accessible art materials. While coloring, I gave prompts such as: *If you were to turn this coloring sheet into a map… how might you do it? What story can/would you like this image tell? How might maps help to tell stories or parts of stories?* I intentionally chose a non-planimetric point of view that is more accessible to participants and potentially beneficial for cartographic practice in the long-run (Sobel 1999).

I asked participants in the Day 1 Mapping Exercise to map a story of a single day in their life using qualitative symbols of their bodies and free sketching of the map. I began the Day 1 Mapping Exercise began by making a list of all the things participants had done that day and where they had taken place, and continued with framing in small multiples each of those places. Once participants illustrated their small multiple frames, they then connected their route with a map flow line, with sketches and annotations integrated, at the center of the page.

3.5 Day 2 – Mapping Meaning and Meaningful Maps

The Day 2 schedule (Figure 3.11) was themed around visibility and invisibility with a focus on "Mapping Meaning", or exploring: *What do maps do, why do they matter, and how can they matter personally?* The goal of Day 2 was to ease participants into creating their

own meaningful maps by providing a situating context to work from while breaking them free of the constraints of fully pre-developed basemaps (following notes in Section 2.3). Figure 3.12 depicts materials from the Day 2 Warm-Up and Mapping Exercise.

Day 2 (Mapping Meaning) Schedule

* *Altered in response to Day 1 insights*

3:00-4:00pm	Arrival & Snack Emotion Survey 1 Homework Time
4:00-5:00pm	Material Selection (K/S materials) Ice Breaker (Quick Character Draw) Emotion Survey 2 Dinner
5:00-6:15pm	Map Lesson (How Maps Can Matter) * Mapping Warm-Up (*Fortnite* Mapping) Mapping Exercise (Constellation Mapping)
6:15-6:30pm	Emotion Survey 3
6:30-7:00pm	Finish Up: Clean Up, Eat Dessert, & Go Home

Figure 3.11 A descriptive schedule of the Mapping Workshop Day 2, including alterations to the planned protocol in response to the participants' feedback and insights derived from Day 1.

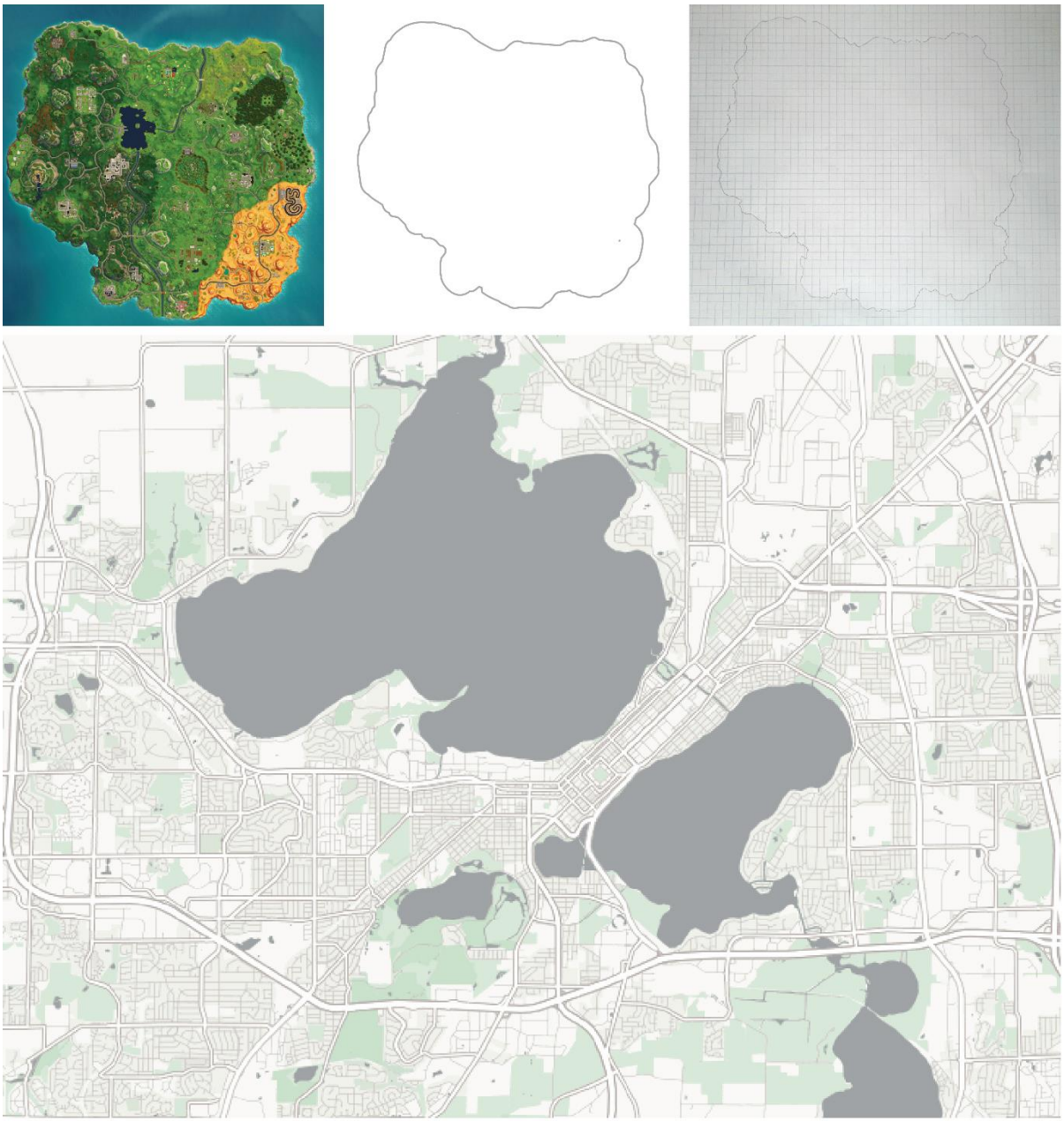

Figure 3.12 Day 2 Fortnite Warm-Up Activity (top) and Mapping Exercise (bottom) templates.

In the Day 2 Ice Breaker, I directed participants to pick from a list of items that we created cooperatively and then to draw that item 6 times at increasingly faster time intervals:

60, 45, 30, 20, 10, and 5 seconds respectively. This activity mimicked the frequent need for cartographers to capture the essential qualities of an object quickly, introducing time as a consideration in cartography, especially when working on meaningful projects with affective (and other) consequences, such as Map Kibera. For external audiences, such as maps produced in response to news events, time is a primary constraint on process with large consequences on the experience of the process of design of the map. The focus is the product. For the self, the timeliness of mapping is essential in capturing experiences, especially the embedding of of-the-moment emotions, whether consciously realized or not, into the map. The cartographer's emotions at the time of mapping certainly inform both the process and product of mapping. In this way, mapping could potentially allow for the initial representation of emotions if captured while the event is occurring rather than iterations and re-iterations of emotions that happen upon reflecting upon an incident or a general period (such as in art therapy sessions), e.g., how one is feeling in-the-moment versus how one feels about-the-moment (and, adding complexity, mixed with how they are feeling during the art therapy session itself). Whether the focus is the production of a map or the process of mapping, time is an essential element to be considered.

Day 2 continued with the Map Lesson, with prompts beginning: *Why do maps matter? Why should they matter to you?* And then continuing into *Are you on the map? Which map(s)? If you are mapped, how are you (re)presented?* versus *How would you choose to represent yourself* (extended from Day 1 topics)*?* I began by introducing the Map Kibera Project, which began in 2009 as a community-driven project led by local youth that worked to draw Kibera—a resilient and populous community dismissively referred to by

many as a “slum”, in Nairobi, Kenya—onto a free and open digital map platform where, until then, only a blank spot on other platforms like Google Maps had ignored, hidden, or dismissed the community’s existence, thereby rendering it largely invisible to the world. This example was used to convey how important maps can be and, even more so, how empowering and important the process of mapping is, given that placing ourselves on maps (and thereby choosing how we are represented as individuals and communities) renders us more authentically visible to the world. Notably, the foundation of the Map Kibera project were hand-drawn map surveys of the various areas, with Project participants (community youth and others) walking around with basemaps, asking questions of residents of the communities and marking observations, thereby acquiring local knowledges of affective geographies. It was only later that the information was digitized, a wholly separate step with markedly different value. The initial hand-drawn collection and representation mapping process held value for the community involving but far beyond the production of a final map product aimed at a global audience, e.g., immense value for the self: empowering the expression of themselves and others, encouraging sharing and understanding within the community (empathy), engaging with daily affective geographies in a visual way, and specifically non-verbally documenting and integrating how community members felt about particular areas and Kibera overall (in contrast to external perceptions of it as either non-existent or simply a part of a “slum”) (more information can be found at http://www.mapkibera.org/). Thus, this fitting example was shared with the teen participants of this Mapping Workshop through a short video and a discussion period during the Map Lesson.

The Day 2 Mapping Warm-Up and Mapping Exercise bridged considerations between affective digital (the Mapping Warm-Up using *Fortnite*) and real (the Mapping Exercise using Madison) geographies. In both activities, participants were encouraged to pinpoint meaningful locations in their lives on a basemap. They were asked to**:** *Take a hole punch, and punch out all the spots/places that have meaning for you on this map. Then, lay the paper over another sheet of paper, and color in the circles. Remove the top map. Now, connect the dots in a way that is meaningful to you. This is your constellation map*. I encouraged participants to add points using a series of prompts concerning place and meaning, borrowed from the Parish Maps project (www.commonground.org.uk/places-people-parish-maps-%e2%80%a8by-sue-clifford/, accessed June 1, 2018), asking to connect these places in any way they would like and to annotate what each place meant or felt like to them. This primary exercise employed the layering approach from mental sketch mapping (see Section 2.3).

3.6 Workshop Day 3 – The Power of Mapping: Re-creating place by Re-Mapping place

The Day 3 schedule (Figure 3.13) extended the visibility/invisibility content of Day 2 by focusing on vision and envisioning. This theme was meant to transition from how essential sight is, not only in being seen/visible to and attended to by the world, to how essential it is to extend that to an imaginative envisioning of possible futures. Figure 3.14

depicts materials from the Day 2 Warm-Up and Mapping Exercise.

Day 3 (The Power of Mapping) Schedule

* *Altered in response to Day 2 insights*

3:00-4:00pm	Arrival & Snack Emotion Survey 1 Homework Time
4:00-5:00pm	Material Selection (P/A & K/S materials) Ice Breaker (Blind Draw) * Mapping Warm-Up (Re-Making BLW) Emotion Survey 2 Dinner
5:00-6:15pm	Map Lesson (Re-Making Place by Re-Mapping) Mapping Exercise (Re-Mapping Madison)
6:15-6:30pm	Emotion Survey 3
6:30-7:00pm	Finish Up: Clean Up, Eat Dessert, & Go Home

Figure 3.13 A descriptive schedule of the Mapping Workshop Day 3, including alterations to the planned protocol in response to the participants' feedback and insights derived from Days 1 and 2.

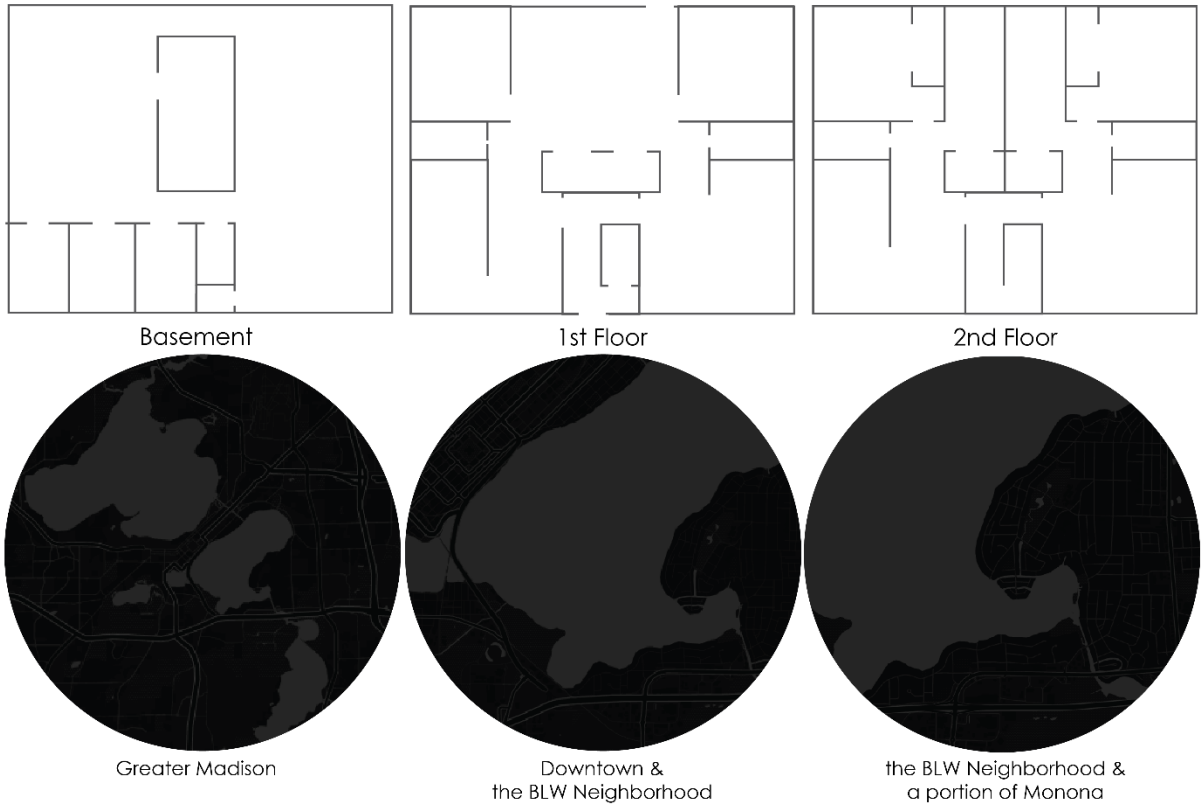

Figure 3.14 Day 3 Warm-Up Activity (top) and Mapping Exercise (bottom) templates.

For the third Ice Breaker activity, I directed participants in the following manner: *Today is all about vision and envisioning. I want you to close your eyes, and for two minutes to draw either a pirate on their birthday or a castle made of jello.* This activity (also borrowed from Lynda Barry, a comics professor at the University of Wisconsin-Madison) was meant to introduce participants to parting from perfection in executing specific forms or visions of things and rather, through feeling, to imagine and create new renditions of forms. Descriptive language was used in the prompt to incorporate movement and expression, rather than simple subjects (e.g., just a pirate or a castle). Thus began an introduction to responding to the call in cartography for more creative ways of mapping (see Section 2.2). The Map

Lesson of Day 3 focused less on introducing new content and more on developing the understandings of the preceding days' content, with a simple discussion on what had been learned overall about maps and with an introduction to a diverse array of creative examples of maps and map art. Participants were asked to: *Think about the diversity of maps. What can maps show? What surprises you? Did you know that maps could show these things?* The goal was to support the connection of all three days' worth of concepts in the participant's minds while simultaneously inspiring creative perspectives on maps and mapping (e.g., beyond just reference maps and into more artistic and thematic map examples, which are not often featured even in K12 curriculums that feature maps).

The Day 3 Warm-Up activity was moved from its typical slot following the Map Lesson to immediately following the Ice Breaker activity. I made this change to mitigate the fatigue signaled the previous two days. The Warm-Up activity required participants to recreate the BLW Youth Center floor-by-floor through doodling and annotation. In doing so, I asked participants to envision how the space would look if they had full authority and resources to remake it. Amidst planning for a new Center, this exercise was especially timely and offered participants another platform to express their voice and own affective geographies.

The Day 3 Mapping Exercise continued the idea of re-making place on a larger scale: an "overwriting" (Kitchin and Dodge 2007: 340) exercise where participants re-envisioned Madison by re-mapping it. Overwriting is a semi-structured exercise, in that a basemap is given but parts of it are replaced entirely by covering (typically less familiar) areas to create a

blank slot that could then be filled in with new visions for the area. I provided participants with basemaps at several scales (neighborhood local to city-wide) and asked them to use white pens to overlay their experiences in these spaces. This exercise provided a middle ground between prescribed, pre-situated mapping and intimidating free-sketch mapping, and uniquely moved from annotating or coloring to overwriting which then allowed for free-drawing. I posed questions about sight versus blindness: *What does this map show? What does it not show? Let's orient ourselves: where are we right now? Can you find your schools and your homes?* The goal was to empower participants to use mapping to begin artistically re-forming their own visions of Madison and local neighborhoods.

The workshop concluded on Thursday (Day 3) with the distribution of participation gifts, which the participants excitedly *chose* to be an assortment of new, individual sets of two types of pens that featured as the most popular of the workshop materials. A participation pizza and ice cream party occurred the following Tuesday, where I asked participants to complete the Post-Workshop and Feedback Surveys.

CHAPTER 4: RESULTS & DISCUSSION

In this chapter, I discuss the results from the Mapping Workshop held at the Bridge Lake Point Waunona (BLW) Neighborhood Center. Five sections follow: the first covers the Affective Qualities of the Environment Pre-Workshop Survey and the Background and Interest Pre-Workshop Survey; the second, third, and fourth cover each of the three workshop days with subsections describing each measure, activity, or observation; and the fifth discusses the results of the Post-Workshop and Feedback Surveys. Across all figures and tables, I use color hue to differentiate the five workshop participants: **Participant A**, **Participant B**, **Participant C**, **Participant D**, and **Participant E**.

4.1 Pre-Workshop Surveys

Affective Qualities of the Environment Survey

The objective of Affective Qualities of the Environment Survey is to capture a participant's feelings towards and within the Youth Center (and the BLW Teen Program in general) in order to discern the participants' general emotions towards the Center from their emotions towards the Mapping Workshop.

Figure 4.1 presents the results of the Affective Qualities of the Environment Pre-Workshop Survey. Participants reported without exception feeling at ease in the Youth Program building environment. All participants felt perfectly comfortable in the BLW Youth Program building (7/7), with most finding the space interesting (all rating 6/7) and reported feeling calm within the space (the majority rating 6/7, with Participant C rating 7/7). Together, these results reveal that the BLW Center is an affectively positive environment for the teens in which they feel relaxed, engaged, and noticed. This finding from the Pre-Survey was encouraging and supported what I had observed during my time volunteering with the

Teen Program: students enjoy the space, and even if they complain verbally at times about being bored or frustrated, they consistently return and re-engage. These baseline findings also indicate that any negative or extremely negative reports from participants concerning their experience in the space during the Mapping Workshop were associated with the workshop itself and not the BLW Center. The lowest rated (though still relatively high) scale from the survey assessed how attractive participants found their environment to be, with the reduced rating likely related to the age and datedness of the former apartment complexes holding the BLW Center buildings. This specific outcome supports the community's call for a new Center, as well as to reinforce the value in the Day 3 Ice Breaker part 2 activity.

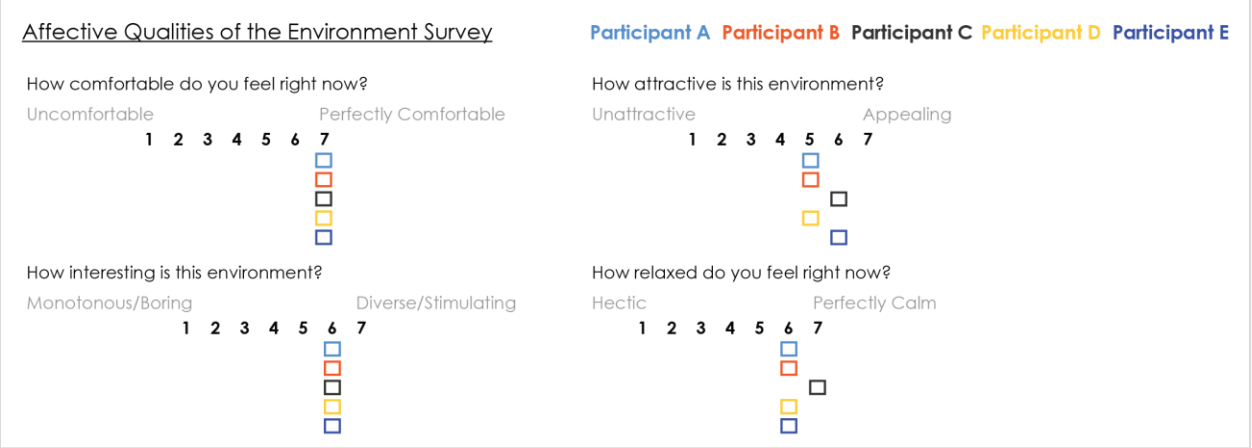

Figure 4.1 Results from the Affective Qualities of the Environment Survey covering how participants felt towards and within the BLW Youth Building, taken as a Pre-Workshop Survey.

Background and Interest Pre-Workshop Survey

The objective of the Pre-Workshop Survey is to capture preferences, experiences, and self-perceptions regarding mapping and other artistic processes.

Figure 4.2 presents the results of the Background and Interests Pre-Workshop Survey. Starting with preferences, four of the five participants indicated they liked to participate in creative/art activities (the fifth not responding), most commonly listing videogames (4/5). This response provided insight into what materials should be offered in the Mapping Workshop, as well as potential media (e.g., videogame interfaces) for future consideration. Given the cognitive sketch mapping focus, I did not consider digital media for this Mapping Workshop, and given the ETC focus levels (refer to Figure 2.3), I also did not consider sculptural materials (e.g., Legos, clay, and playdough). However, noting the diversity of their interests overall was informative and suggests possible future Mapping Workshop extensions spanning longer periods or with greater funding resources. Though all five of the participants are either fluent in or speak Spanish conversationally, everyone listed English as their preferred language, allowing me to offer materials and instruction in English only.

Participants also reported their reasons for coming to the BLW Center generally and the Mapping Workshop specifically. The most frequently identified reasons for attending the Teen Program were fun/playing and help with homework (3/5 participants each). The most common reason provided for participating in the Mapping Workshop was that “It seemed fun” (3/5).

Regarding map experience, 4/5 participants said that they had made maps before and 4/5 participants reported feeling positively about maps (the fifth indicated “unsure”). However, all five participants reported that they would not choose to make a map of their own initiative and only one reported using maps. This finding evinces a missed opportunity

in K12 education for artistic, creative, and place-based learning. This Mapping Workshop thus represents a pathway for teaching participants how they can make maps to serve their own purposes: that they can be part of the map's process of becoming and become empowered along the way.

Finally, responses regarding self-perception revealed an inverse relationship between participants who considered themselves as artists and participants who thought their ideas, opinions, and perspectives were unimportant to others. While this relationship is potentially an artifact of the small sample size, this somewhat jarring finding could speak to the feelings of inadequacy that individuals can harbor with regard to the title of "artist" (see Section 2.2).

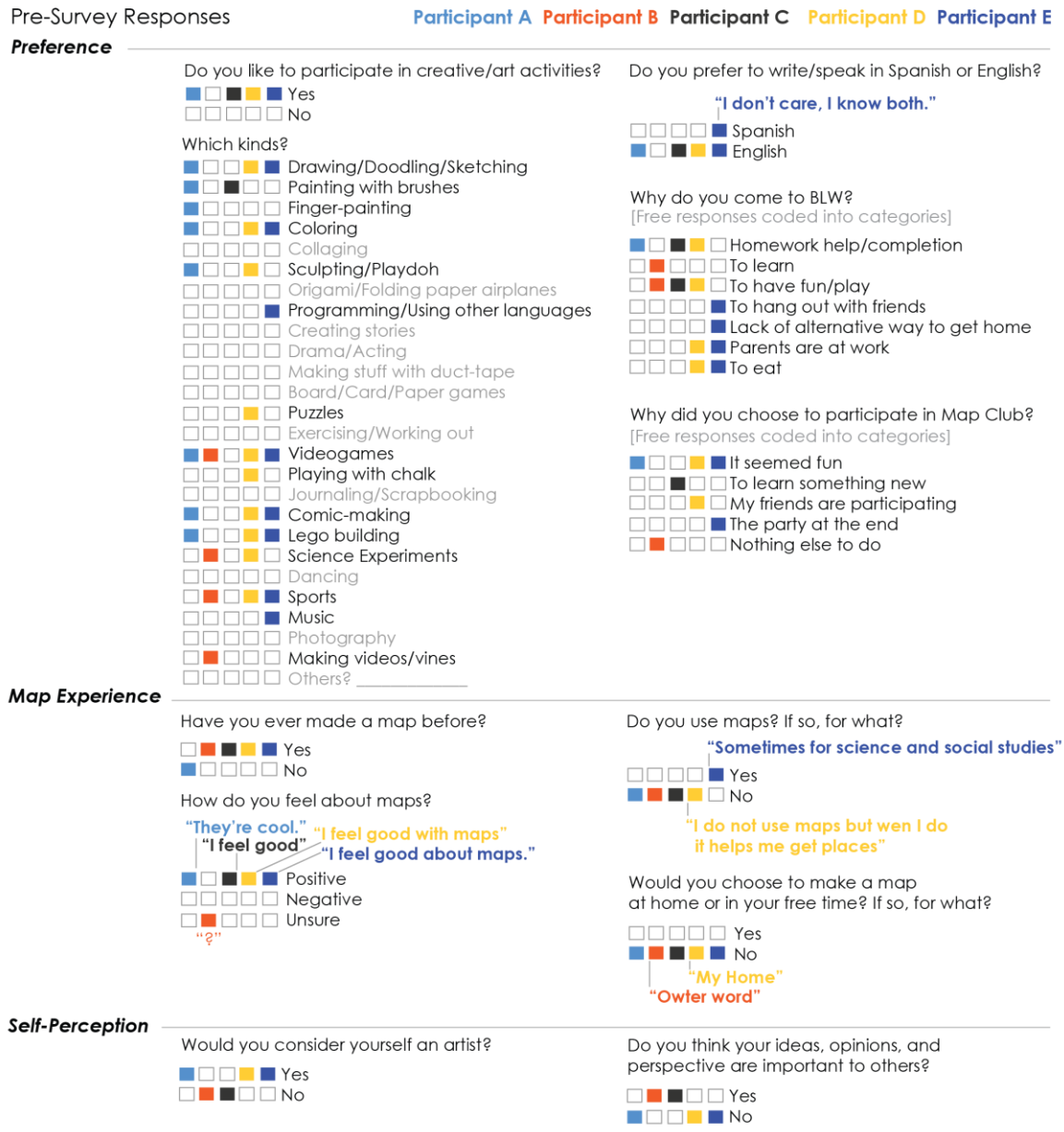

Figure 4.2 Outcomes of the Pre-Survey broken down by preference, map experience, and self-perception regarding mapping and other artistic processes.

4.2 Day 1: Map Basics Overview

Day 1 Logistics

As introduced in Chapter 3, Day 1 covered the basics of map concepts and mapping, exploring *"What are maps? What does your map of the world look like?* and *Why?"* with the goal of simply getting participants to think about these questions by drawing maps and related graphics in an open and exploratory way that allowing for self-expression in both non-verbal and verbal forms. The general mood on Day 1 was upbeat and (as is typical at the BLW Center) highly energetic, with participants willing to listen and engage. BLW Teen Program leaders participated throughout. The second UW research facilitator was present and participating throughout each of the days, a pattern that began on Day 1. Two participants had to leave early this day: one to accompany a sibling home and another due to parental request. As introduced in Section 3.1, participants leave BLW programming at different times depending on variable family needs, a fantastic example of how the Center adapts to and serves the community. Because I replaced regular programming, interruptions in participation was an expected side effect of the Mapping Workshop case study. Overall, my own affect was good, but I spoke too fast from nerves at times.

Day 1 Emotion Survey 1

The objective of the Emotion Surveys is to collect PANAS affect scores and capture participant mood, with Survey 1 providing a baseline for subsequent comparison after each activity.

Figure 4.3 presents the results of the PANAS Likert-scale ratings included in the Emotion Surveys across all Mapping Workshop activities. I administered Emotion Survey 1 at the start of each workshop day, after all participants arrived and grabbed a snack. To start Day 1, overall positive affect scores were higher for all participants than the overall negative affect scores for all participants, suggesting that they arrived on Day 1 in positive emotional

states. Most positive affect scores far exceed the negative affect scores (e.g., Participants C, D, and E), though Participant A and, especially, Participant B reported an overall lower positive affect, reducing their ranges between positive and negative ratings.

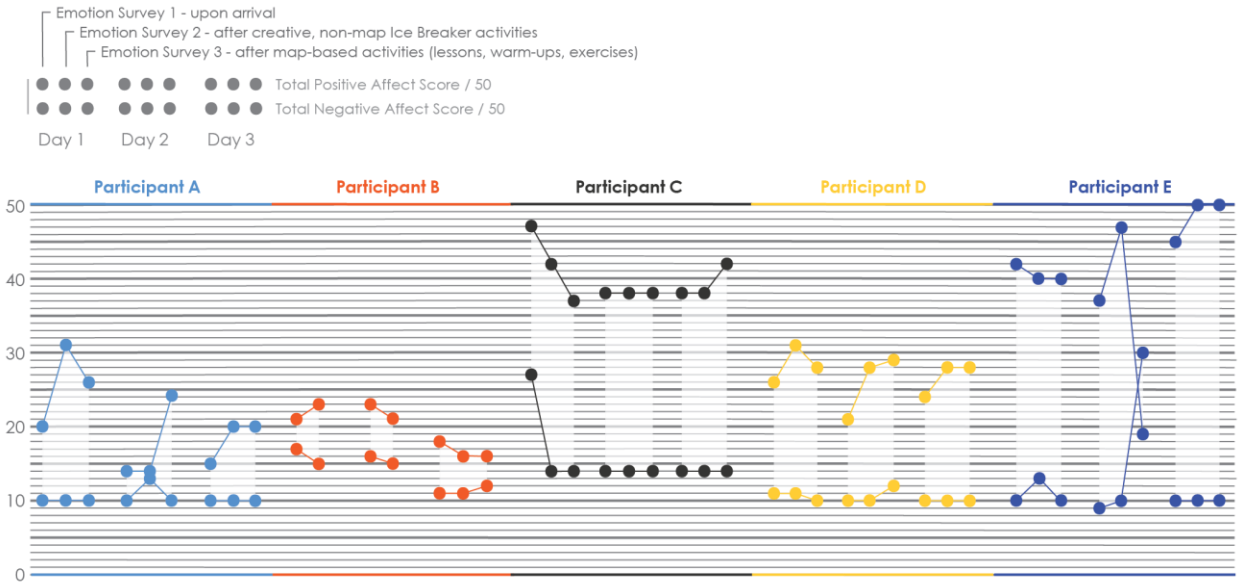

Figure 4.3 Emotion Survey PANAS positive and negative affect scores by participant across the entire workshop. Rather than presenting the averages of each of the nine reports, this figure displays the total scores to better illustrate the relative change between reporting days and to establish the general character profile with regard to emotion reporting. Two scores on a scale of 0-50 are recorded for overall positive affect and overall negative affect. In all but a few instances across the Mapping Workshop, the positive affect scores exceed the reported negative affect scores.

Notably, two participants verbalized confusion over the vocabulary on the PANAS survey form, specifically the terms “ashamed”, “attentive”, “enthusiastic”, “irritable”, and “jittery”. I did not clarify the meanings of these emotion terms, but other participants helped to define by synonyms or examples. For instance, Participant E described “enthusiastic” to another participant as “excited”, “attentive”, as “like you’re paying attention”, and “jittery”

as “like you’re squealing around”. One of the two Teen Program leaders contributed clarifications as well. While this discussion of the PANAS survey phrasing speaks to evidence of a limited emotional vocabulary of some of the members of this particular cohort, it also points to the comfort and familiarity the participants had with each other and the BLW Center space to ask questions and show vulnerability.

Figure 4.4 presents the reported overall mood score, associated emotion word, and reasoning by each participant per activity. The first Emotion Survey recorded three participants feeling “happy” (overall mood as 9/10 or 10/10), one “sleepy” (Participant A, mood reported as 5/10), and one “nothing” (Participant B, also with an overall mood of 5/10). Reasoning varies considerably, but overall indicates a generally pleasant to very pleasant mood at the beginning of Day 1.

Day 1 Emotional Observations

The objective of emotional observations is to add an additional, sometimes non-verbal format for capturing affect and emotion for comparison to the PANAS self-reporting.

Figure 4.5 visualizes the emotional observations made by the second UW research facilitator throughout all three days of the Mapping Workshop by placing them on the Affect Wheel as coordinates along the unpleasant-pleasant axis and the activated-deactivated axis (see Figure 2.1). Though the observations indicated positive (pleasant and activated) scores for all workshop activities, there are interesting variations within each day

Day 1 Ice Breaker: Character Scale Draw

The Day 1 Ice Breaker is a creative arts-based activity tangentially integrating the mapping concepts of scale, generalization, and symbolization and encouraging empowered self-expression.

The Ice Breaker portion of Day 1 commenced after 45 minutes of homework time, which ended with the participants expressing excitement for the day. During homework time, I set-up a display in the central BLW Center meeting space that included a printed map from a popular map-based videogame that these participants play: *Fortnite*. When several of the teens recognized the game map, they gathered around with excitement and chatted about it. Although I had intended the display to help acclimate participants to the topics I would be introducing, it also inadvertently generated an environment that was affectively activated and pleasant.

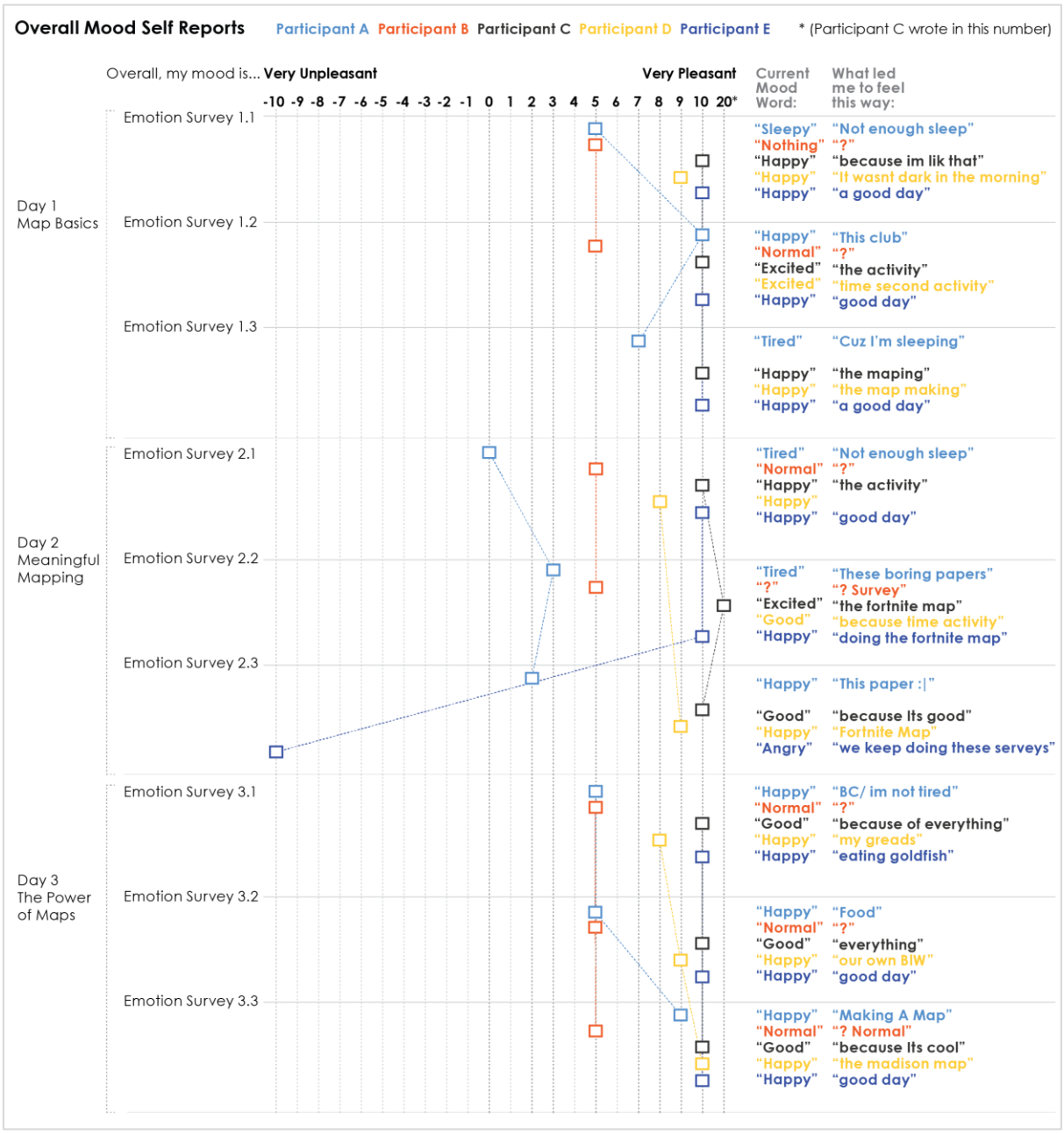

Figure 4.4 Overall Emotion Survey self-reported mood results. The mood questions allowed a more familiar way for participants to express the general atmosphere of their emotions in their own written language and gave the third measure for triangulating different pictures of emotion through both verbal reports and observations. The emotion word and reasoning are included as explanations next to each reported scale value.

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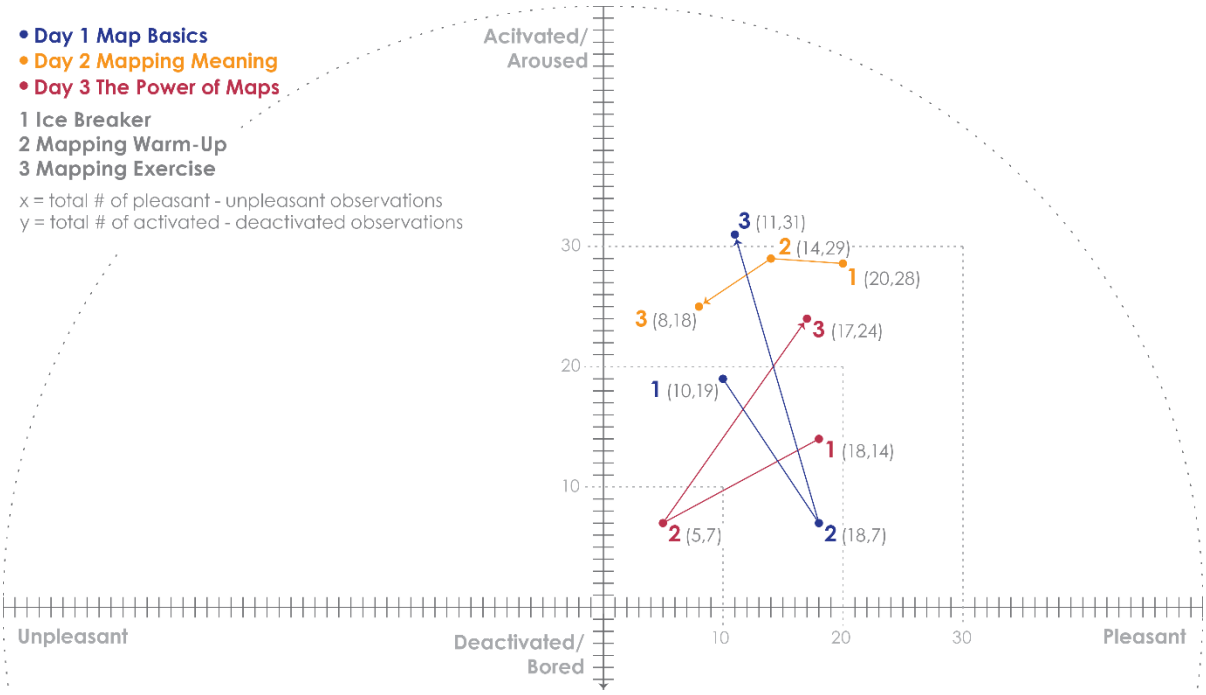


Figure 4.5 Emotion plots from coded observations. The emotion plot coordinates were derived by coding observation notes from the second UW research facilitator and calculating the differences between the counts of activation vs. deactivation and unpleasant vs. pleasant across each day in the workshop. For example, if there were 45 observations indicating activation (e.g., a participant busily drawing with focus) and 12 notes indicating deactivation (e.g., a head laid down on a desk), the difference of these numbers was taken and a Y-axis coordinate of 33 was derived. This was then paired, in the same manner, with the difference between the number of observations falling under signs of displeasure or pleasure (unpleasant vs. pleasant) as an X-axis coordinate. In aggregate, observed affect remained activated and pleasant throughout the workshop.

Participants responded well to the drastic transformation to their schedule for the week for the Mapping Workshop, but were highly active after homework time, with some participants energetically dancing and others presenting anxious anticipation. Because of the high physical energy after homework time, I intervened with a short game before beginning

the Day 1 Ice Breaker. I directed participants to gather in a semi-circle and play a memory challenge known as the "Animal Game" in which participants are asked to choose a hand gesture that mimics a specific animal and to repeat their own hand gesture along with the hand gesture of another participant in a specific beat pattern created by the group's clapping. While Participants A and E chose to observe rather than participate in the second round of the game, the game caused laughter and fun, was competitive, and helped participants to progress their skills with practice. Further, the game was new to all participants, serving as a good way to introduce, practice, and get accustomed to something unfamiliar, providing a segue into the Mapping Workshop. It also worked to bring the group together performing similar, but unique, expressions repeated in the workshop activities: following the same scripts, they would execute their own processes of expression. The novelty of the game further reinforced the overall positive affect of the workshop experience. This brief intervention following homework time confirmed that participants enjoy playing, not only with, but also against one another, reaffirming Trifonoff's (1999) findings, introduced in Section 3.3, about the value of competitive activities for engaging participants in Mapping Workshops.

We regrouped after the game once participants seemed settled and began the Day 1 Ice Breaker. I officially began the Day 1 activities by describing the purpose of and expectations for the Mapping Workshop overall. When noting the importance of the emotion surveys to the research, Participant B noted "I'm very tired, my survey will say tired" to which I responded, "the only thing I care about is that you're honest and open for trying new things. Be honest about what you like and don't like". As I explained that we were making

art maps, conversation began forming around the geography lessons they were learning in school, an early indication that the Mapping Workshop is one way that the BLW Center supports and reinforces K12 learning objectives while offering a different orientation to the material.

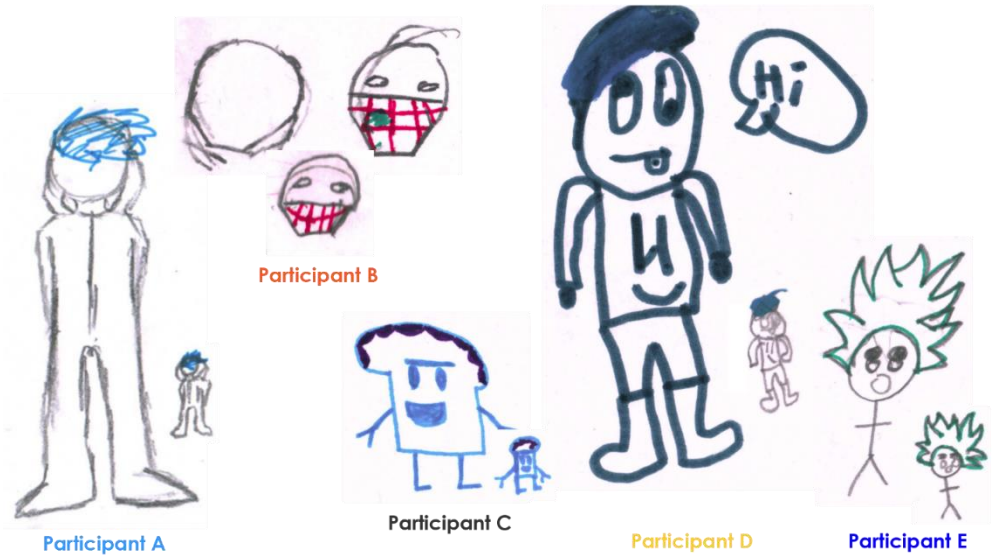


Figure 4.6 Day 1 Ice Breaker artwork of characters drawn at 5x5" and again at 1x1" shown at relative scales to one another.

Figure 4.6 presents the results of the Day 1 Ice Breaker activity. I gave participants two differently-sized pieces of paper and instructed them to choose whichever art material they would like to use to annotate the papers, noting that they had to use their material selection for both rounds of the Ice Breaker activity. The participants were excited about the selection of new and good quality art materials. In particularly, the felt pen markers became a rallying point during the second day of the Mapping Workshop when affective and energy began to wane. Participants selected the medium felt pen markers, Uniball pens, or pencils,

with all participants selecting more than one material for the first Ice Breaker. Selection of multiple mapping materials was a recurring observation throughout the Mapping Workshop, suggesting an unspoken or subconscious need for variation in their own emotional expressions.

Once participants selected their materials, I gave them three minutes to draw their characters following the name they had chosen to represent themselves with and following these prompts: *If you could give yourself any fun, silly name, what would it be? Choose a name you'd like to use during this workshop… Now, draw your character—your chosen representation of yourself that goes along with your chosen name—but retain only the essential details, those which make the character your own unique character.* They were asked to redraw the character on a piece of paper one-fifth the size of the original. Thus, this exercise addresses the concepts of scale, symbolization, and scale without directly referring to maps.

During the first round with the 5"x5" pieces of paper, while participants engaged in the timed drawing activity, the Teen Program leaders noted that they should do more timed drawing activities during normal programming since the room was unusually quiet and focused. Participants B and C continued to make jokes, only at longer intervals, throughout the Day 1 Ice Breaker—the two participants that did *not* identify as an artist in the Pre-Workshop Survey—while Participants A, D, and E stayed quiet and extremely focused. Participant D seemed to be confident and when they finished, threw their hands up and said "Whoo!" The differential behavior between Participants B and C and Participants A, D, and

E during the Day 1 Ice Breaker potentially suggest that self-perception as artistic might influence early buy-in to a map art activity like Ice Breaker 1. It also suggests the strong quality of friendship, or at least comfort, that exists among the participants.

When I instructed participants to replicate their drawing on a much smaller piece of paper, they all audibly gasped, although Participant E quickly followed with reassured statements of confidence. While drawing during the second round, Participant C noted, “This is hard”, Participant A said, “I already messed up”, and Participant B said, “This is getting me super pissed off” to which Participant E responded, “Hey—language!” Participants D and A were the first to finish, respectively, and both enthusiastically exclaimed “Done!”, reinforcing the influence of self-perception on artistic activities and highlighting an unexpected competitive aspect to Ice Breaker 1 that also may have explained their focused quiet during the initial drawing. Participant B remained focused while drawing at the smaller scale, whereas this person was joking more frequently during the first part of the Ice Breaker and generally is more active and physical, a sign the activity had stimulated their attention. All participants expressed excitement at the possibility of keeping the materials after the Mapping Workshop, which was an unexpected result.

This scale drawing challenged participants to retain the essential details of their characters so that they could be identifiable, and overall participants did a moderate job practicing the process of generalization given they attempted to retain all of the characteristics rather than selecting and simplifying the essential characteristics of their characters. As a group, they lacked conversation around scale and symbolization. For

instance, no comments aside from their perceptions of the challenge as difficult were made that connected the activity to the mapping concepts, which was not unsurprising: participants had hitherto very little exposure to and practice in the process of mapmaking, and this activity occurred before any formal mapping topics were introduced in the next stage. Further, each participant used more than one drawing material and was able to integrate them into their sketches at both scales, appearing to reinforce the idea of their intrigue towards complex, rather than simple, expression. Despite lacking verbalization around symbolization during this exercise, participants were successful and engaged in self-representing through artful practice. Not only was this an affectively exciting exercise, it was also an excellent way to both have participants self-identify and for me to understand their self-chosen characters a bit better. Thus, this activity was successful on levels that I did not expect.

Day 1 Emotion Survey 2

The objective of Emotion Survey 2 is to tease out the affective consequences of non-map creative, art-based activities, i.e., the Ice Breaker activities, to serve as a baseline to measure against the affectual consequences of mapping as a creative, art-based activity.

Each Ice Breaker activity was followed by Emotion Survey 2, which used the same PANAS and mood questions from Emotion Survey 1 (Figure 4.3). While participants remained confused about some emotion terms in the PANAS, they were notably more frustrated with having to break to take the survey than Emotion Survey 2. As Participant E stated, “No, I don’t like surveys” going on to say “I thought we did this?” The participants seemed to not fully consider the emotion surveys, but instead moved through them rather quickly, a potential limitation when interpreting results, and perhaps accounts for why each

participant seems to report scores rather consistently over surveys and days, with a few notable and meaningful exceptions (Figure 4.3).

Refer again to Figure 4.4. Switching discussion from affect to mood, Participant A made a dramatic change in their scoring of their overall mood from the first emotion survey, now reporting the maximum of 10 as “Very Pleasant”, citing feeling “happy” and “because of this club”, a finding that corroborates their improved positive affect. The other reports did not change value (remaining at 10, apart from the absence of a reported number by Participant D). Rather than the popular “happy”, two participants (C and D) now wrote “excited”, citing the Mapping Workshop activities as the reasoning, and Participant B’s response transformed from “nothing” to “normal”. Participant E’s reasoning remained the same (as it would repeatedly across days) as “good day”. This survey was a positive indication that the Mapping Workshop was going well and that participants enjoyed the impromptu competitive game and subsequent Day 1 Ice Breaker.

Following Emotion Survey 2, participants had dinner. Participant A used some of the time to continue to work on their character, while singing, rather than engage in some of the game-like activities the other participants were engaging in to fill down moments, which was not only characteristic (as they often practice art) but encouraging given they could have selected to engage in other artful processes. While conversation largely deviated away from maps, Participant C did state without prompting, “I like Map Club”, referring to the Mapping Workshop.

Day 1 Map Lesson Observations

The objective of Map Lesson 1 was to expound on general concepts in mapping that were implicitly introduced in the Ice Breaker and then explicitly integrated into the Mapping Warm-Up and Exercise for each day. The Day 1 Map Lesson focused on the general mapping concepts of projections, scale, generalization, and symbolization.

After dinner, we moved into the brief Day 1 Map Lesson using the dissection of a globe beach ball to stimulate discussion on projections. I started the Day 1 Map Lesson by asking participants how they would turn the round globe into a flat map. Participant E stated, "You take the globe and roll it out" while Participant C mentioned "machete". They then simultaneously agreed that "It doesn't roll out!". Participant E then summarized a profound realization from the Day 1 Map Lesson, stating "that map is a lie". From a pedagogical standpoint, this is a major sign of success of the Day 1 Mapping Workshop, as the Ice Breaker and format enabled deeper critical thinking about the nature of projections and generalization, and the inaccuracies and lies therein, concepts that even can allude college students.

Following discussion, I gave the globe ball to Participant A, who had been over-excitedly playing with it at the beginning of the day. I again leveraged this opportunity to redirect energy and invest in individuals who expressed interest in specific aspects of the Mapping Workshop. With no direction other than "try to flatten this without distorting any land", Participant A transformed the ball into the impressive form reminiscent of the Waterman butterfly projection (Figure 4.7).

Figure 4.7 The unguided outcome of the globe-projection exercise during the Mapping Lesson by Participant A.

While Participant A cut the globe carefully, I gave the other participants an orange and first asked to mark a point on the orange with a pen. I then directed them to peel the orange and attempt to flatten the skin without ripping it, especially avoiding the mark they had made on the map, instead intending to keep that mark at the center. My explanation was a bit confusing, especially to Participant C who said, “That was confusing, can you say it again?” After some time with the activity, however, Participant C said with surprise, “What? I never noticed!” referring to the distortions that all maps contain due to projections. Participant A reinforced Participant E’s earlier message, “They’re just straight up liars”.

The lesson continued with a brief discussion of scale, and when I asked if the participants understood, Participant C was enthusiastic in their response, “Yes!” We reviewed several maps at small versus large scales, and then asked whether the dissected globe, relative to the other maps present, is small or large scale. The group responded by

shouting “Small!” together excitedly. The overwhelming answer was correct, and surprising given the minimal instruction provided thus far and how commonly even practicing cartographers confuse the counterintuitive labels of small versus large scale. Overall, the Map Lesson on scale signaled the group’s readiness for this type of material and reaffirmed Sobel’s (1999) progression model (see Chapter 3.4). Participant A, during the scale portion of the lesson noted, “I don’t like maps. They’re too hard” which was a similar sentiment to something they had said once months before while I was volunteering. Distracted by other things at different points throughout, Participants C and D interrupted with random questions, while Participants A and E answered those questions correctly. Successful peer learning of this sort occurred often throughout the workshop, with the group helping to reaffirm or to guide one another’s understandings of both emotional language and general concepts, which began to include mapping. Participant A noted, “That would take months to make”, referring to the globe, a new recognition of the complexity that goes into map design. I then introduced the concept of generalization, talking about scale in relationship to the amount of detail shown in a map, using the Ice Breaker exercise as an example exhibiting how it was difficult to maintain small details as the paper size got smaller. Participant A noted here that their second drawing was not nearly as detailed. Participants C departed at the end of this conversation for the day to escort a sibling home.

I concluded the Map Lesson with a discussion of map symbolization, a topic that gained renewed interest across all participants after teen focus wandered during the discussion of generalization. Participant attention improved only after I referred back to the *Fortnite* map in regards to its symbolization. Specifically, I queried participants about the

symbol choices used in the *Fortnite* map print displayed and the game in general, asking if they thought they were successful in helping participants during game play. The participants were not sure, needing a bit more explanation of the concept. I noted that emoji's are graphic symbolizations of emotions and then asked what symbol is often used on maps to represents capitals, such as Madison, WI. Participant E was the first to mention a star after a brief pause for thought. I then prompted participants to consider how non-capital cities might also be symbolized on a map to show this difference. I drew on the whiteboard as we discussed, first stars for capital cities and then dots for non-capital cities. During this discussion, I once again returned to the Ice Breaker activity, noting that the process of self-identification that they had engaged with earlier was actually a process of symbolization. Conversation between participants was limited, unusual for the Teen Program, with the remaining Participants A, B, D, and E listening but not verbalizing much.

The Day 1 Map Lesson on projections, scale, and symbolization ended after 20 minutes. Overall, the Day 1 Map Lesson was a success, as everyone was enthusiastic and lacking complaint, an indication that these concepts were at least interesting enough to spend time considering. In retrospect, I assess participants as largely focused on the material with interspersed bouts of distraction, particularly for the topic of generalization. In the future, I recommend spending more time relating concepts to the lives and interests of the individual groups as I had done with *Fortnite*, but rather than in a "Map Lesson" format, in separate activities designed to artfully introduce a concept (such as the Day 1 Ice Breaker) and then to talk immediately about what map concepts that activity related to with other relevant examples, returning to these concepts as they appear throughout the Mapping Workshop

activities. This shift would help to further decrease a didactic-like atmosphere and generate less bouts of distraction, and instead allow for immediate translation of concepts not divorced in time from the process.

Day 1 Mapping Warm-Up: Transforming a Coloring Sheet into a Map

The objective of the first Mapping Warm-up and Mapping Exercise was to have participants explore the newly learned basic map concepts by applying them to a coloring sheet—or a familiar and comfortable medium—to reinvigorate exploration around how a map is different from other images.

Following the Day 1 Map Lesson, I pivoted to a Mapping Warm-Up requiring participants to add meaningful symbols to an oblique image of a town, thereby transforming the illustration into the beginnings of a map. Figure 4.8 shows the results of the Day 1 Mapping Warm-up.

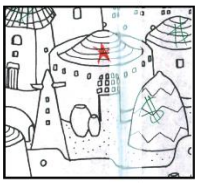
Conversations during the Mapping Warm-Up revolved around perceptions and representations of wealth, particularly cues about which houses had rich inhabitants. Participant A was the most graphically engaged, and integrated color symbolization ("green for the rich") into their map. Perhaps this discussion and symbolization related to the marginalization of the BLW neighborhood—split between high-income, lakeside residents and low-moderate to low-income inner residents sharply juxtaposed—and how the act of symbolization while transforming these illustrations into maps enabled the participants to comment on the unevenness in their local landscape non-verbally. Whether this is the case or not (being reminded that it is important not to impose the researcher's imaginative map reading onto the resultant map product, see Section 2.3), I was fascinated that participants

chose to create an economic landscape from all the possibilities that could be symbolized in the map.

Further, participants generally agreed upon designating a specific house as the capitol building—symbolized as a star, an extension and application of our Map Lesson conversation earlier—due to its large, round structure at the center of the page. Such designation of the capitol reflects local knowledge of maps, as Madison—the capital of Wisconsin—is commonly represented on large scale maps not as a star, but as a building with a rounded ceiling given the building's notable rotunda and dome. Thus, the Mapping Warm-Up provided a process for combining the basic pedagogical goals from the Map Lesson with participants' experiences and interpretations of their local environment, the latter of which becoming reflected in their chosen expressions of an imaginary place.

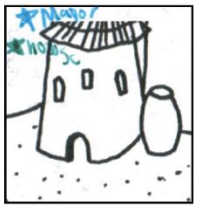
Participant A

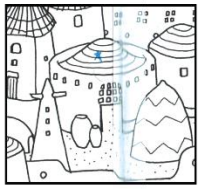
consistent consideration and representation by all participants



Participant B

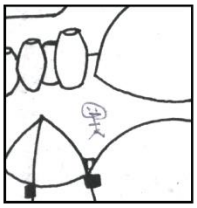
legend

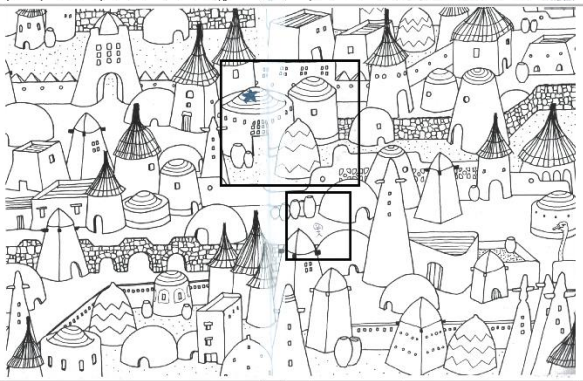


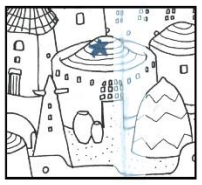


Participant D

representation of self in map







Participant E

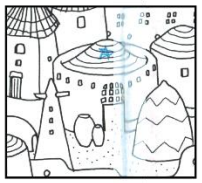


Figure 4.8 The Day 1 Mapping Warm-Up results in which participants were asked to use what they had learned during the Ice Breaker and Map Lesson to transform an oblique-perspective image of a village into a map. The same coloring sheet was given to each participant (at center). Discussion during this activity was rich, though all but Participant A made few markings onto the sheet itself. On the left are the exceptions to this minimalism, and on the right is the consistent symbolization across all maps of a round, center structure perceived by the group to be the political center.

While conversation was rich regarding the uneven economic landscape and local context, engagement with the Mapping Warm-Up varied. Notably, Participant E did not care for this activity, and they only put one symbol on the page following their peers, showing what could be fatigue, disengagement, and/or boredom. Participant D also lacked activation but remained engaged in the exercise. Participant E finished the Mapping Warm-Up stating, "What time is this done?" and went on to explain that—in contradiction to their earlier comment—that "I like the activity" but that "I just want to go home", with their forehead leaning onto their hand as they smiled. However, when Participant A, perhaps the most engaged and enthusiastic, explained their choices and symbolization, Participant E attended to and laughed in response to the narration. In retrospective, I believe I needed more concrete prompts *how* (not *what*) to symbolize, particularly how different thematic maps can be used to symbolize rather than focusing solely on iconic representations, and I ultimately wrapped the Mapping Warm-Up 1 early due to disinterest. Participant B left between the Mapping Warm-Up and the Mapping Exercise due to an early dismissal from a parental request.

Day 1 Mapping Exercise: Day Route Map

The Day 1 Mapping Exercise required participants to map the story of a single day in their life using qualitative symbols of their bodies and free sketching of the map. This was designed to be an approachable introduction into how one might flow through the process of

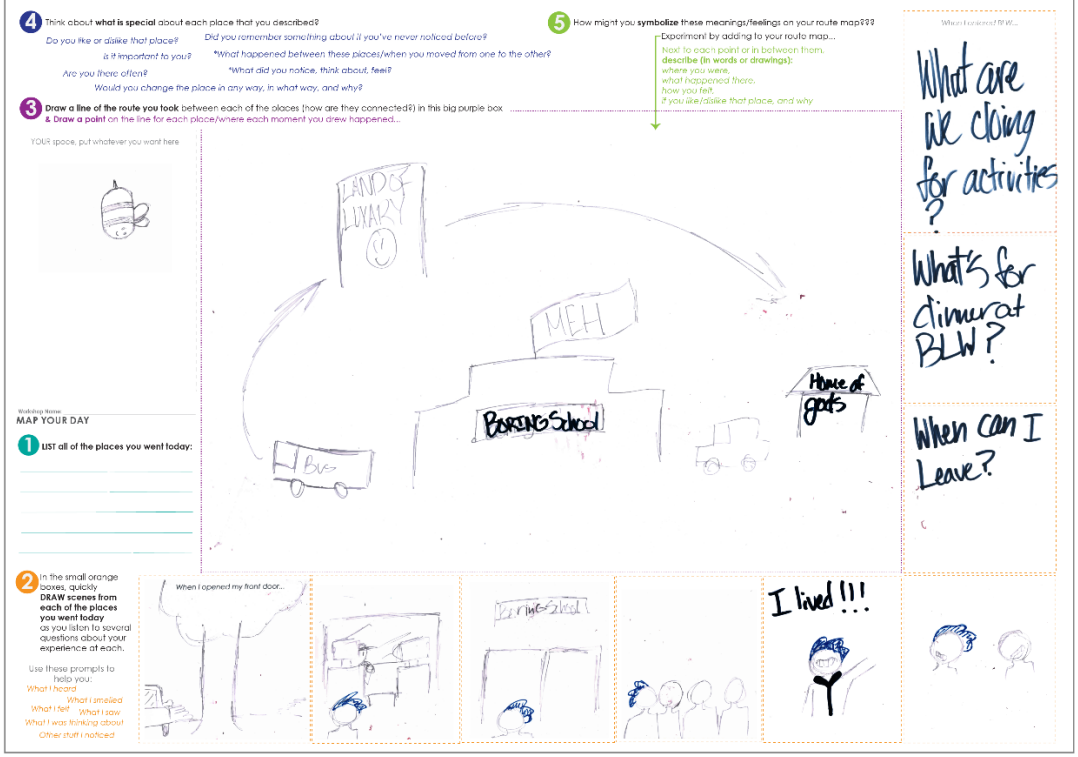
creating a map by building, reflecting upon, and forming connections between the participant's experiences of movement within and through daily affective geographies.

The Day 1 Mapping Exercise followed the Mapping Warm-Up, which highlighted the experiences of moving through affective geographies—beginning at home and ending at the BLW Center—during a normal weekday. Figure 4.9 presents the activity mapping results for Participants A, D, and E, the three remaining at the end of the Mapping Workshop following the two early dismissals.

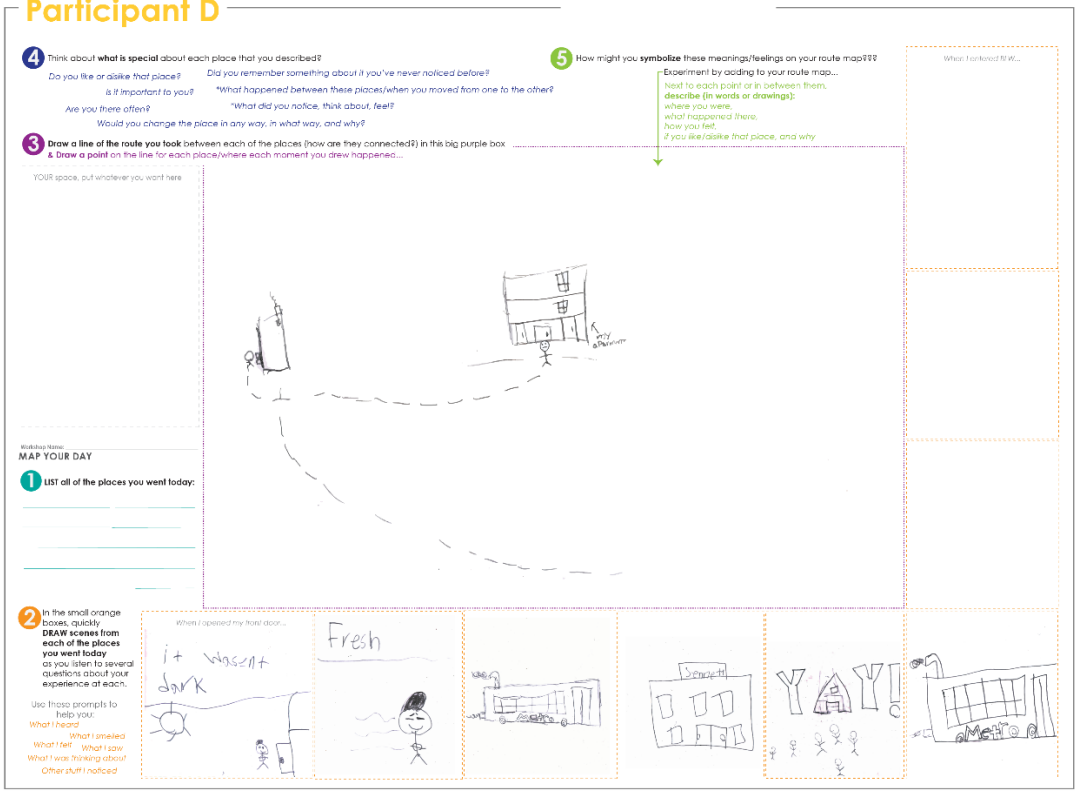
The remaining three participants were visibly fatigued at this point, requiring prompting to keep them focused on this activity. To begin, I asked them to list each place they had been that day, and to think about their experiences of movement within and between these places. I then gave them specific prompts for each square that they had to fill in to get them engaged with the exercise, such as *What did you see when you left your front door this morning? How did you feel? How did you get to school, and what did you notice along the way?* During the exercise, Participants A and E were hanging out at the front table, actively talking with one another and making jokes, laughing as they worked. Participant D was more subdued and focused, but seemed to be enjoying the Day 1 Mapping Exercise the most based on non-verbal cues. Participant E, though still participating, continued to fade from the Mapping Warm-Up and showed increased disinterest. However, Participant E clarified several times that they were simply tired from a long day, an indication that their disinterest was not related to the Mapping Exercise itself. This is a critical reminder that external displays are not alone a reliable source for determining one's emotions around a topic.

There was a bit of confusion as the activity began, likely attributable to the mapping element wherein participants were asked to draw their route from place to place with no spatial context, which confirms the hesitancies supported in the mental sketch mapping literature (see Section 2.3) about the possibility of feeling overwhelmed with free-sketching without a frame of reference. The lack of practice in doing something of this sort was obvious, and considering that teens are often given routes to follow without input rather than asked to reflect and create them themselves, not surprising. It is likely the first time any of them had reflected on their transitions between spaces.

Participant A



Participant D



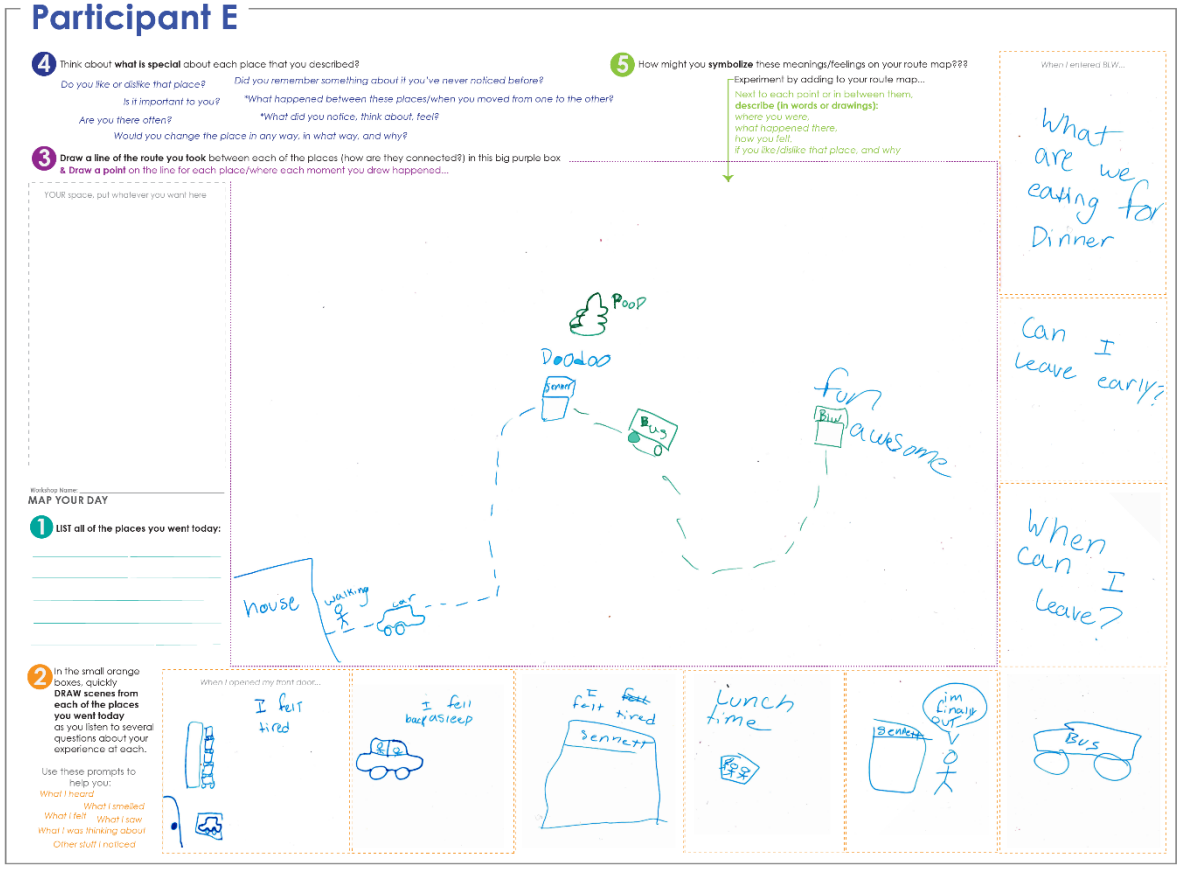


Figure 4.9 The Day 1 Mapping Exercise results in which participants were asked to begin by making a list of all the activities participants had completed that day and where they had taken place, and continued with framing in small multiples each of those places, which finally were illustrated and then connected with a map flow line at the center of the page.

A deep dissatisfaction with the Sennett Middle School came to dominate conversation between Participants A and E. My prompts pulled out many stories about school, particularly physical fights between students and long drives or bus rides to school and from school to the BLW Center. However, the conversation was also empathetic while critical, as Participants A and E recognized that low salaries for teachers lead to a poor atmosphere at school, and how these poor attitudes from the downtrodden teachers cause the participants to suffer direct

consequences. However, participants were quick to recognize the "good" teachers with low salaries. The empathy that Participant A showed towards their favorite teachers in particular was surprising, given the general nonchalant attitude put on display and the level of awareness and reflexivity required of such an insight.

The Teen Program leaders and I prompted questions about their daily activities, giving the participants a platform to express their emotions about a particularly strong affective geography. I asked them to identify and mark emotions at points in an attempt to increase their awareness or description of their emotions. Participant A continuously drew throughout the activity, narrating their drawing as they went and using multiple materials (pen, pencil, and marker). Participant D took longer to complete the activity, as they kept pausing for careful consideration of each stage. Although fatigue was evident, Participant E noted several times on the Mapping Exercise that the BLW Center and programming are "awesome" and "fun", fixing on the one positive place from their story map. The conversations generated from this exercise were insightful and achieved what I had hoped: to get participants to explore their emotions around these affective geographies. An encouraging sign was that Participants A and D, of their own volition, continued working on the Day 1 Mapping Exercise even when I excused them for the evening following Emotion Survey 3.

Day 1 Emotion Survey 3

The objective of Emotion Survey 3 was to tease out the affective consequences of the mapping activities themselves, providing comparison against the earlier emotion surveys.

Day 1 concluded with Emotion Survey 3 (Figure 4.3). Both positive and negative affect scores either dropped a bit or remained consistent for the three remaining participants.

Participant A's negative affect score remained unchanged from the start of the day (10 out of 50), though their positive affect score dipped slightly from Emotion Survey 2 (from 31 to 26), although ended higher than Emotion Survey 1 (an initial positive affect score of 20). Participant D's positive affect score dipped slightly, though still 2 points above their Emotion Survey 1 score, but overall their range between the scores widened, with the negative affect score also dipping a point. Participant E, who seemingly hit a wall affectively, actually reported the same positive affect score (40 out of 50), but their negative affect score dipped down three points to their Emotion Survey 1 negative affect score (10 out of 50).

The third overall mood report continued to be encouraging, however (Figure 4.4). Of the four remaining participants, only Participant A's overall mood report dropped (from 10 to 7), citing being "sleepy" as the reasoning, signaling that fatigue from the Day 1 schedule was an issue for all participants. Participants C (who completed Emotion Survey 3 just as they had finished the Mapping Exercise before leaving relatively early) and E remained at 10, reporting "happy" because, respectively, "the mapping" and the "good day" they had had. Although Participant D did not report a score, they reported being "happy" because of "the map making". Taking together, the progression in participant moods across the three Emotion Surveys was encouraging that the Mapping Workshop was successful, and that the mapping process itself could indeed create positive affect for the teens, beyond the positive affect generated by the more general, non-map creative art activities that the second emotion survey captured.

Day 1 End Notes

This section includes unexpected, take-home observations that I recorded at the end of each day, an indication of my major impressions from the constituent activities.

Action and noise grew in the room after completing the Day 1 Mapping Exercise, as participants talked about a local arcade. Smiling and laughing filled the third floor. The participants seemed to enjoy the Mapping Workshop as a whole, but were visibly tired after the long series of activities and surveys after an already long school day. In an informal verbal survey, I asked participants to share what they liked and disliked about the Day 1 schedule. Participant D liked the Animal Game, especially, and when prompted for more specifics, they replied, "Oh yeah—I like the characters", referring to the group's self-representations beginning the Ice Breaker. Participant E liked everything but turning the coloring sheet into a map (despite the misleading appearance of displeasure and deactivation during the Mapping Exercise), and Participant A liked everything but the surveys. The day concluded at 6:05pm with cleaning up, dessert, and rides home.

4.3 Day 2: Mapping Meaning Overview

Day 2 Logistics

As introduced in Chapter 3, Day 2 was themed around visibility and invisibility with a focus on "Mapping Meaning", or exploring: *What do maps do, why do they matter, and how can they matter personally?* With the goal of easing participants into creating their own meaningful maps by providing a situating context to work from while breaking them free of the constraints of fully pre-developed basemaps. I had leveraged insights derived from Day 1 to change the Mapping Warm-Up from the vague coloring-sheet-to-map activity into a topic

of interest for the participants: *Fortnite*. Participant B returned again, after having left early on Day 1, but left early this day as well following Emotion Survey 2 due to their family schedule. Participants arrived highly energetic overall and excited to engage with the Mapping Workshop materials, which they even bickered over slightly but ended up sharing. Participant A asked with eagerness, “What are we drawing—or, I mean mapping?”

Day 2 Emotion Survey 1

The objective of the Emotion Surveys is to collect PANAS affect scores and capture participant mood, with Survey 1 providing a baseline for subsequent comparison after each activity.

Day 2 began with Emotion Survey 1, recording affect and overall mood scores for each participant following their school day. Refer again to Figure 4.3 and Figure 4.4, respectively. Overall positive affect scores were once again higher for all participants than the overall negative affect scores for all participants, suggesting that students also arrived on Day 2 in positive emotional states. Participant A had a notably small range between the positive and negative affect scores (14/50 and 10/50, a difference of 4 points), under half of the range amount from Day 1 Emotion Survey 1 (a difference of 10 points), although still leaning toward the positive.

Switching discussion from affect to mood, participants began Day 2 in characteristically “tired”, “normal”, and “happy” states, similar to Day 1 and illustrating the emotional profiles introduced in Chapter 3. Overall mood scores ranged between 0 (Participant A), 5 (the consistent score of Participant B across all activities all 3 days), and 10 (Participants C and E). Participant D did not record an overall mood score for Day 2.

Day 2 Emotional Observations

The objective of emotional observations is to add an additional, sometimes non-verbal format for capturing affect and emotion for comparison to the PANAS self-reporting.

Overall, Day 2 remained the most activated day of the entire workshop rather steadily across all of the activities, rather than seeing the major drops in arousal that were witnessed in Days 1 and 3, with the Ice Breaker the most pleasant of all of the Mapping Workshop activities and enjoyment waning as we moved through the three activities of Day 2. However, all three activities were similarly activating. This is likely due to the light, humorous collective atmosphere from the Day 2 Ice Breaker and the *Fortnite*-based content of the Day 2 Mapping Warm-Up, demonstrating the pedagogical value of social comradery and drawing on personal interests.

Day 2 Ice Breaker: Quick Draw

The objective of the Day 2 Ice Breaker was to introduce participants to time as a critical design process constraint, and its relationship to the amount of symbol generalization that occurs, mimicking the necessity for cartographers to capture the essential qualities of an object quickly, especially when working on meaningful projects with affective (and other) consequences.

The Day 2 Ice Breaker activity instructed participants to pick an item (a cat, skeleton, house on fire, or any other thing they might think of) to draw it six times at increasingly faster time intervals: 60, 45, 30, 20, 10, and 5 seconds respectively. The challenge was to retain the essential characteristics of each item so that they would remain identifiable, introducing an element of time into the artistic process.

I began the Day Ice Breaker by instructing participants to select up to six of the available materials for the Ice Breaker, including both the Day 1 P/A materials as well as

new Day 2 K/S materials. Participants responded positively to the new materials, with Participant E noting, “These are cool”. The participants even playfully bickered over negotiations for certain pens and settled the issue among themselves. Participant E experimented with and asked about how to use the calligraphy markers, and I intervened attempting to help, which was notable given that they were not only selecting for new writing materials but also willing to ask for instruction on how to use them. Participant B observed with interest as I explained calligraphy. Overall, the energy was extremely high, even more than is typical for the Teen Program.

I then introduced the activity and time constraints. Figure 4.10 presents the outcome of the Day 2 Ice Breaker. Participant C elected to draw their personal character (“Lil’ Sandwich”) from the Day 1 Ice Breaker, demonstrating retention from the Day 1 activities. Participant B selected to draw a house on fire and jokingly asked, “Can that be Donald Trump’s house?” making known their political opinion during this opportunity for creative expression. Participant E also chose to draw a house on fire, while Participant A selected a cat. Participant D began by drawing a skeleton, but for unknown reasons switched after the 60-second round to drawing a cat instead.

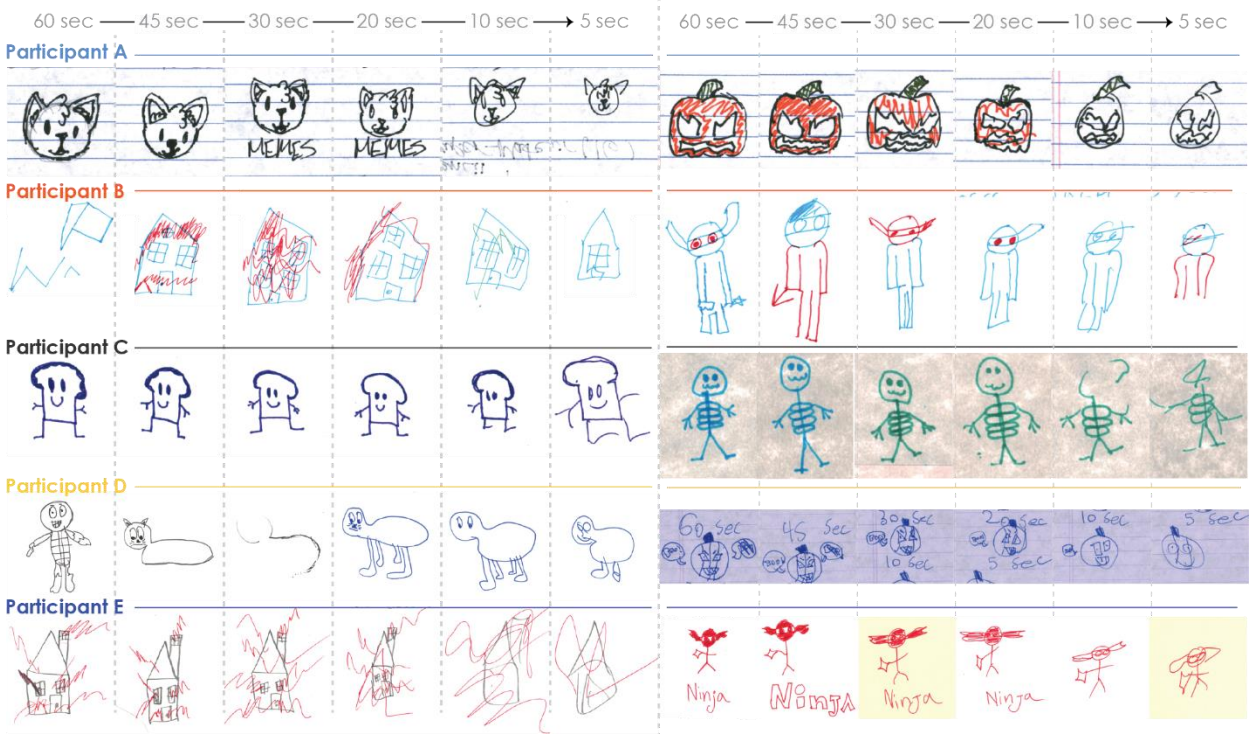


Figure 4.10 Attempts 1 and 2 for the Day 2 Ice Breaker Quick Draw.

The room hushed right before drawing began. Throughout, the participants were a mix of intensely concentrated and quiet or active and verbal, and these states varied throughout the different time intervals and by participant. Participant E was full of anticipation, asking, “Can we start now?” and completed the 60-second round with intensity. The group shared, laughed, and joked about their drawings, which defied my expectations that they would be self-conscious and have feelings of vulnerability about their expressions. At the end of the 45-second round, Participant D was excited to share their drawing, proclaiming, “Look at mine!” Participant A was talking throughout the Ice Breaker, and ended the 30-second round stating, “My 30-second was my best one”, suggesting development of strategy as the Ice-Breaker commenced. The 20-second round increased in

intensity, with Participant A noting, “I don’t care if it looks bad, I just want to make sure I get it down.” The 10-second round was quiet, with less talking this time. Participant C yelled when the time was up, embodying the emotional charge that this activity ignited in the room. Everyone collectively laughed at their images following the 10-second round, again showing comradery instead of self-consciousness. After the 5-second round ended, Participant C noted, “60 seconds was super long!”, an insight that suggest an understanding of the importance of time for effective design.

There was energy, excitement, and goofing around as participants shared their drawings from the Ice Breaker. Participant E was even uncharacteristically laughing and joking, suggesting the Ice Breaker promoted inclusivity, working to overcome social barriers through a collective challenge. Participant B said, “That was funny” and continued with narrating their pictures. Participant D asked, “Are we doing another one?” Overall, participants recognized that more time is not always beneficial, as more detail is not necessarily better. Thus, the Ice Breaker effectively spiraled back to lessons from Day 1 on generalization and symbolization while layering on new aspects of meaning making and building social inclusion.

Participants enjoyed the activity so much that they spontaneously elected to complete the activity again. Again, participants performed well at retaining the characteristics of their chosen items, with Participants A and E sharing they thought they did better the second time given more practice. Participants experimented with multiple colors (e.g., Participants A, B and E) and switched pens mid-activity (Participant C), adding both to the creativity of the

activity and signaling that participants were excited rather than intimidated about the timed challenge. There was laughter as they continued to share their drawings while wrapping up the day's Ice Breaker activity.

Day 2 Emotion Survey 2

The objective of Emotion Survey 2 is to tease out the affective consequences of non-map creative, art-based activities, i.e., the Ice Breaker activities, to serve as a baseline to measure against the affectual consequences of mapping as a creative, art-based activity.

The gaps between positive and negative affect remained large for all participants after the Emotion Survey 2 except for Participant A, whose positive affect score stayed the same from the first survey (a low score of 14/50), but whose total negative affect climbed to 13/50 (the smallest gap for Participant A across the Mapping Workshop). Thus, Participant A had stronger identification with these negative emotional terms following the Day 2 Ice Breaker, despite active engagement in both rounds of the timed activity.

Participants' mood scores either increased or remained the same. Participants A and C, with C wrote in a score of "20", a strong indication that they enjoyed the Day 2 Ice Breaker. Participant D once again deferred from selecting a numerical score, though they did note that they were "good" because "of the time activity". Although Participant A's score increased, they remained to report "tired" only now because of "these boring papers" (i.e., the surveys), suggesting it was the survey itself causing negative affect, rather than the Day 2 Ice Breaker. Participant attitudes during the workshop period between the Day 2 Emotion Surveys 2 and 3 were impacted by the group's general antagonistic opinion towards the survey reporting, reflecting in some of the third emotion survey reports but beginning to form here. Participant C and E, however, were notably "excited" and "happy" due to the

forthcoming *Fortnite* Mapping Warm-Up, which participants were aware of, given that the daily schedule with activities were written on the whiteboard, an important and inclusive practice at the BLW Center. Participant B left early once again, following their completion of the Day 2 Emotion Survey 2, for family scheduling reasons.

Day 2 Map Lesson Observations

The objective of Map Lesson 2 was to introduce participants to how they may or may not be represented on maps and the consequences of (mis)representation.

The Day 2 Map Lesson included a review of the map concepts from Day 1 to build retention, querying *What are maps? What do they show? What do they do?* Participants were given a 1-page graphic overview review sheet on the concepts of projections, scale, generalization, and symbolization, and were asked to recall what they remembered from Day 1. Though they were overall uninterested in rehashing the previous day, I was pleased with two aspects of the review: participants were able to quickly and correctly recall what the difference between large and small scale is, and participants agreed that maps lie given distortions created from flattening the globe onto a 2-dimensional surface (e.g., projecting).

I then loaded the *Fortnite* interactive web map on a laptop to provide an example to introduce the Day 2 themes of mapping meaning. I started by demonstrating how the *Fortnite* map encodes information (meaning) into the map through symbolization largely drives the experience the map user (and, here, the game player) has with the map. I then asked participants to think about how and why they had both chosen and decided when to include their own symbolizations (characters) in the activities of the day before. The participants

regularly contributed to the conversation, though not focused explicitly on symbolization, but rather in short bursts talking over gameplay experiences using the map.

I then loaded Google Maps to discuss how they may or may not be represented on maps, showing participants that despite the BLW Center main building being identifiable on the map by label, the Youth Program building was not (only the building footprint is present, lacking any indication of the critical use of the space for the neighborhood). I used this example to probe what representation on maps might mean for their lives, asking: *Were they represented? Were they visible?* Participants physically and intellectually perked up at this, shifting their conversation away from *Fortnite* and back to mapping.

I concluded the Day 2 Map Lesson by showing the overview video of the Map Kibera project (https://www.youtube.com/watch?v=UAVzqg2E07U). Participants B, C, and D were attentive and engaged, but Participant A drew throughout and Participant E lacked activated interest and had their head down. After the video, we discussed what it means to be left off the map. Initially, the teens thought that being off the map is a "good thing" because their enemies are not able to find them. While there are real-world advantages to being left off the map—particularly in the context of surveillance, regulation, and control—all participant conversation was focused more on the militarized combat interactions in *Fortnite*. I probed if being mapped could also do good and promote empowerment, again citing Map Kibera and their previous day's activities, and the Map Lesson ended with a general group consensus that maps could do both good and bad. However, conversation on the map meanings remained limited to the tactical advantage of identifying the locations of enemies and

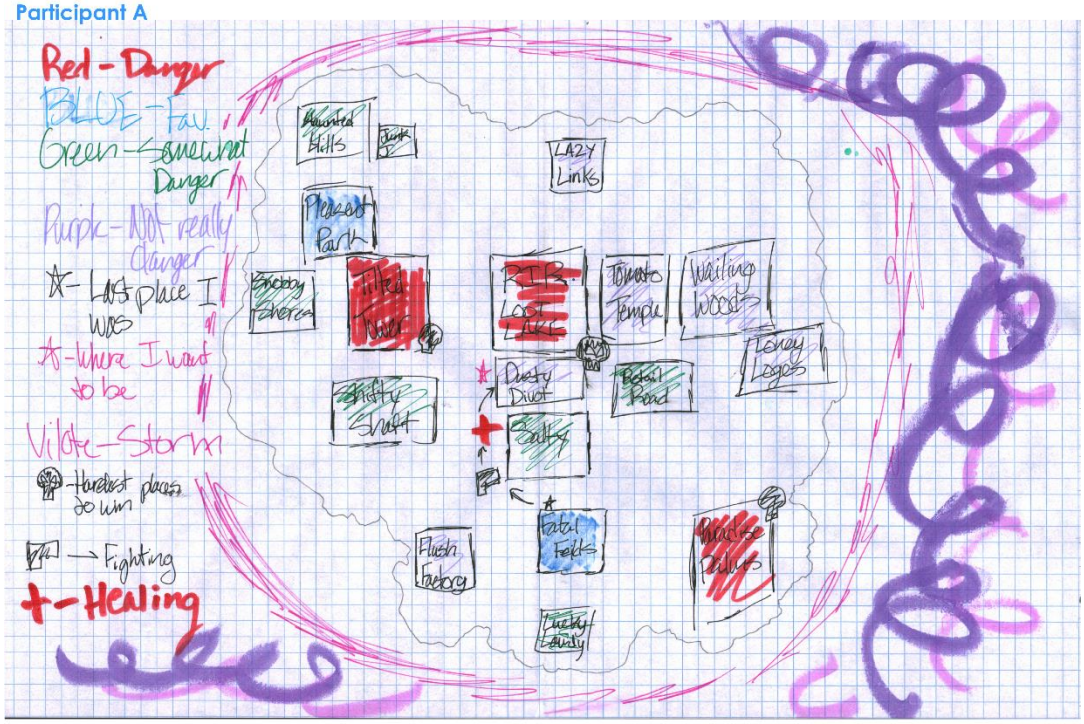
resources. Thus, while *Fortnite* was a useful vehicle for building excitement for the Mapping Workshop and meeting them on the level, *Fortnite* itself is potentially problematic as a primary way adolescents are exposed to maps, limiting understanding of how maps become meaningful while narrowing imaginaries to nationalistic and military use cases.

Day 2 Mapping Warm-Up: Fortnite Basemaps

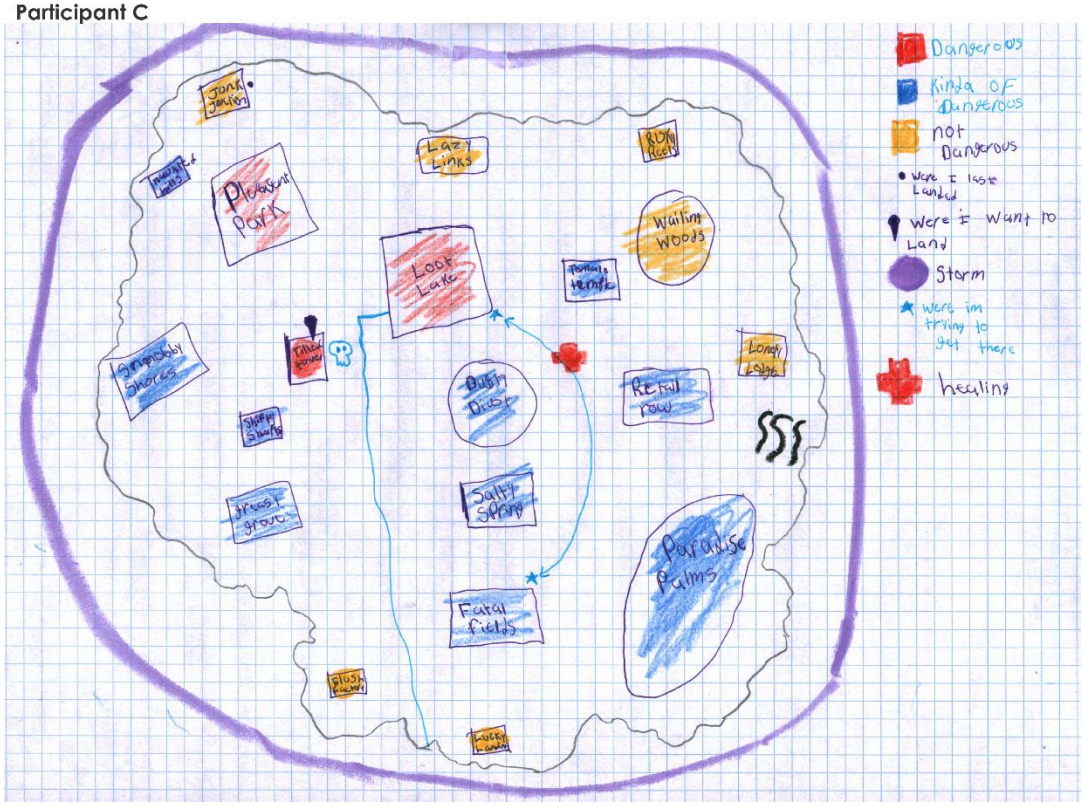
The objective of the second Mapping Warm-up was to prepare participants for the task of layering meaning unique to their own experiences and understandings onto a blank basemap in the forthcoming Mapping Exercise by first using an outline of the Fortnite *island and their experiences during gameplay through symbolization.*

Following the Day 2 Map Lesson, I pivoted to a Mapping Warm-Up challenging participants in recreating *Fortnite Maps*, which involved doodling around the outer form of the *Fortnite* island to layer meaning onto a blank map that was unique to their experiences and understandings. Figure 4.11 presents the outcomes of the Day 2 Warm-Up as separate maps recreated through a truly cooperative activity that allowed the participants to share with one the joy of a common interest.

Participant A



Participant C



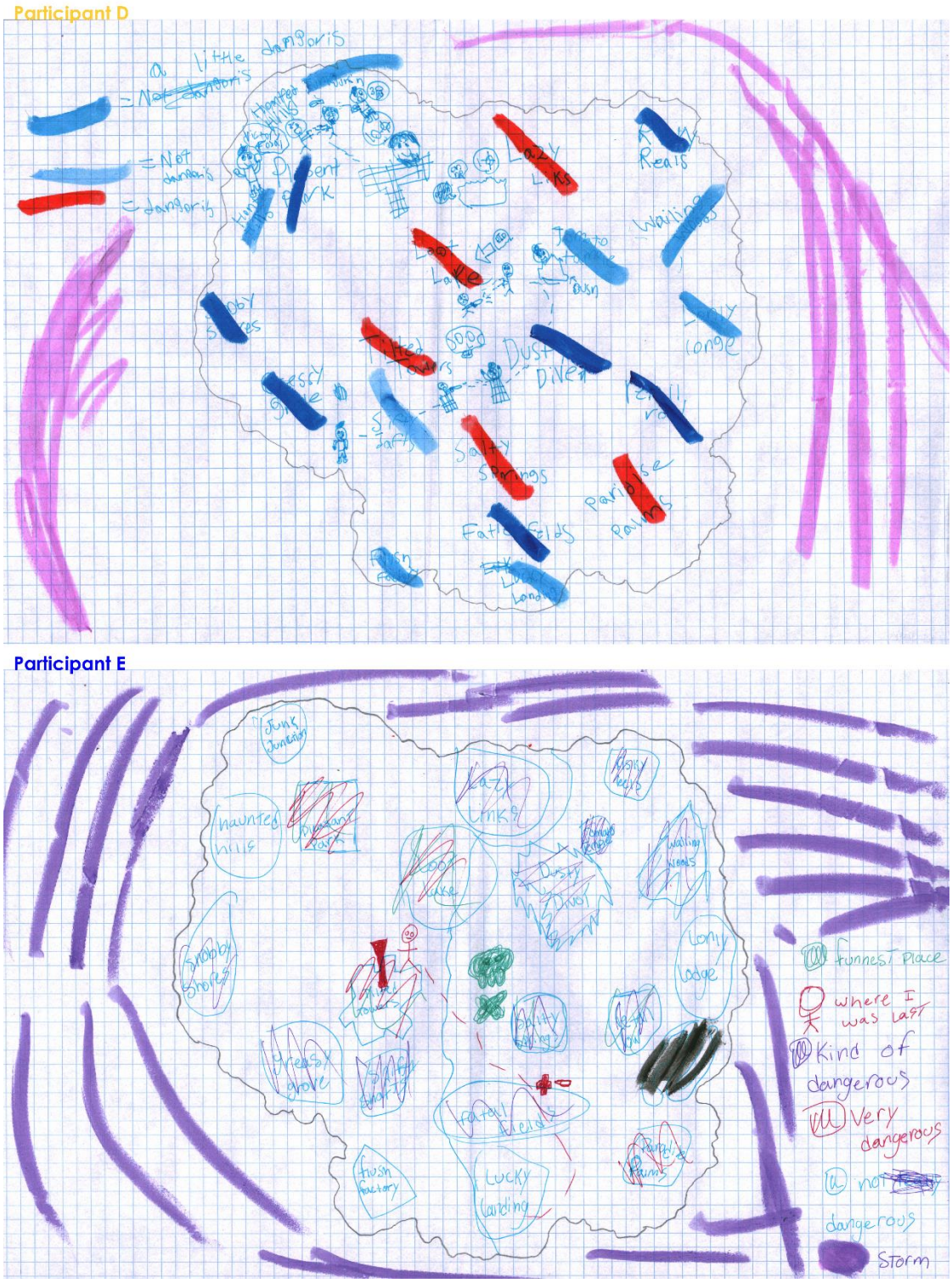


Figure 4.11 Day 2 Mapping Warm-up Fortnite Maps outcomes.

By and far, the most engaging activity for the teens was the *Fortnite* Mapping Warm-Up, which is evidenced by the maps in Figure 4.11, which are well-developed and which utilize multiple levels of symbolization, employing both color and symbols. By far, these maps of all the maps are the most comprehensive. As soon as I introduced the activity, Participants C and D expressed excitement, with Participant D exclaiming, “Oof! I know this by heart!” and Participant C, competitive, saying, “I play more *Fortnite* than you” and “I don’t know how to play pleasant”. This last comment was heavily contradicted when the group as a whole began to help one another recall the *Fortnite* island features.

While intended as an individual activity, the Day 2 Mapping Warm-Up became a cooperative mapping exercise as everyone brainstormed locations aloud to share their gameplay experiences and to complete their individual maps. Participant A noted, “I like how we’re all helping each other.” Throughout the workshop, the participants chose to work with one another every time they could rather than alone. Conversation revolved around the different features and their movements across the map, and I leveraged this opportunity to expand upon their Day 1 Mapping Exercises, challenging them to identify and symbolize obstacles in their way as they move along a particular campaign path. Participant E had their head up, was engaged, and drawing consistently, which was out of character and attributable to being so excited that it defied their general relaxed and reluctant composure.

Around halfway through the Mapping Exercise, I brought materials and utensils over from the material table to where the participants were sitting, because I sensed that the participants had forgotten that the material table existed with a variety of options available and that they could change materials anytime at will. In response, Participant E said, “What

the heck? What are these?" The participants began layering color and symbols using different materials (such as the addition of the tempera paint sticks) to develop meaning across their maps. Participant D was first to use two colors, with Participant A following that, "We should make a key for how dangerous a place is" and "I used red." Participant E used "blue for not dangerous" and, again, Participant A, "I'm going to use green for mediocre". Overall, participants experimented much more with symbolization in the Day 2 versus Day 1 Mapping Warm-Up, primarily using color to represent categorical thematic judgments of risk. Growth in use of symbols on Day 2 again reaffirmed Sobel's (1998) progression model.

As the maps filled with meaning, I asked participants to draw their workshop character (or *Fortnite* character) where they were last on the map, which Participants D and E did. Participant A used a star as the symbol instead, and Participant C a dot. I then asked where they want to go from this position, and they all stated "Tilted" (according to the website, "Tilted Towers was a big city on the Battle Royale map located at central coordinates…[and it] was the area with the most rooms, item chests, windows, and high-rise buildings" found at https://fortnite.gamepedia.com/Tilted_Towers and accessed May 13, 2019), the "funnest" place in the *Fortnite* universe. I prompted them to think about the route that might connect where they last were positioned in the game and how they might move from there to Titled, what might happen along the way, what obstacles they might face, etc. We spoke again about symbolization, and how they might symbolize these things, such as "The Storm" and fighting, which they each considered. Integrating an activity that leveraged their interest created the best mapping outcomes, in terms of process (affective experience) which reflected in the map products.

As the activity winded down, Participant C commented, “This was fun, making the map of *Fortnite*” to which Participant E echoed, “Yeah, this was fun. I feel good.”—a strikingly positive remark. Participants were proud of their maps, and all of them asked if they could take their map home. This coordinated with the art therapy ETC framework P/A level rather than the K/S level, where it was noted that the art works at this stage are often discarded by the creators (refer again to section 2.2); rather, this outcome supported and matched the P/A planned focus of the day on the development of and amount of differentiation between forms, as well as the presence, differentiation, and change of affect in the expression, rather than the K/S focus of sensory exploration or kinesthetic expression, with participants also working to develop a product rather than only explore a process. Participant D even noting that they were going to hang their map on their bedroom wall, which is especially heartening given that it is an intensely affective personal geography, and likely the only truly private space they have. I conclude the Mapping Warm-Up by bridging from digital affective geographies into real affective geographies, as performed in the subsequent Mapping Exercise.

Day 2 Mapping Exercise: Constellation Map

The objective of the second Mapping Exercise was for participants to develop understandings of their own affective geographies, how they are connected through personal meaning, and how mapping can be used to creatively portray this.

The Day 2 Mapping Exercise encouraged participants to link meaning with real life locations, in essence identifying affective geographies while exploring their meanings and the connections between these places. Participants added points to a map of Madison based

on a series of prompts concerning place and meaning. Participants then punched holes into the map and connected these places in a meaningful way, annotating each place by what it means to them or how they felt about it. Figure 4.12 presents the outcomes of the exercise.

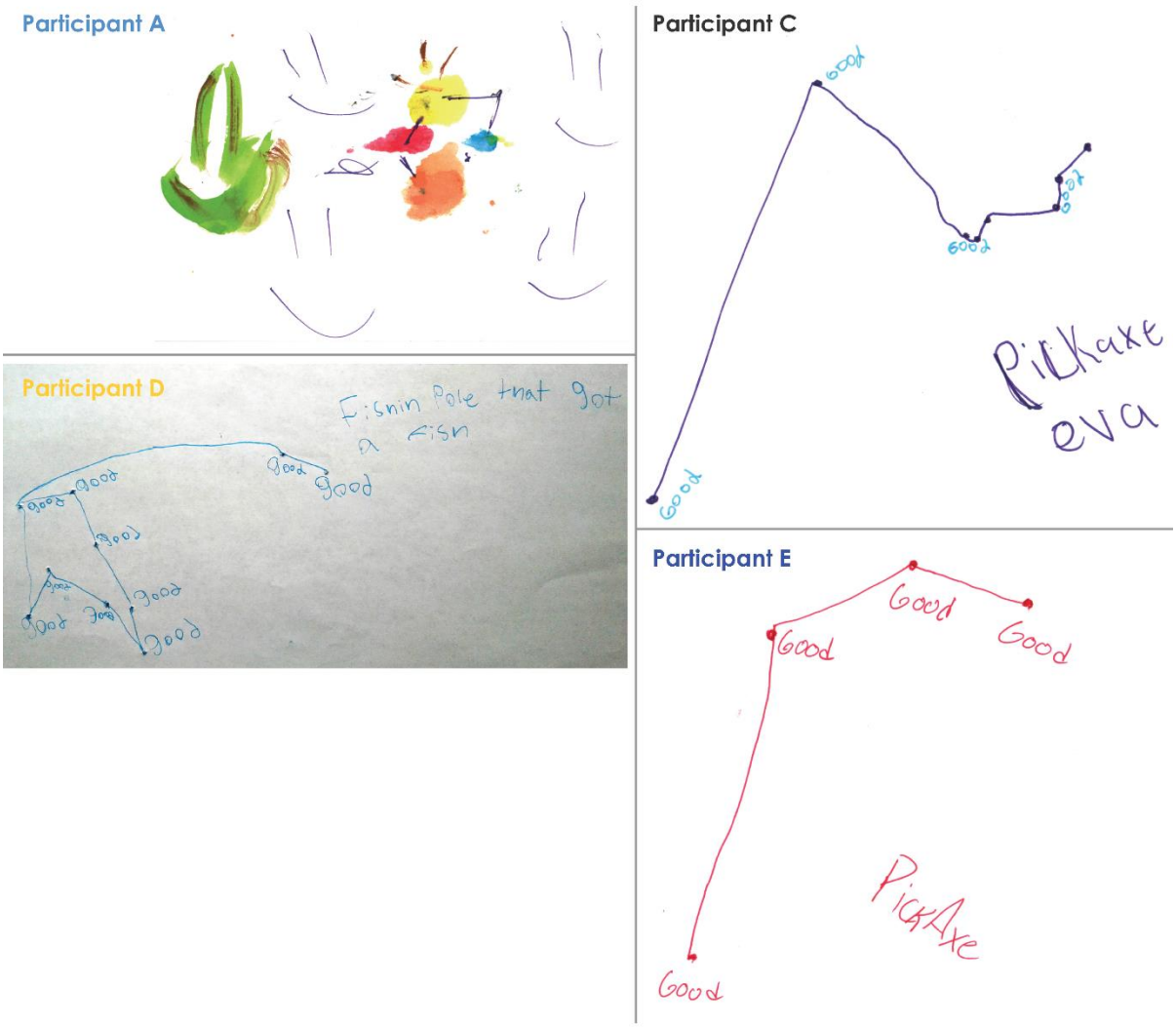


Figure 4.12 Day 2 Map Exercise Constellation Maps, presented at the same scale to one another. The maps used to mark locations are not presented to protect participant privacy.

To begin the Day 2 Mapping Exercise, I handed the participants a variety of scaled maps of Madison, among which they could choose, and first directed them to situate themselves by finding their homes. Some participants were able to identify their home immediately, while others required the assistance of myself and others. I was not surprised by this variability in the practice of using maps across the participant pool, as their world from above is not a familiar perspective and, if seen, places are often already marked (such as on Google Maps), requiring minimal engagement with the basemap. However, Participant D reviewed the exercise by saying that they "liked locating things" and, rather than having places pre-identified for the participants, the process of orienting themselves in space, even if difficult, is a beneficial skill to develop. Encouraging engagement with and use of maps as processual tools was an important element of the Mapping Workshop.

I then prompted participants to locate and mark on the map places of meaning outside of their homes—both good and bad. When I mentioned bad, Participant A said that they once saw a car accident occur from the second floor BLW Youth Center windows. Participant C followed with a narrative about a nearby town where they had once lived and that it was not a very good memory given negative local events, including a shooting. This place was marked on their map. The opportunity for mapping places where they had negative as well as positive experiences allowed for conversations to develop on otherwise unknown incidents that had impacted the participants in some way. All of participants added the BLW Center as a positive place and they also added commercial locations like Walmart and restaurants like Red Robin as positively affective geographies, which supported the love of food that I had witnessed throughout the Mapping Workshop (participants were often excited about the

snacks as they arrived, especially the goldfish crackers). I provided prompts regarding place and meaning that encouraged them to keep going until they had at least five places on their maps, though Participants A and E only marked four, although Participant A was the only one to vary the use of color creatively, albeit without explanation. Fatigue was becoming evident, especially for Participant E, similar to the end of Day 1.

Once they marked these places on the maps, they were directed to poke holes through the paper at those locations, participants flipped the page over and connected the dots to make the "stars" of their constellation. Participant D identified the most places (ten), putting in the most effort. I finished by querying, "What did you put on your map?" Participant C responded, "Good stuff." When I ask what shapes their constellations made, Participant E responded, "I don't know, a pick axe?" and then asked how to spell it so that they could write it down. Participant D noted, "Mine looks like a hat" but eventually settled on the image of a "Fishing pole that got a fish" once they connected two distant points to where the other eight points were aggregated. Participant C looked intently at their constellation of "Pickaxe eva", without explanation of the chosen name. I asked the students to denote somehow how they feel about the points in their constellations, e.g., the affective geographies they had marked. Participant C said, "I feel good. How do we mark them?" I prompted them to explore the emotions they had connected with each of these geographies and to symbolize that somehow with each point, which was done by Participants C, D, and E by labeling using the popular term "good" alone, continuing the use of a limited emotional vocabulary. Participant A said, "I don't want to do this anymore. I'm tired. Can I put smiley faces next to them?" and, thus, became the only of the four remaining participants to use symbols for emotion, though also

the only participant to not give a name to the form of their constellation. That they felt they had to ask for permission to add symbols rather than labels signaled that perhaps I was not as clear in reinforcing the concept of using symbols to represent meaning as I thought I had been, or at least in a way that was absorbed by the participants. Participant D remained quietly working after the others were done, and even asked if they could take it home to finish it, which I happily agreed to and was an encouraging sign. Students began requesting the surveys, in conforming to the schedule of the Mapping Workshop, so that the night could end and we finished up. This activity revealed the rather limited extent of their affective geographies, or at least that they had not before considered the meaning of place. Though participants, apart from Participant D, did not seem overly interested in this activity (attributed in part to the fatigue at the end of the day), the creative application of color and symbols (Participant A) as well as descriptions of the constellations allowed for a new perspective on how places could be connected with meaning.

Day 2 Emotion Survey 3

The objective of Emotion Survey 3 was to tease out the affective consequences of the mapping activities themselves, providing comparison against the earlier emotion surveys.

The third emotion survey found that Participant A's previous low positive affect score was increased fairly dramatically (by ten points, from 19/50 to 29/50) and their negative affect score decreased to the value it had been upon arrival (the first emotion survey, 10/50), indicating that the mapping activities had a positive affective impact. Participant E, however, had a different result, in that this was the only case over the entire 3 days of Mapping Workshop wherein the negative affect total score exceeded the positive affect total,

indicating their strong displeasure with surveys (perhaps specific to the format or type and presentation of this particular survey) and its consequence on their affective experience of the mapping workshop. Observations supported that the surveys alone were responsible for Participant E's affect scoring here. In fact, Participants A, C, and E (though only Participant A and E's affect scores reflected this, interestingly; Participant C's scores remained constant over all three surveys, with a positive affect score of 38/50 and a negative affect score of 14/50, perhaps indicating a lack of attention paid to the surveys and an effort to get them over and done with) all verbally expressed opinions agreeing on this issue, which points to the possibility of group influence on scoring. Specifically, as I introduced the second survey, Participant C complained, "Why?"; Participant A said, "These are the reason I'm in a bad mood" and "If we didn't have to do this, this would be much better." Participant E said, "I'm going to put that I'm in a bad mood"—despite not observably in a bad mood just moments before and even in the moment itself—and after everyone completed the survey, they finished with, "I said I'm in an angry mood because we keep doing this survey." Participant A responded with, "I said this paper." Though highly verbal as I handed them out, the group was quiet as they filled out the surveys. Participant E seemed more engaged than usual, with an upright posture and general present composure. Participant C was particularly intense and quiet as he filled out the form, which potentially disagrees with my theory that they were simply moving quickly through the survey without thought, especially given that they ended by saying, "I like my map". Participant C smiled. I asked, "How did you like it? Write that on the back. Tell us how you felt about it on the back side of the sheet." Rather, Participant E responded verbally with "Good" and asked, "Why can't we just tell you if we liked it?" This

statement has implications for how it might be best to survey emotions of teenagers during mapping workshops. Though not popular among many of the participants, these surveys made a space in time dedicated explicitly to the expression of their emotional experience, though the format of reporting is something to improve. Participants were able to exercise their own power over this expression as verbal and/or written protest rather than it being reflected in their behavior or composure, given they remained in overall apparent positive moods with high energy. This supports Chapter 1 arguments that simply listening to children, by allocating time, space, and attention for them to express their opinions, perspectives, experiences, and emotions is unequivocally important and supports better life outcomes. Participant D made no verbal or written note of complaint regarding the surveys, and a wide range remained between their affect scores (17 points), with positive affect increasing a point and negative affect increasing two.

Switching the discussion from affect to mood, Participants A and E revealed their disdain for the multiple survey method in this report, with their scores shifting from 3 to 2 and 10 to -10 respectively, although their reasoning and emotion words differed. Participant A reported being “happy” but attributed the minimal drop in the score to “this paper” (i.e., the survey). Alternatively, Participant E reported being “angry” because “we keep doing these surveys”. This attitude matched verbal expressions during the workshop, with students complaining as a cohort; the more dissatisfaction that was expressed by a single member, the more the group agreed and replicated this sentiment. Yet, 3 of the 4 remaining participants reported being generally happy, with Participants C and D holding strong scores at, respectively, a subtle increase to 9 and a return to the maximum 10 from their excited

written-in number from the first round, defying verbal complaints. Participant D cited the *Fortnite* map, still, as the reason for their positive emotional state. Overall, Day 2 saw the most variation in overall mood reports due to this expression of distaste for the surveys, which—again—served as a good way for participants to feel empowered in sharing through multiple means their opinions—both where they agreed, where they did not, and how they chose to express their thoughts.

Day 2 End Notes

The general fatigue at the end of the night was overall lower, though participants expressed a need and desire for "free time". Overall, participants did really well and maintained a good energy, at an even higher level than Day 1. Students fed off one another's energy, affecting one another. I informally asked, "What did you like about the activities?" to which they collectively responded, "*Fortnite*!" Participant C added, "I liked locating things" and Participant E, "I liked it in general", in reference to the *Fortnite* mapping exercise. Participants were asked "Which mapping exercise did you like better, the ones from yesterday or the ones from today?" They all adamantly agreed, "Today!" and I asked "Why?" Participant A: "Because it was *Fortnite*." Participant C said "I'm excited" while walking around the room at the end of the day. At some point during the Workshop, Participant A had taken off their shoes, evidencing their comfort in the space. Participants C and A were excited and danced when I confirmed that I would buy them drawing utensils for their participation gifts. Overall, Day 2 ended with a high level of energy remaining despite the busy school-to-Mapping Workshop day.

4.4 Day 3: The Power of Mapping Overview

Day 3 Logistics

Day 3 extended the visibility/invisibility content of Day 2 by focusing on vision and envisioning in discussion around the diverse, creative possibilities of mapping and maps: *What can maps show? How can maps be used to show your perspectives and visions?* The Day 3 goal was to empower participants to use maps to re-form their own visions of the BLW Center and their neighborhoods/Madison.

In sensing that the participants might be more restless the last day, given the dramatic change to their BLW schedule to the workshop, and in recognizing the value added by additional perspective and presence other than my own, I recruited an additional observer for the day from the University of Wisconsin Cartography Lab. Though the participants were more riled up when they arrived than usual (and would continue to be), the overall vibe during homework time was relatively quiet and calm compared to the two previous days. The group began giggling and goofing around after homework time, and everyone seemed in a good mood.

I took an informal tally at the beginning of Day 3 to acquire general impressions of the Mapping Workshop so far. This opened up an environment encouraging free and honest discussion around the mapmaking processes in the workshop. All five participants raised their hands indicating that making maps is fun, two (Participants D and E) raised their hands indicating that making maps is relaxing, three (Participants A, D, and E) that making maps is meaningful, but none of the five indicated that making maps was empowering. Informal

tallies are a useful way of gathering the attention of participants and having them engage together in a quick and on-theme activity, refreshing their considerations of maps. It also allowed me to visually and verbally connect with participants and to gather a sense of the day.

Fatigue and focus were issues given the structure of the workshop and that participants had long days at school before even arriving at BLW. I decided to shift the Mapping Warm-Up activity to before dinner following the Ice Breaker, given the fatigue exhibited in Days 1 and 2 following dinner. Rather than cut the activity altogether, I maintained the Mapping Warm-Up to develop a transition between the creative non-map based activity to the Madison map-based activity. I also condensed the map lesson to a few brief reminders and an offering of a diverse array of maps to serve as inspiration for their own works.

Day 3 Emotion Survey 1

The objective of the Emotion Surveys is to collect PANAS affect scores and capture participant mood, with Survey 1 providing a baseline for subsequent comparison after each activity.

Day 3 began with Emotion Survey 1. Refer again to Figure 4.3 for the affect scores. At the start of Day 3, total positive affect once again exceeded total negative affect across the board. Students consistently arrived over the 3-day workshop in positive emotional states. On Day 3, the ranges between the positive and negative affect scores notably increased for Participant E, with a particularly high positive affect rating of 45/50 and a negative affect

rating of 10/50. Participants A-D had characteristic reporting ranges, similar to Days 1 and 2, but overall positive.

Switching discussion from affect to mood (refer again to Figure 4.4.), Day 3 began with overall positive mood reports, ranging (on the scale from -10 to 10, very unpleasant to pleasant) characteristically between 5 and 10 (Participants A and B 5/10, Participant D 8/10, and Participants C and E 10/10). "Happy" was the most popular reason provided (3/5), with "normal" and "good" also provided as variations. Participant A broke their typical report of "sleepy", and instead said they felt happy because they were unusually not tired. Others cited the workshop snacks ("goldfish" crackers), their grades, and everything in general as contributions to their general positive emotional states.

Day 3 Emotional Observations

The objective of emotional observations is to add an additional, sometimes non-verbal format for capturing affect and emotion for comparison to the PANAS self-reporting.

Day 3 Affect Wheel observation coordinates also varied from both Day 1 and Day 2 (refer again to Figure 4.5). The Day 3 Mapping Exercise was the most activating, with the Day 3 Ice Breaker similarly pleasant though much less activating. The Mapping Warm-Up was significantly less pleasant and activating, which is likely due to the shift in the schedule positioning from after dinner to following the Ice Breaker, and with less time afforded the activity (and, therefore, fewer observations to review).

Day 3 Ice Breaker: Blind Draw

The Day 3 Ice Breaker was designed to introduce participants to parting from perfection in executing specific forms or visions of things and rather, through feeling, to imagine and create new renditions of forms.

The Day 3 Ice Breaker focused participants on the theme of vision/envisioning by literally removing their sight and challenging them to envision as they drew, utilizing other senses than vision. Figure 4.13 presents the outcomes of the Day 3 Ice Breaker activity.

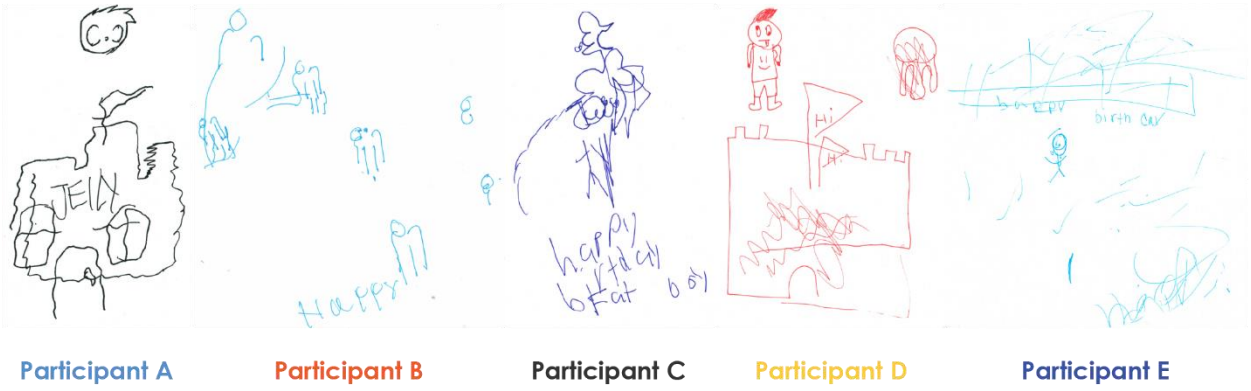


Figure 4.13 Day 3 Ice Breaker: Blind Draw outcomes.

Once blindfolded, I instructed participants to draw either a castle made of jello or a pirate on their birthday. The participants made jokes and laughed about the blind draw activity. Participant A said, “I have no idea how this is working.” Participant B said, “I don’t know how to do this” and then laughed about their drawing. Three of the participants chose to draw a pirate on their birthday, while the other two chose the castle made of jello. Participant E peaked during the exercise and laughed at some of the pictures.

After the Ice Breaker, participants shared their pictures and looked at one another’s. Participants A and B did not understand the point of the exercise, saying, “What was the point of that?” and “Um, what was that?” respectively. I responded by introducing the Day 3

theme and reminding participants of the Day 2 content, including Map Kibera. Participants expressed the most discomfort with this exercise and it was the least liked among all of the Ice Breaker activities, which may be due to their unfamiliarity with drawing with their eyes closed and with the fact that this particular Ice Breaker therefore was less competitive given none of the participants were comfortable enough with the exercise to be confident about their performance. None of the participants drew for the full two minutes, even after being prompted.

Day 3 Mapping Warm-Up: Re-making BLW

The Warm-Up activity required participants to recreate the BLW Youth Center floor-by-floor through doodling and annotation. In doing so, I asked participants to envision how the space would look if they had full authority and resources to remake it.

The purpose of the Day 3 Mapping Warm-Up was to empower participants in sharing their visions of what the BLW Youth Center could be if they had the opportunity to remake it however they would like, therefore introducing and encouraging the envisioning of creative futures through the mapping process. Figure 4.14 presents the outcomes of the Day 3 Mapping Warm-Up.

The Day 3 Warm-Up activity was moved from its typical slot following the Map Lesson to immediately following the Ice Breaker activity. I made this change to mitigate the fatigue signaled the previous two days. The Warm-Up activity required participants to recreate the BLW Youth Center floor-by-floor through doodling and annotation. In doing so, I asked participants to envision how the space would look if they had full authority and resources to remake it. Amidst planning for a new Center, this exercise was especially timely

and offered participants another platform to express their voice and own affective geographies.

The group began brainstorming aloud what they would like to add to the BLW Youth Center. Everyone in the group became excited when they talked about the things they like in the basement, which the teens use as a recreation space, identifying a pool table, foosball table, video game systems, a ping pong table, drum set, keyboards, and couches. All the participants apart from Participant E elected to use symbols to depict objects that they would add to the BLW Youth Center, but they all also chose to include several words to describe the changes they would make to each area in the building.

As I began the introduction to the activity, Participant A interrupted with, “I’m already lost” signaling an uncharacteristic lack of interest in the day’s activities, attributed to restlessness. Understanding their interest in professional art materials, I offered Participant A a new set of Micron pens to use, thinking that boredom with the materials after two days of drawing with the same ones may have at least in part motivating their lack of interest. I also intervened with the pens to prevent the other participants from being negatively impacted from Participant A’s verbal outbursts of disinterest in participating (although their presence and choice to remain involved betrayed this). I believe this worked; for instance, Participant D remained smiling throughout, demonstrating that even though the participants can impact one another, each maintained full agency over their own behavior and their own opinions.

Figure 4.14 Re-making BLW results.

After Participant A's outburst, Participants B, C, D, and E continued to brainstorm what they would do differently in the basement. There was a lot of talking and laughing as they collaboratively brainstormed. When conversation moved to the second floor, participants collectively were excited to add another gym in the building. However, this conversation resulted in the group teasing Participant D for their weight, a negative outcome of the activity. After this, the group was quiet and focused when they began working on the second floor.

The Teen Program leader asked what would happen to the Los Niños Primeros program space, and they all agreed that they did not want the younger children to be there and would rather have the space for their own activities. Conversation and levels of engagement varied over time, but overall, Participants B, C, and D were interested in the activity. Participant E was seemingly disinterested (though likely interested, only internalizing their emotions as was characteristic) and Participant A was not as interested as they were in previous days. Multiple gyms, second floor patios, hot tubs, video games, and fast food were among the most popular additions, a clear indication that the participants view the BLW Youth Center more like home than school.

Day 3 Emotion Survey 2

The objective of Emotion Survey 2 is to tease out the affective consequences of non-map creative, art-based activities, i.e., the Ice Breaker activities, to serve as a baseline to measure against the affectual consequences of mapping as a creative, art-based activity.

The second emotion survey of Day 3 (refer again to Figure 4.3), following the Ice Breaker *and* Warm-Up activities (unique to Day 3) saw, in 4 of 5 participants, an increase in

total positive affect. Participant B reported a minor decrease but overall maintained a positive score. Participant E scored the highest possible (50) in the positive affect score. These numbers were encouraging in that positive affect overall was being maintained across workshop activities with only minor variations. Participant A did not want to do the survey and Participant B joked that they were leaving because of the survey, although stayed for the remainder of the workshop.

Switching discussion from affect to mood (refer again to Figure 4.4), the second overall mood report varied from the first with only a single difference: Participant D increased their reported score from 8 to 9 because of being able to envision "our own BLW". The other participants ranged in emotional states between "Happy"—despite their lack of engagement—because of "Food" (Participant A), "Normal" and "?" (Participant B, as was characteristic), "Good" because of "everything" (Participant C), and "Happy" due to it being a "good day" (Participant E). Participants A and B retained scores of 5/10, and Participants C and E retained scores of 10/10.

Given that the Mapping Warm-Up was placed prior to this survey, the scores reported also capture the affective consequences of the Re-making BLW activity, as evidenced by Participant B's mood report attribution. Though not ideal, this prevented adding an artificial break in between the activities. It also allowed for the prioritization of participant experience by requesting less engagement and performance from them after dinner, where fatigue during Days 1 and 2 was most evident. Participants also could then focus their energy on the

primary Mapping Exercise alone, while thinking about the creative map examples presented to them in the Map Lesson.

Day 3 Map Lesson Observations

The objective of Map Lesson 3 was to simply share with participants a diverse, creative set of examples of thematic and reference maps and map art in order to expand their perspectives on what is possible and to encourage creativity in their own mapping.

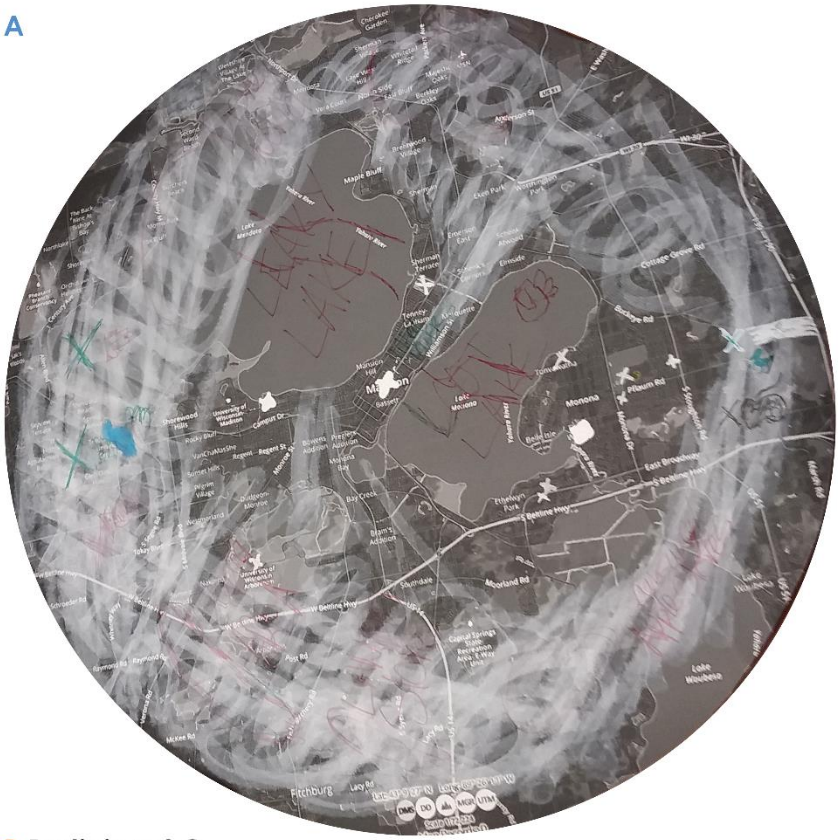
The Map Lesson of Day 3 focused on developing the understandings of the preceding days' content to support the connection of the three themes, with a simple discussion on what had been learned overall about maps and the diverse array of creative examples of maps and map art. We began after dinner by reviewing the content of Day 2 in brief, specifically the *Fortnite* Mapping activity and Map Kibera, focusing on how maps can be useful and meaningful. When I asked, "What are maps?" Participant B responded that maps show "where you are and where you're going," a hint at the processual concept of remapping. While all participants contributed small contributions to the discussion, overall participants were quiet but in positive moods. Participant D was the only fully attentive participant during the Day 3 Map Lesson, with Participant A leaning back with their hands behind their heads, Participant B laughing and gesturing with their hands, Participant C making noises and jokes, and Participant E sitting with their head down. When Participant A noticed change in the basemap I put on display for *Fortnite*, the participants all perked up and chipped in to talk about adults playing *Fortnite*. I ended the Map Lesson by placing on the table ad displaying a stack of examples (from single maps to books) of creative maps. Unfortunately, no participants spent time exploring these then or after, thus self-limiting their exposure to creative map efforts.

Day 3 Mapping Exercise: Re-Making Madison

The objective of the Day 3 Mapping Exercise was to encourage participants to feel empowered in developing and expressing their visions for their own affective geographies by re-making via mapping Madison using the "overwriting" method.

The Day 3 Mapping Exercise continued the idea of re-making place by having participants re-envision Madison through re-mapping it. The goal was to empower participants to use mapping to begin artistically re-forming their own visions of Madison and local neighborhoods, e.g., practicing expressing their perspective through the creation of spatial arguments. The outcomes of the Day 3 Mapping Exercise are presented in Figure 4.15.

Participant A



Participant B **Participant C**

Participant D Participant E

Visiting Teen

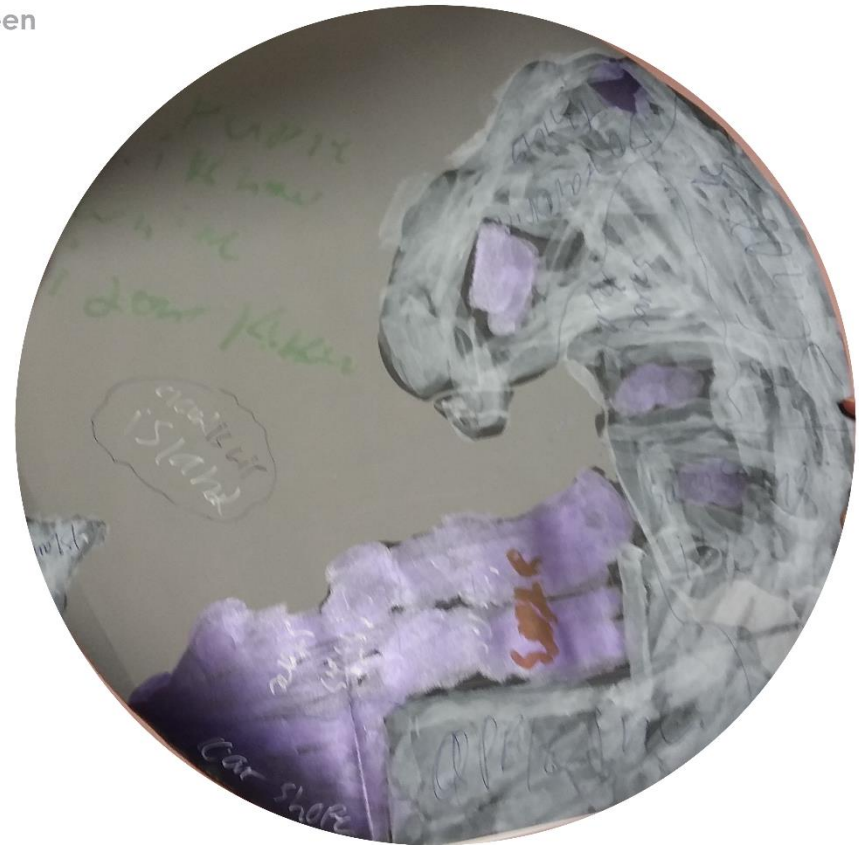


Figure 4.15 Day 3 Mapping Exercise results, wherein individual or pairs of participants used the "overwriting" technique to cover areas of Madison or the greater BLW neighborhood (depending on their choice of basemap) that they had no personal knowledge of, and "replaced" those areas by layering onto them what they would place there if they were "in charge". The parts of the map uncovered are annotated with places of meaning and other transformations that they chose to portray. Another BLW Teen Program participant showed up during this activity, after having been absent all week, and asked if they could participate; their map is presented as the last in the series.

As I set up the exercise, the room had an ancy, overly energetic atmosphere, and the participants were difficult to direct. The participants spontaneously requested that they be allowed to work in groups on a single map rather than individually, revealing a need and desire for cooperative activities, to which I happily agreed. This indicated their strong regard for one another's opinions, ideas, and perspectives, and their general enjoyment of the established friendships. It also revealed their lack of self-conscious expression, at least among one another and with regard to artistic activities, and the strength of the life skill in being able to work well in groups even at this young age. Participants B and C chose to work together immediately. Participants D and E later began working together. Participant A seemed disinterested, pulling their hood up over their head, until one of the UW facilitators joined to form a third group.

The groups were not listening well as I tried to guide them through the activity; they mostly spoke between themselves, identifying finding places rather than whiting anything out or following directions. This signified their need for free time and free expression rather than guided interaction, and so I modified my approach. Rather than speak to the group as a whole, I began moving between the individuals and groups and chatted with each about their

maps of their visions for Madison. The second UW-Madison research facilitator also helped to stimulate thoughts and engagement among the groups. This is a critical note, speaking to the benefit and importance of at least two facilitators (myself and at least one other, though two were much better): some participants had grown tired of my constant requests for engagement, and appreciated the interest from the other facilitators and the care for their opinion that was exhibited. In essence, more adults showing that they cared about the expressions (opinions, feelings, etc.) of the teenage participants was impactful and affective. Both facilitators also asked interesting questions that I did not previously consider. Soon, Participant E and Participant D decided to work with one another.

Given the involvement of the UW facilitators in the Day 3 Mapping Exercise, I was afforded several moments to watch rather than lead the exercise. I noticed that the participants remained using the same materials they had earlier. Given the dark basemap (rather than the typical white-based maps or sheets of paper they had been working with frequently) and the Mapping Exercise prompt (of covering large areas rather than just annotating points), I saw another opportunity to remind the participants of the diverse materials on offer. Accordingly, I carried the tempera paint sticks, paint, crayons, and other materials from the material table on the other side of the small room to the tables where they sat working. The energy in the room built when I brought out the new materials, with many of them selecting the tempera paint sticks so that they could cover large areas of the map fairly quickly and without mess, a good tool to fulfill the “overwriting” prompt.

Carrying over from the Day 3 Mapping Warm-Up, participants continued to joke about wanting to make a million gyms across the city. The teasing of Participant D about their weight also continued, and though all friends, it felt like bullying, and so I intervened by asking them kindly to empathize and to not hurt their friend. Participant D had spoken up for themselves throughout by joking back, and the friendly teasing finally died down. The room remained full of laughter and smiles. Participant C eventually said "we should get paid to do this" indicating their perceptions of the worth of their labor—a revelatory note.

As participants began whiting out the maps, they experienced a bit of trouble with the white paint sticks, prompting another round of material experimentation. Participants D and E used multiple materials, including pens and various colored tempera paint sticks. They made a key after I asked what each of the colors they used to differentially code places meant. Participants B and C goofed around with each other, but continued to work on the exercise. Participant E helped one of the Teen Program Leaders reign the rest of the participants in when they became over-energized with the pens, both by marking their bodies and getting white ink all over the table.

Participants D and E talked about yachts and big houses, and integrated them into their map, saying that they would choose to live along the shoreline where the large houses exist today. Money seemed to be a theme their map, and their choice to live along the Lake Monona re-exposed the palpable division between livelihoods that existed within the BLW neighborhood, with the participants keenly aware of the disparities. Participant E joked about having electronics everywhere but eventually expressed wanting a soccer field, and added it

to the map when prompted. They were more interested in discussing what they would change or create rather than in expressing it visually, via the map.

I jumped in to help Participants B and C, and we giggled and had fun over the sheer amount of possibilities we covered, including discussions of house boats and floating aquariums. At one point, they then began falling to the ground, laughing and goofing around. Participant C soon returned to drawing intently as well, now that their period of physical outlet was complete, which was an amazing indication of self-regulating behaviors and being in tune with their own needs and how to meet them while remaining present in the Mapping Workshop. When Participants D and E seemed to be done, Participant D used their arms to express what their new city will be like and how it would draw people in. Participant C added that Madison would be like the new Chicago.

Participant A drew icons on top of their map, showing effort, but returned to zoning out after a while, seemingly fatigued. Participant D was overall energetic, moving between standing and sitting positions, and even sometimes dancing and joking. Participant B continued to draw despite Participant A asking if they were done. During the ending transition, Participant C began to draw on themself with the paint sticks, cat whiskers and stripes. Participant E drew on themself as well. This was another and unexpected form of expression that the materials provided.

Participants integrated parts the imaginary of the *Fortnite* Island into their visions of Madison, but also came up with other creative ideas, such as an underwater tunnel linking Lake Monona with the Capitol Square, envisioned by Participants B and C. Conversation

during this exercise was rich, and allowed for fun, imaginative ideas that would not typically be considered by adult audiences. The exercise was so intriguing that another teen, who regulary attends but had been absent that week from the BLW Teen Program, stopped by near the end and asked if they could participate. They joined in the activity and completed the map presented as the last in the series of Figure 4.15. Their success at completing this exercise without much trouble was an indication of how accessible it is, given that this teen had none of the previous days' map or mapping experience. This activity could then, perhaps, be deployed earlier in a workshop sequence or simply on its own, without a map lesson. Perhaps the largest take away is that these maps reveal how small their physical worlds really are, with all of the maps consisting of large swaths of layers of white-out. That means that how these places are structured, and what is available there, is critical to their daily life experiences.

Day 3 Emotion Survey 3

The objective of Emotion Survey 3 was to tease out the affective consequences of the mapping activities themselves, providing comparison against the earlier emotion surveys.

As I announced the survey (refer again to Figure 4.3), everyone's energy increased. Participant C said, "Survey—I like it." The final emotion survey maintained a total positive affect far exceeding the total negative affect for all but Participant B, whose range was consistently close. Total negative affect scores were maintained in all other cases, with total positive affect scores either staying the same or increasing. This is a positive indication of both overall experience during the day and, specifically, the art-mapping process.

Interestingly, the results of all three days for each participant reveal characteristic reporting trends that are useful in interpreting each survey and lend insight into how the teens understood or regarded the survey they were asked to fill out and their understanding of emotional language, with potential consequence for future workshop design. The method presented here is helpful in identifying moments of dramatic increase and decrease.

Switching the discussion from affect to mood (refer again to Figure 4.4), the third overall mood report for the last day of the workshop saw two increases: Participant A increased their score from 5 to 9, and Participant D increased their own from 9 to 10, both citing the mapping exercise as the reason for the increase. Participant C also noted that their good mood was attributable to the workshop "because it's cool". Three participants (C, D, and E) thus reported the maximum score or a "very pleasant" mood at the end of the day after the mapping exercise, one with a significant increase, and one (Participant B) holding steady at 5 (which was characteristic of their reporting in general). This result, especially given the timing after three long, activity-filled days and ending at the close of a week, is especially encouraging in that, despite all observational evidence towards restlessness and dwindling engagement, students still enjoyed the process and found mapping to be particularly activating and pleasant emotionally.

4.5 Day 3 End Notes: The Post-Workshop Survey

The objective of the Post-Workshop Survey was to understand how the Mapping Workshop changed creative preferences and perceptions of and experiences with maps.

Day 3 ended with the additional, Post-Workshop Survey, which was modified from the Pre-Workshop Survey (see again Figure 3.6) to capture change over the workshop. The results are presented here as Figure 4.16.

Figure 4.16 The Post-Workshop Survey responses and how they varied from the Pre-Workshop Survey responses (original response indicated by the gray boxes).

The most exciting result of the Post-Workshop Survey follows: each participant reported liking making maps and that they would choose to make a map again of their own volition (though Participant D also wrote in "Maybe"), which was a 100% change from the Pre-Workshop Survey. This evidences overall success of the Mapping Workshop and the mapping process in general as positively affective experiences. When asked how they felt

about maps (*positive*, *negative*, or *unsure*), they overwhelmingly reported *positive*, and reasoned (moving from the Pre-Workshop Survey responses to the Post-Workshop Survey responses): from “They’re cool” to “They’re great” (Participant A); “I feel good about maps” to “really exciting” (Participant C); and, “I feel good with maps” and “I feel good about maps” to, in short, still “good” (Participants D and E). Participant B was the only one still unresolved in their opinion, reporting *unsure* with a characteristic reasoning of “?”, with no change at all (including spelling, capitalization, and grammar as written) in response from the Pre-Workshop Survey. When queried what they would map on their own, Participants A, C, and E all responded with *Fortnite*. Participant B yet again responded with “?”. Participant D was the only one to answer reflecting the empowering component of the Mapping Workshop, writing “It will show what I want in or out of my house”, and was also the only participant to change their response to whether they would *use* maps more often now to the affirmative, “to tell somebody stuff” (exact spelling), seemingly supporting the conclusion that the Mapping Workshop had empowered them to both find and express their voice regarding their own affective geographies. Participant E was the only other to respond *yes* to if they would use maps more often, writing “Yea for science”. Participant A reported “No but I’ll make them”. Participant B wrote “Maybe” and Participant C wrote “Kinda of” (exact response). Participants A, C, D, and E all reported a continued enjoyment of participation in creative/art activities, and Participant B did not indicate a choice, also representing a lack of change over the Mapping Workshop.

Moving from questions regarding preferences and experiences of maps, perhaps the most confounding of the reports were the changes in the “Self-Perception” category, with

two of the three participants who had identified previously as artists switching their views, namely Participant A (who practices art frequently and showed no evidence of self-conscious emotion during the Mapping Workshop) and Participant E. Participant C was the only to switch from not considering themselves an artist to now considering themselves an artist, and Participant D remained consistently confident with their identification as an artist. Thus, of the three who originally identified as artists (Participants A, D, and E) only Participant D remained and Participant B joined them, leaving two of five to self-identified artists. Three of the five (Participants A, B, and E) now rejected identification as artists. Compounding that was the heartbreaking report that all (rather than just the original three) of the participants now reported that they did not feel that their ideas, opinions, and perspectives are important to others (Participant B and C had changed their positioning), despite our talks on empowerment, my repeated reminders that I cared for what they thought and felt, the fact that they contribute collectively and listen to one another, and that their agency is supported through BLW Center activities and by the leadership in the majority of Program decisions. While an explanation remains unclear, perhaps they felt at the conclusion of the workshop that their voice was not important or recognized by the external world.

4.6 The Feedback Survey

Participants were asked to complete the Feedback Survey on the Tuesday following the workshop (BLW does not hold the Teen Program on Fridays) before the incentivized pizza party. I originally had planned to distribute this survey at the end of the third day, but the participants were evidently fatigued and I felt it too much to ask of them, thus adapting

my plans to their apparent needs and verbal requests. Delay in the survey distribution also allowed participants the chance to reflect on the Mapping Workshop in its entirety after-the-fact and separate from a specific day's affective consequences. The Feedback Survey encouraged participants to contribute their opinions on the workshop, including suggestions for what they would do differently or better if they were to design and run it themselves, through the pairing of a number scale response with a free response section allowing for varied forms of expression. The following paragraphs split discussion of the Feedback Survey into several subsections, in sequence: general feedback, material feedback, emotion feedback, and activity-specific feedback.

Figure 4.17 presents general feedback with regard to the workshop. While the responses to "What do you remember most about maps?" and "What do you remember most about Map Club?" were varied, brief, and some incomplete, all of the participants reported to having liked making maps, with four of the five participants scoring "How much?" as 6 of 7, with Participant C reporting a 7, or "A lot" because—overwhelmingly among participants—mapmaking was "fun" (in comparison, an adjective not typically associated with school). These results evince that the Mapping Workshop had time-lasting effects: four days (and over a weekend) after the end of the Workshop, these responses matched the Post-Workshop survey results (refer again to Figure 4.16) with mapping overwhelmingly regarded even still as a positive affective experience. Participants equally enjoyed the Mapping Workshop overall, with similar reasoning and scores (6/7 and 7/7), though Participant A noted it was because, "I get to hang out with my friends". This is an important note about this age group in particular, in that if friends are willing and engaged, most anything can be made or remade

to be fun. Perhaps the most surprising response of all belongs to Participant E. Given their consistent fatigue and characteristic lack of engagement across exercises—which, without careful observation and knowledge of the individual, could have been coded as negative affect, deactivated displeasure, or negatively-associated emotions—I had expected different results. Their score of 7 and reasoning that "because I got to do a lot of stuff" betrays their apparent composure throughout, reinforcing the necessity of triangulating multiple reports of emotion and encouraging the conclusion that Participant E, in general, was enjoying the Workshop internally even as their external expressions could be misinterpreted as boredom. Researchers should take care of their assumptions and rely more heavily upon self-reports, specifically when regarding the emotions of teenagers.

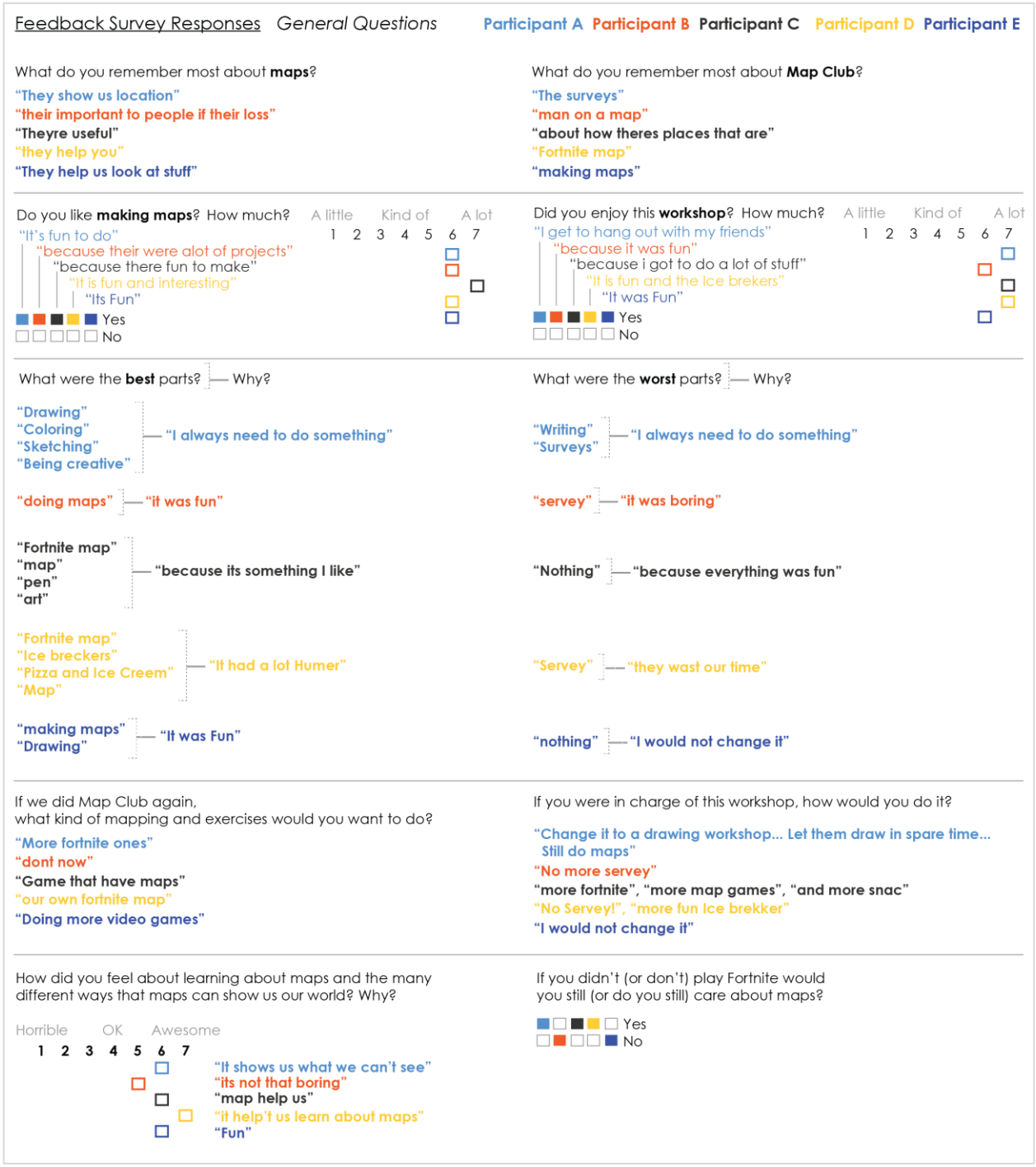


Figure 4.17 Feedback survey general responses.

When asked what the best parts of the Mapping Workshop were, all but Participant A listed maps or mapping. Participant A unsurprisingly listed “Drawing”, “Coloring”, “Sketching”, and “Being Creative” as the best parts, given their longstanding affinity for these activities, and answered *Why?* with “I always need to do something”, which is an insightful comment that supports my observations: when the other participants engaged in non-workshop activities, Participant A would remain drawing. When asked what they would do if they were in charge of the Mapping Workshop, Participant A wrote “Change it to a drawing workshop… Let them draw in spare time… Still do maps”, which is what the Mapping Workshop was in essence, and upon asking them about what the difference might be, they responded to me that it was important to frame it differently for the participants but to not actually change the content. There was no further explanation. Participant B wrote, “doing maps” and “it was fun”, which was similar to Participant E’s answers of “making maps” and “Drawing” because “It was fun”. Participant C and D offered more: Participant D listed the *Fortnite* map and the Ice Breakers specifically, along with the pizza and ice cream party, and reasoned “It had a lot Humor”; and Participant C listed *Fortnite* as well, along with “map”, “art”, and “pen”—significantly as the only participant to mention the materials here, confirming that materials do in fact matter concerning the affective experience—“because its something I like”.

Conversely, when asked about the worst parts of the Mapping Workshop, Participants A, B, and D listed the surveys, because (once again) “I always need to do something”, “it was boring”, and “they wast our time” (direct spelling and listed respectively). This result was surprising only for Participant D, who had never before complained about the surveys,

though characteristically they complained very little about anything. Participant A also listed "writing", which is interesting given, both, their opinion (forthcoming, see Figure 4.19) that they did not feel able to express their emotions through mapping, "because writing was not used a lot" and their use of art as an outlet for contained energy. Participant C elected that they would not change anything because they found everything to be fun. Participant E, however, was once again the most surprising in that—despite their adamant, highly vocal (and likely influencing) negative regard to the surveys during the Mapping Workshop—they said twice on this feedback survey that they would not change anything. I asked them about this answer, and they replied that they would gladly do the surveys again if we did another mapping workshop, that they would not change the surveys or the workshop. Overall, these conclusions exceeded my expectations. With regard to other improvements, Participants A, C, and D requested more *Fortnite* mapping, Participant C asked for more games with maps and more snacks, and Participant E requested more video games. Participant D asked for more Ice Breaker activities. When I asked if the participants would still care about maps and mapping if they did not play *Fortnite*, Participants B and E said *no*, while everyone else said *yes*. This conclusion supports observations over the Mapping Workshop, such as Participant E becoming strikingly and uncharacteristically activated during the *Fortnite* activity, and Participant B generally reporting no opinion (such as their "don't now" answer here with regards to what activities they would like to do if we had the Mapping Workshop again, and characteristic "?" and "unsure" answers throughout surveys) which may be enhanced in effect by their two early dismissals on Days 1 and 2 (experiential interruptions).

Finally, in querying how they felt about learning about maps and the many ways that maps can show us our world, along with why they felt that way, Participant D recorded the highest score (7/7, or “Awesome”) because, “it help’t us learn about maps”. Participants A, C, and E all reported high scores of 6 out of 7, because “It shows us what we can’t see”, “map help us”, and “fun”, respectively. Participant B rated the lowest (and yet still above “OK”) score, a 5 out of 7, because “its not that boring”. Participant A’s answer was particularly exciting, signaling that they had absorbed some of the pedagogical content around meaning in the Mapping Workshop.

Figure 4.18 presents the feedback regarding the workshop materials. I found that materials were critical to driving excitement in this Mapping Workshop, concentrated around professional-quality art pens. When queried as to why they chose the specific materials they did, the most popular answer was that the materials were chosen because they were “interesting” (4 of the 5 participants). Participant B marked this as their only response to the question, while Participant D (the only to not select “interesting”) reported choosing the materials only because they were “new” (e.g., rather than previously unused by anyone or unopened, “new” in this context means a type that the participant had never personally encountered). The majority of participants (4/5) reported liking the different materials. Despite all observational evidence, Participant A reported not liking the different materials, though they did indicate that pens were their favorite and, indeed, their participation in several of the activities (especially the Day 3 Mapping Exercise) was in-part motivated by the availability of new and professional-grade pens. The diverse selection of materials to draw/paint/mark upon (e.g., papers, wood, etc.) seemed to receive little attention by

participants, and instead the majority of time the most familiar materials were selected, such as regular weight/quality printer paper and blank index cards. The same can be said for pens, which were higher quality and offered a diverse array of marking weights and colors, though still familiar to use. Pens seem to be a popular material with this age group in general, as more advanced art practices become available. I would guess that paint was not selected because it requires more time and steps to actually deploy (e.g., a paint brush, water, clean up, etc.) and more elementary materials like crayons were not as attractive given possible associations with them as tools for younger children, though no observational evidence supports these conclusions. Group selection, too, could have played a role, given the esteem the participants hold for one another's opinions through their time together and friendships. Other possible explanations will be discussed in Chapter 5.

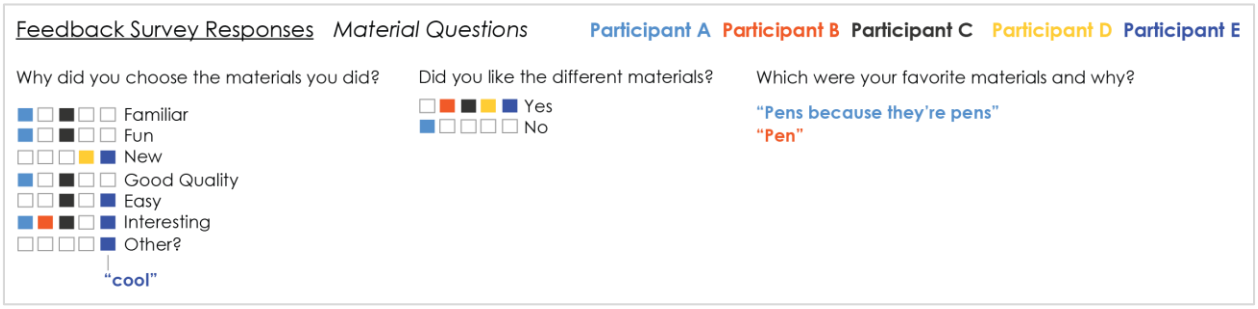


Figure 4.18 Feedback survey material preference responses.

Figure 4.19 visualizes the emotion-specific responses from the Feedback Survey regarding mapping as a process through which to express emotion. Participants A, C, and D reported being able to express their feelings *about* places through mapping, though only Participants C and D reported being able to express their emotions through mapping, noting

(in exact terms and formatting), “because It feel cool” and “It let other now about my day”, respectively. Participant A—the individual who regularly enjoys practicing art, especially drawing—answered *no*, that they did not feel able to express their emotions through mapping, “because writing was not used a lot”. This could indicate either their preferred (or most accustomed) means of emotional expression and/or a lack of realization of the relationship between art-making and emotional expression. Participants B replied with the standard “?” and Participant E offered no explanation. Participant A—the individual who regularly enjoys practicing art, especially drawing—was the only participant with mixed results, citing “because writing was not used a lot”.

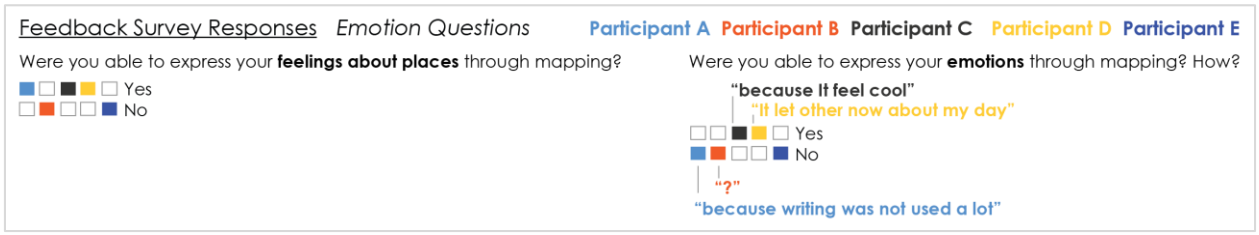


Figure 4.19: Feedback survey emotion responses.

Participants were asked to report on a scale of 1 to 10, from “Horrible” to “Awesome”, how they felt about each of the Mapping Workshop activities. Figure 4.20 presents the Activity-Specific Feedback reports, coded by participant, for each of the activities for all three days. The vast majority of the responses fell within the 6 to 7 range (closest to “Awesome”), though Participant C elected to write in numbers that exceeded the scale when they felt particularly strong about certain exercises (namely, the Day 2 Quick Draw Ice Breaker scoring twenty and the Day 2 *Fortnite* Mapping Warm-up scoring a

significant 100). The lowest reported scores were 4, the equivalent to “OK”, which are concentrated in the Day 1 Mapping Warm-Up and Mapping Exercise. None of the workshop activities were described, either by my observation or in the self-reports, to rate anywhere near “Horrible”. By and far, the most variable activity was the Day 1 Mapping Warm-Up (transforming a coloring sheet into a map). This outcome is attributable to various factors: presenting this activity too early without participants having a solid grasp around maps or the process of mapping coupled with the exercise being too open-ended (an intentional lack of explicit direction so as not to dictate outcomes) may have left participants feeling lost. Additionally, my introduction to the concepts was brief, and only two of the four concepts could be applied here (generalization and symbolization) and overall lacking discussion around thematic mapping. Even so, [2 of the 5] participants enjoyed it, and none found it “Horrible”. Feedback for the Day 2 “Constellation Map” activity is absent due to my oversight in excluding it from the survey form. Overall, Days 2 and 3 were rated successfully, which indicates a positive-gaining overall experience.

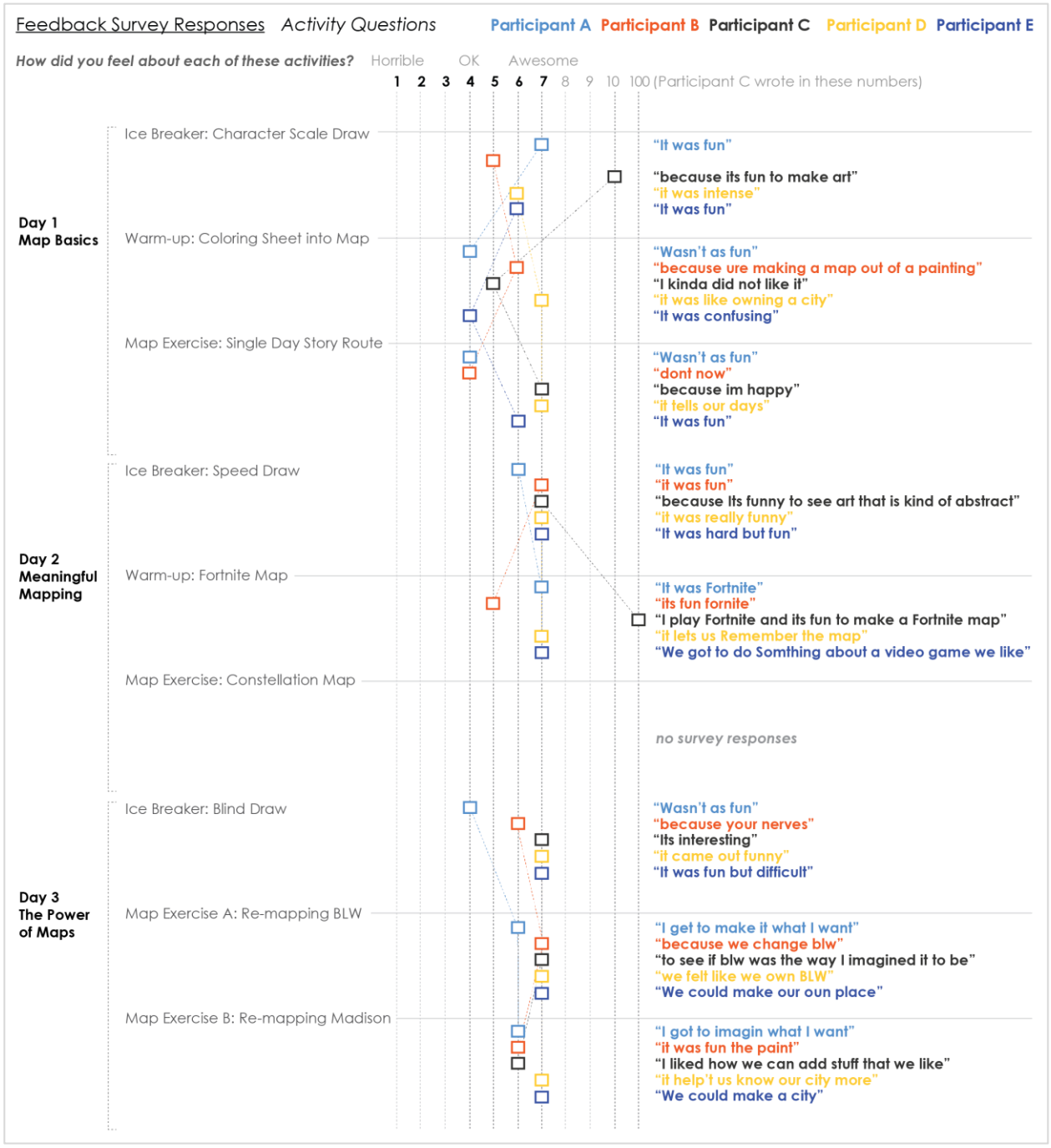


Figure 4.20: Feedback survey activity-specific responses. The quotes listed on the far right are the given reasoning for why they had chosen that particular score. The feedback survey listed each activity in turn, with representative pictures of each as reminders, and thus respondents were basing their latest answer to a particular activity having their previous activity-based scores in mind (e.g., they were likely comparing each activity against the ones before).

4.7 Discussion

Given the survey results especially, the Mapping Workshop was found to be a positively affective event for all participants. Dramatic transformations of considerations regarding maps and mapping occurred, though it seems that relatively less insight regarding place-based emotions was achieved due to expression of a rather limited emotional vocabulary. However, the evidence is encouraging that creative mapping processes can indeed allow participants to express both verbally and non-verbally their conscious and unconscious emotions. Chapter 5 follows, presenting conclusions and future directions for this research.

CHAPTER 5 – Conclusions and Future Directions

5.1 Overview

A first realization I gained from this research is that there is so much we do not know: how complex cognitive processes work to construct mental maps, how to understand and measure emotion, and the ever-evolving effects of materials and their interactions in art therapy and cartography. Thus, I offer this research as a preliminary experiment that balances these unknowns with what we do know: that mapping can be an expressive, emotional process producing insight and empowerment, and that teenagers should be given the opportunity to invest in the mapping process for their own benefit. I have approached the term intervention, which is widely applied, hoping to intervene in how cartographers practice, think, and teach about mapping, and in how relative newcomers to mapping approach it with a creative mind. In the next section, I summarize major conclusions by research question. I conclude the thesis with suggestions for future directions that take into account and adjust for the limitations of this project.

5.2 Conclusions by Research Question

RQ1. EMOTION/THERAPY: *What impact does the process of mapmaking have on the emotional discovery of the mapmakers, and how can the mapmaking process better serve as a productive, therapeutic experience?*

Refer again to Figures 4.3 - 4.5 and Figures 4.16 - 4.20 for the Emotion reports and Post-Workshop Survey/Feedback Survey reports (respectively). The process of mapping was affectively positive across the Mapping Workshop, with all activities falling within the

Activated-Pleasant quadrant of the Affect Wheel. Overall, participants were enjoying themselves and engaged, although this varied according to specific character profiles, which—if accounted for in the workshop design—might increase their self-reported affect.

Thus, external positive affective signals (pleasant and activated) far exceeded the total of external negative affective signals. This is the first step towards having the mapmaking process support emotional discovery as a productive, therapeutic experience: designing to support mapping processes that are fun and stimulating.

RQ1a – Character Profiles

As expected given emotion research, variation among emotion reports was indeed the norm. However, the affect scores for each participant remained relatively stable, apart from Participant A and E, who were the most adamant of the bunch, and who were the most outwardly expressive of their dislike for the survey methods. Despite those dips/irregularities, the ranges between positive and negative affect scores between each participant across all activities and days is insightful in that, even despite fatigue after a long day of school and then the burdens of the Mapping Workshop schedule, the mapping activities (following dinner) maintained the ranges fairly well, thus indicating that participants overall remained positive and activated. This finding was reinforced by the Overall Mood Report scores, which also consistently remained high, with Participants B, C, and E most often reporting that it was the mapping activities themselves that were responsible for their positive emotional states. Participant A varied in their reasons for their good overall moods, but ended the week with credit given (and a score of 9/10) to “Making a

Map". Participant B was the only participant to either seemingly dismiss the surveys by answering with "?", "unsure", and the same scores frequently, or this could be due to a lack of emotional discovery in general due to lack of emotional assessment or understanding. However, their Feedback Survey positively highlighted maps and mapping several times, thereby indicating not a lack of emotional discovery toward the Mapping Workshop, but a lack of interest in expressing/reporting their emotions through the survey formats that were provided. Characteristically, Participant B was highly physically active and charismatic, and perhaps this survey format kept them sitting too long unnecessarily.

Thus, the process of mapping was overwhelmingly responsible for the positive emotion states. Survey formats should be carefully redesigned and simplified so as not to distract from the mapping experience.

The Feedback Survey results reported that all participants enjoyed both mapping and the Mapping Workshop overall, indicating its effectiveness as a positive therapeutic activity. However, in response to the Emotion Questions, Participants A, C, and D reported that they could express their feelings about places through mapping, while Participants B and E did not. Overall, B seemed disinterested in expressing their emotions and rather just wanted to be engaged in activities without the requisite reflection, and Participant E showed a lack of emotional engagement in general. When I asked if they felt they could express their emotions through mapping, Participant A joined in saying they could not, "because writing was not used a lot". Participants C and D, however, maintained that they could express their feelings about places and their emotions in general through mapping—in essence, a success.

Thus, the process of mapping can support emotional discovery for individuals if they are open to it and if it appears in a format that is supportive of their preferred type of expression, impacting them positively by opening up perspectives on the world and engaging them in new expressions (see reasonings in Figure 4.5).

RQ1b – Mapping Experience and Self-Conscious Emotion

Although all, except Participant A, noted that they had made a map before, none reported wanting to make a map at home or in their free time at the beginning of the Mapping Workshop. At the end of the Mapping Workshop, every participant claimed that they would indeed make a map on their own time. Additionally, there was no evidence of self-conscious emotion or anxiety with regard to drawing ability, as the participants were open to sharing and even laughing about their own works with others, as a practice in bonding over shared experience.

Thus, the mapping process can better serve as a productive, therapeutic experience when engaged in with groups of friends who are open to sharing and enjoying the outcomes of the activities. Mapping as a group (more so than an individual) activity is particularly productive for this cohort—a group of teenagers who spend their time together every day after school engaging in activities—allowing for emotional discoveries within and without of themselves.

RQ1c – Emotional Vocabulary and Bonding

The limited emotional vocabulary of Participants B, C, and D was apparent, and though this is problematic with the PANAS survey, it allowed for an opportunity of co-

teaching and moments of emotional exploration outwardly among the group, essentially Social and Emotional Learning (SEL) initiated by themselves. It also points to the comfort and familiarity the participants had with each other and BLW space to ask questions and show vulnerability. Participant E, who was typically less engaged overall, spoke up quickly (and accurately) during these moments to help their friends, evincing a better grasp of cultural definition and deployment of emotion words, and an eagerness to help others. Participants reported "good", both verbally and in writing, many times, which is typical among this age group when talking about feelings broadly. Asking each participant what they consider "good" or how they would define it for themselves would have been beneficial, offering deeper insight into their expressions by degree of positive association (something like, "Is it Goldfish-for-snack good, or trip-to-an-awesome-amusement-park good?"). Essentially, despite the drawbacks of the surveys, the opportunity to learn from one another about the cultural constructs of emotions words and to bond during this period was profoundly positive.

Thus, the process of mapping—with the integrated surveys—supported peer-driven Social and Emotional Learning and can better serve as a productive, therapeutic exercise by allowing the freedom for participants to share and mediate their understandings of emotion in a group setting (rather than restricting the reporting to a private, non-interrupted activity), contributing to emotional discovery.

RQ1d – Materials and Framing

Materials and media are known to significantly affect the outcome of the mental sketch mapping and art therapy exercises, and they certainly did here. Participants' constrained use of color and their overwhelming choice to use professional-quality pens (both felt-tip and regular) was overwhelmingly typical until those choices of material were ineffective for the exercise and participants were forced to experiment with new selections (Re-Mapping Madison, the Day 3 Mapping Exercise). Due to the black basemap, the pen marks did not show up well, though participants tried still. The only other time that alternative materials were used was in the Day 2 Warm-Up, the *Fortnite* map, where participants felt they needed a larger selection to be able to encode meaning or symbolize the multiple variables onto their map. Pens, however, remained the primary instruments used.

Zero of the participants chose to color in the basemaps supplied, and it was difficult to focus them on overwriting by whiting out the areas they were not familiar with on the Day 3 Mapping Exercise. Thus, coloring (or filling significant amount of areas) as an activity and any materials aimed for that particular task (crayons, regular tempera or finger paint, large tip markers, etc.) were not chosen. I interpret this as a limitation: the teens lacked regular or frequent access to these types of materials and, therefore, the Mapping Workshop became a way in which they could finally use (and eventually own) these materials. They are expensive to acquire, especially in the vast array of colors and tip size/type offered. Pens allowed for controlled, concise movement over the expressions, they mitigated mess (paint can deter interest simply because of the opportunity for mess, the number of steps involved in

set-up and clean-up, as well as it typically takes more time to paint, and paint does not allow for exactness in depiction easily), and they were familiar (in that utilizing these pens did not require any special or new techniques). A large part of the emotional outcomes in this Mapping Workshop, particularly activation (excitement) can be attributed to participant's enjoyment of the opportunity to interact with these pens. Doodling, or layering, was the most preferred activity-type overall when it came to mapping, though free-drawing was highly enjoyed during the Ice Breaker activities, which indicates that for short and less-complex exercises, free-drawing may be ideal (allowing for the greatest amount of freedom), whereas for longer and more complex exercises, doodling or layering are preferred (giving context, without conditioning the depiction—a good medium for initial mappings).

Thus, the mapmaking process can better serve as a productive, therapeutic exercise by allowing active experimentation and selection of materials that are novel or otherwise exciting to the participants, and supporting participants with the level of complexity in content of the exercise that fits their needs, which with teenagers was doodling/layering for mapping activities, and timed free-drawing for non-map creativity activities. The process of mapmaking can begin with a positive affective experience (e.g., material selection) that carries creative experimentation throughout the activity. The ETC material framework supports beginnings of this exploration.

RQ1e – Surveys

The surveys were the least-liked elements of the Mapping Workshop, directly affecting emotional reports and affective experience. Notably, the surveys were not strong

enough to deter even the most adamant participant (Participant E) from mapping again, and even engaging in a workshop with the same survey format. However, taking advantage to make the surveys more akin to artful expressions rather than detached, school-like reports, would be best. For instance, including hand-drawing surveys (which would set the precedent for asking them to draw by hand), or having participants self-plot on the Wheel of Affect are both easy routes to be taken, though there are other ideas: integrate surveys into (as a part of) the exercises, rather than separate from them, and develop a scale for each audience in particular. The overall mood score and word choice seem to be the most accessible for this participant pool. Given that the persistent and variable-dependent state of emotional re-becoming is highly variable among individuals, it is important building in and maintain as many opportunities for emotional expression and documentation into the workshop, including through open responses, informal conversation, and mapping prompts, which is reinforced given contradictions across the Mapping Workshop observations and the reports.

Thus, the mapmaking process can better serve a productive, therapeutic exercise with different survey formats (more creative and integrated rather than a requisite chore). Another take-home is that individuals communicate emotions in different ways, and having many outlets to receive whichever way of communicating is an essential part of the empowerment process. Surveys act as outlets for emotion, even for productive participant protest.

RQ1f – Verbal and Non-Verbal Vulnerability

The Day 1 Mapping Exercise process largely became centered around the participant's experiences at their Middle School. Because they had been there that day, the school featured on their route maps. By asking participants to draw a typical weekday, I was able to capture insight into habitual rather than spontaneous experiences. The deep dissatisfaction that emerged with the school, both on paper, and verbally for Participants A and E allowed an outlet for criticism that even given all my time at the BLW Teen Program, I had not heard. Therefore, this Mapping Exercise prompted the outlet and sharing of emotions regarding one of the most affective geographies of a teenager's life: school. Along with the negative emotions and explanations that accompanied them, the participants also chose to express empathy toward the teachers, even ones that they had had poor experiences with, noting that the financial and practical strain on the teachers may be the root cause of the poor attitudes of the teachers and thus the poor relationship and learning outcomes of students. In contrast, participants also were able to express (on the map) the high, positive regard they held the BLW Center in, though this remained non-verbalized.

Thus, the mapping process is a powerful way of exercising and re-expressing emotions regarding affective geographies and the impacts on the lives that visit those geographies. Not only did this expression offer both non-verbal and verbal outlets for the participants, it also allowed for me, the other UW researcher, and the Teen Program leaders to gain insight and understanding into not just how the participants felt, but why.

RQ2. RESEARCH/PEDAGOGY: What are best practices for using the mapmaking process as an artistic, emotional, place-based research method and pedagogical intervention, in this case with specific regard to adolescents?

RQ2 Overview – Research/Pedagogy

Dramatic transformations of considerations regarding maps and mapping over the Mapping Workshop occurred. Though the observations indicated positive (pleasant and activated) scores for all workshop activities, there are interesting variations within each day. In the next section, I discuss each potential variable to the end of proposing a revised workshop template.

RQ2a – Breaking out of the Shell

There was evidence that the Ice Breakers promoted inclusivity, working to overcome social barriers through a collective, impossible challenge, particularly for Participant E, who broke out of their normal shell to sit upright, talking and laughing with the group. The Teen Program leaders also made known that the level of quiet conversation during these intense, short periods exceeded anything they had seen, and considered doing some themselves during regular programming hours. The Ice Breakers were popular, and served as good examples to use later given the theme of the day and the connection of the activity directly to the day's concepts.

Thus, beginning the day by reducing overall outsiderness and challenging the group together in a timed exercise allowed for short, high bursts of energy that invigorated participants emotionally. This exercise should be planned intentionally as an example to

build future concepts upon, thereby helping participants to connect revelations and experiences across the full workshop.

RQ2b – Active Breaks and Competitive Games

Including a *new* active and competitive game at intuitive breaks, where participants are exhibiting a need for gross motor movement through excessive or even downtrodden energy, can be highly beneficial in re-engaging the creative focus of participants. Typing in mapping is recommended, such as a darts competition for hitting specific spots on a map or a live mapping challenge where participants have to race to figure out how to best map out a path in a room to get through obstacles and to a specific goal. Mapping breaks and games not only help to resolve some need for large external expression or re-enlivening, but also add to the fun and creative ways that we can engage participants with maps and mapping. Offering alternatives to the physical activity, such as arts-based challenges, could support the participants who do not feel they need a break; in this way, they would not be excluded, and could perhaps integrate an activity like "draw what you see and how it feels" to connect it to the workshop content.

Thus, moderators should be both flexible, responsive to the in-the-moment needs and opinions of participants, and creative in their own planning and responses to support a fun experience overall, by integrating themed games and active breaks. Being open to the in-the-moment revisions and suggestions of participants, as well as to some participants simply enjoying watching rather than participating, is critical.

RQ2c – Map Lessons

Major, unexpected successes from a pedagogical perspective occurred during the Map Lessons on both Days 1 and 2, when despite the lack of much previous map learning, participants were able to claim "that map is a lie" as I had only begun the lesson. This showed advanced understandings of map concepts that even can allude college students. It continued on Day 2 when the participants collectively identified without hesitancy the relative difference between small and large scales, even given the counterintuitive labels, which signaled the group's readiness for this type of material and reaffirmed Sobel's (1999) progression model (see Chapter 3.4). Though the lessons were not overly popular, the attentiveness, contributions, and recall that participants exhibited signaled that the map lessons were a necessary and helpful component in bridging concepts and supporting conversation between the moderators and the participants.

Thus, keep map lessons short while giving enough information for participants to draw from later on. Tangible examples and relating the lessons to either participant interests or experiences helps to develop the mental connections that participants maintain.

RQ2d – Mapping Warm-Ups

In review of the Day 1 Mapping Warm-Up, while leaving *what* to map abstract was productive, I did not give enough detail on classification, numerical levels of measurement, color ramps, etc., with participants then only choosing categorical differences with icons (e.g., capitol vs. regular city) rather than exploring different thematic maps. Thus, perhaps limited use of materials was also a product of limited exposure at this stage to the different

types of maps that exist, though I had shown them a collection during my time volunteering that was heavily arts-based and thematic. This was also an intentional choice, given that I was avoiding both inundating them with a school-like experience as well as attempting not to condition their depictions while offering the basics, so that they were given the opportunity to develop their own methods of mapping and expression. It was too early. Despite this, even though the maps were underdeveloped, the conversation around this fictional geography was rich and interesting, evincing how insightful the participants are about economic geographies and the disparities that exist over space. Participants were able to come to fascinating and creative conclusions, as a group, but they needed more information to go beyond this one dimension on the map.

Thus, conversation can be as or more interesting an outcome as the visual produced, speaking to the power of process and the essential need for expression.

The Day 2 Mapping Warm-Up was much more successful, as participants were able to layer meaning onto the *Fortnite* outline using many different symbolization techniques, given their intimate knowledge with the map. Participants were excited and even wanted to keep their maps. This was a productive way to bridge cartographic pedagogy with real-world interests, and to support positive affect, while displacing participants from problematic technology. Participants also reported in the Feedback Survey that they would make another *Fortnite* map on their own time.

Thus, integrating interests into the mapping exercises meets teens on their level and elevates positive emotional outcomes and associations with map processes.

RQ2e – Mapping Exercises

The Day 1 Mapping Exercise received overly positive, though relatively lower overall scores. This likely follows suit with too much freedom and the lack of experience and explanation provided, which I fixed on Day 2. Also, scheduling the Mapping Exercises earlier in the day would have helped to mitigate fatigue. Having the template with prompts was handy, because where I failed to explain clearly, participants were able to guide themselves through the activity with copious conversation and excellent results. Being a creative, arts-based venture, I found that they achieved map outcomes that were exceptional.

Thus, schedule the mapping exercises (or primary workshop focus activities) when participants are likely to be the least fatigued. Use templates to help direct participants. Encourage conversation among participants who share experience in their daily journeys.

The Day 2 and Day 3 Mapping Exercises were rich in guided prompts, but participants were hard to focus. Therefore, taking a co-producer positioning rather than a moderator positioning and engaging individuals in turn where needed rather than a group as a whole was far more productive.

When participants do not want prompts and are not asking for help, let them map freely. Have multiple moderators to help ignite new engagements and inspire new thoughts.

RQ3. OTHER BENEFITS: What other benefits does the process of mapmaking have on both map and mapmaker?

RQ3a – Empowerment

Participants felt empowered to verbally and visually represent their experiences over space. The *Fortnite* maps, the BLW Youth Center maps, and the Madison maps were particularly empowering, given they were able to recreate their own affective geographies (both imaginary and real). K12 education could benefit from the recogntion that artistic, creative, and place-based learning represents a pathway for teaching participants how they can make maps to serve their own purposes: that they can be part of the map's process of becoming and become empowered along the way. Giving participants the opportunity for planning input also signals to them that their opinions matter to the adults around them. An outcome of the BLW re-mapping Warm-Up was that, with permission, their drawings were shared with the Director of the Center to influence design of the new center, integrating their personal process into a larger process with great consequence on their affective experience in that space.

RQ3b – Cell Phones

One of the most exciting research outcomes that I have yet to address follows: I had no issues with the use of cell phones during this Mapping Workshop. Not once did I have to ask participants to drop their phones, after the initial request on Day 1. This, above all doubt, signifies to me that participants were engaged and enjoying a positively affective experience. From observations over my year volunteering at the Program, I witnessed how problematic the prolific use of cell phones was during programming: participants trying to sneak onto their phones during homework time, or wanting to use them (sometimes to play *Fortnite*)

instead of engaging in the group activity following dinner, etc., to the extent that sometimes the Teen Program leaders would have to confiscate the phones. Thus, the strong pull that technology often has on the teenage participants seemingly dissolved during the Mapping Workshop altogether, even during points when participants were (seemingly, though not certainly) deactivated.

Thus, the process of mapping can reduce not only the time spent on screens/cell phones, but also replace the need of the participants to be constantly interacting with them, and therefore hopefully contribute to more positive outcomes on the front of teenage mental health outcomes.

5.3 Limitations and Future Directions

There are a number of limitations in this single study that point to future research projects, as summarized in the following.

Affect and Emotion

To begin, affect and emotion are treated rather shallowly, in line with the general lack of scientific understanding of each and their interaction with one another. Collapsing all understandings of affect, mood, feeling, and emotion down to the essence of total emotion is problematic, which future research should clarify. Psychological constructivist understandings of emotion and affect were chosen over other emotion theories, such as those by evolutionary psychologists. These theories have their own limits. Despite this, capturing multiple data points including observations paired with volunteering over the long period

allowed for a triangulation that helped to clear up or at least allow me to comment on incongruences.

Share the Labor

Although a general code sheet was developed to help the other UW researcher capture notes, it was difficult to use given the fast pace of the days and having the task of recording not only signs of apparent emotion but also what was being said. Multiple researchers as moderators could help to dissolve some of this difficulty, with each looking for evidence of different codes or otherwise dividing the labor.

The Great Map Debate

A concern of this work could very well be in that the process will not result in creating maps, but map-like objects. Here, it suffices to consider all maps as "constellations of ongoing processes" (Dodge et al. 2011: 16). Much like in art therapy, where "[t]he spontaneous projections encouraged in therapy-oriented art therapy are not art in the complete sense, but neither are they anti-art. They are vital fragments of the essential raw material from which art may evolve" (Ulman 2001: 26), mappings produced can be considered productively intermediary, incomplete, and unrefined. Projection is a likable term: stemming from cartography and implying an imperfect but purposeful spatial portrayal capturing some aspects more accurately than others, and from a specific viewpoint. Again, the useless map, which can have a substantial impact on an individual's cognition and experience of place (D'Ignazio 2016: 38), though a representationalist perspective says that the art in cartography is not the same traditional take on art as an expressive medium (Dent et

al. 2009: 18). The question then, considering post-representation, is if cartography *actually is* or *can be* an expressive medium within the bounds of a map and the process of mapping? Contemporary artists, at least, show implicit agreement that it can, and I would argue that the outcomes of the mapping activities in this workshop pare indeed, if not fully developed, vital fragments from which the map can continue to or re-evolve. This debate gets to the heart of what qualifies as a *map*, and indeed if so called art maps are as perceived as valuable to academic cartographers as are conventional maps. Academic and public interactions or practice with maps differ (Crampton 2009: 5-6), and bridging this difference creates new possibility. In addition, not all art is produced for public consumption or others, nor should it be, including maps. Thus, not strangling or otherwise disfiguring a creative mapping process in order to fit the depiction into a rigid definition of map is so important to the growth of the individual cartographer and the field of cartography itself.

Conversations with Art Therapists

A central assumption of this work was that cartographic maps have yet to be considered in art therapy, but perhaps they have been. Conversations with practicing and research art therapists would greatly benefit this line of inquiry. Always, but especially placed in the context as intervention, we must interrogate what doing good with maps means and what it does not, and further, what it can or cannot. Voices from the psychology community should be sought out and triangulated to ensure that, rather than good intentions, evidence-based best practices are developed.

Opportunities, Not Expectations

Participants do not owe their stories or emotions to researchers. Therefore, opportunities and not expectations should be offered to participants, supporting whatever process is beneficial for them. Maps, here, are especially productive in that if participants are not interested in exploring their emotions, the process of mapping can develop spatial skills and understandings that are not readily offered in public education, as well as a unique artistic place-based exercises.

Learning with Teens

Among others, studies herein discussing the connection between affect and creativity were with adults in the workplace rather than with children in an educational or community setting. The assumption is that the findings from these studies can translate from adults to teenagers, and from the workplace to a primarily recreational space, which is problematic. They also were conducted in the hopes of isolating variables that affect workplace productivity, which was not our attempt here. This is overall indicative of the state of affairs with regards to research: considerably less is known about teenagers over almost every field, including geography, with longstanding but relatively few scholars focusing their efforts here. However, this is changing, and—if possible—learning with teens, for teens (and children in general) is an explicit future direction that cartographers should help to champion.

Inclusivity

This research is situated within a field expanding itself around ideas of inclusive and plural cartographies (Almeida, 2014). All ages and all abilities should be considered when

cartographic research or mapping is practiced, developing emotional mapping workshops or activities developed explicitly around the unique needs and strengths of each community.

Influence and Be Influenced

Every day, more research in this arena is emerging, and cartographers should work diligently to make it accessible to non-academic audiences in varieties of ways, beginning with aggregating and sharing resources for public review and use (not just online). Local individuals and programs are already doing this, for example the Making Justice Program from the Teen Bubbler at the Madison Central Library (more information can be found here: http://teenbubbler.org/creations/personal-maps), which is incredibly important work—being taken on by mostly "non"-cartographers—in extending mapping knowledges and practices to local at-risk youth. Cartographers should practice how to communicate both internally and externally what we do, why it is important, and to seek creative input. Thus, I highly encourage cartographers to: (1) Get into the field to map, especially involving themselves in their communities, and (2) talk to people, especially regarding their emotions and their affective geographies. Many other fields also offer frameworks that closely align with new movements in cartography, such as *creative place-making* from Business. Comic-making also offers incredible insight, both in terms of creative, non-oppressive practices and material commentary, often with an emphasis on emotion; what can comic-making teach (cognitive/mental sketch map) cartography? Psychogeography should also be re-implemented, with individuals encouraged to go outside and document how they experience their movement through their communities, cities, and places unknown. These all would

contribute well to understandings of the true power of maps and mapping's effect on emotion.

Materials

Though the materials were a large success, limited employ of the variety of materials can in part be attributed to both the proximal positioning of the materials (on a table across the room) as well as the tempo of the Mapping Workshop schedule. Building in time for material exploration and experimentation would be highly beneficial in supporting the active (rather than default or quick) selection of materials that fit the emotional needs of the participant.

This work builds towards a potential "Variable Framework for Art Mapping Instruction", which is a diagram that presents the various variables involved that can affect an art mapping process, and how they might interact with one another. The draft is presented here as Figure 5.1.

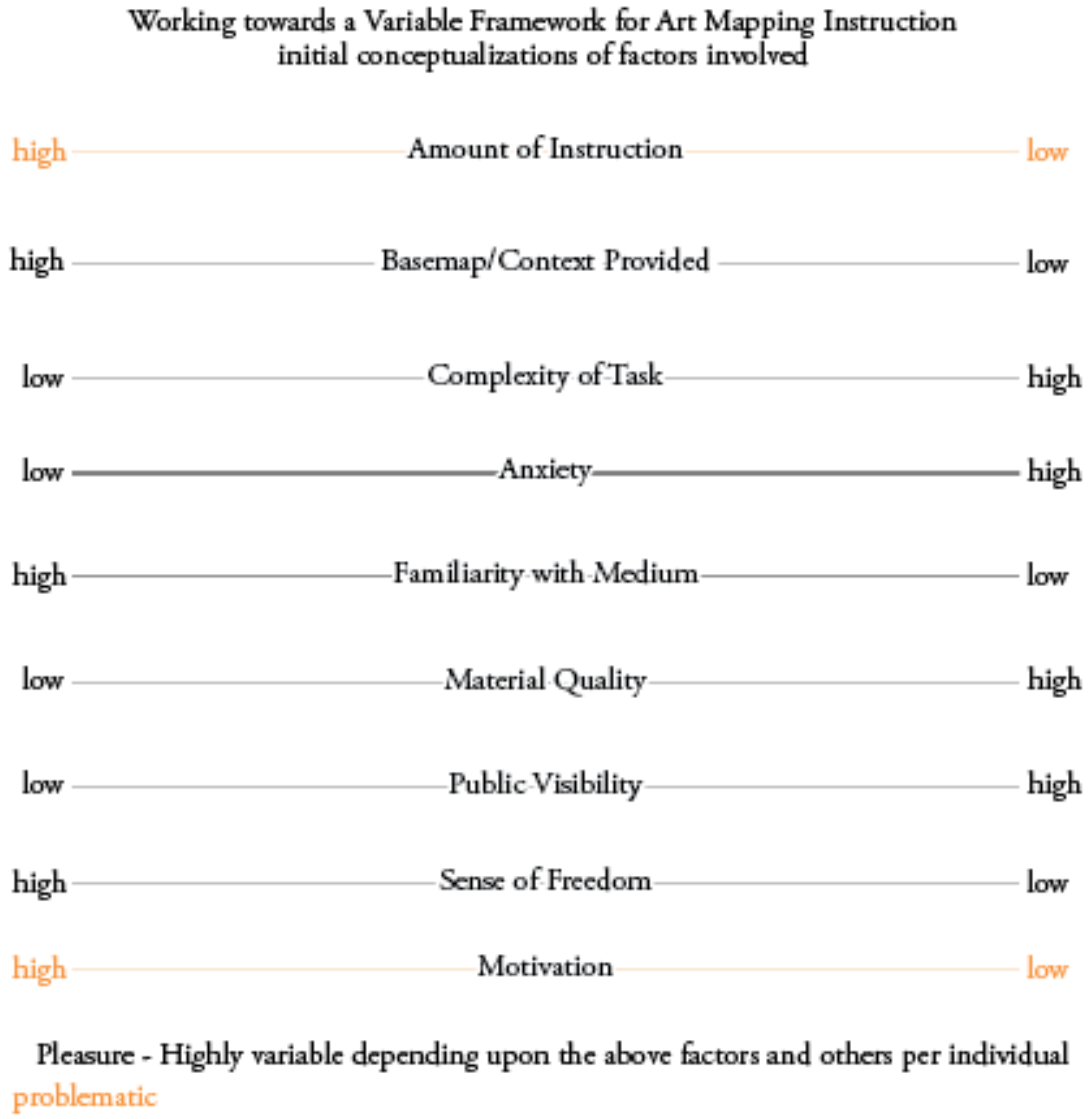


Figure 5.1 Understanding the complexity of how mapping and emotion are intertwined, especially while instructing, first requires identification of how different aspects of the art process interact. This figure is an initial draft of several identifiable factors and attempts to coordinate at the end of bipolar axes, how these aspects interact with one another, hoping to coordinate a full picture of the state of the creator during creation and how materials, environment, and amount of instruction (among other variables) impact the experience.

Cartography also would benefit from advanced considerations of the affective (and other) consequences of mapping materials (paper type, size, feel, pens, markers, paint, etc.)

outside of the technological, as well as considering what therapeutic value may be held in the process of mapping via digital technologies. Thus, along with the "Variable Framework for Art Mapping Instruction", theorizing "Affective Tactile Metaphors" (Figure 5.2) or how the tactile qualities of materials can create emotional metaphors that prompt particular kinds of affective experience, would contribute to our knowledge of how materials *feel* when they are used and the meanings that they carry, and thus how they affect the cartographer's emotional state both before and during use. A more enlightened review and application of the ETC would be helpful in contributing to this line of inquiry.

Affective Tactile Metaphors (in progress)

- Napkins & tracing paper – metaphor for fuzzy, layered experience, feels: flimsy (vulnerable), transitory, fleeting, disposable—texture like gift wrap (used for decorative, disguising purpose and then discarded)
- Transparencies – sturdy/opaque, layered experience, clear connections, playing with representation, being able to erase and remake, indestructible, unfamiliar
- Regular lined paper – accustomed to, diverse uses, primary association with school
- Upcycled paper (print on one side, clear on the opposite) – a sense of repurposing (giving new life to something), allows for a feeling of freedom with practice, but more substantial: a draft to reference, less disposable though far from "final"

Figure 5.2 Theorizing examples of "Affective Tactile Metaphors" that couple the general feel, quality, and regular access to materials and how that would in turn affect the mapping process and emotions experienced therein.

Conclusion

With these conclusions and limitations in mind, future workshops seeking the intersection of mapping and emotion under an art-therapy intervention lens and centering

mapping as process would benefit from a restructuring of the above template into the following form (or something similar):

After having spent time getting to know the participants well and the environment within the workshop will take place, co-design the workshop entirely, taking a truly participatory approach. Develop a four-part series, wherein each workshop is co-designed: two planning sessions and two activity sessions. The first day-long workshop planning session would be dedicated to emotion, spent on developing emotional vocabularies and encouraging and practicing different forms of emotional expression, with the day culminating in the production of the emotion surveys/reports to be used during the other three parts of the series. The second day-long workshop planning session should be used to co-develop the mapping exercises, leveraging this planning period as a way to teach them about maps and mapping separate from the actual mapping processes. The third day-long workshop would be the first activity session, wherein a Psychogeographic approach is taken and participants lead a walk while performing in-the-field sensory mapping and layering live data observations onto a map along with the co-linear narrative describing their experience over time and place. The fourth and final day would culminate in thematic mapping exercises indoors. The emotion surveys/reports could be visual as well, or in place of, verbal reports, integrated into the particular mapping exercise. Potential ideas include that participants could draw a representation of their own feeling and ascribe a label to it directly on the product that they have created, thereby not divorcing the emotional experience report from the mapping product. Co-designing emotion reports would give us insight into how teens think about emotion, how they express it, and their range of emotional vocabulary, and the disparities

between the same emotion words for individuals. Emotion word dictionaries could be developed by each individual, indicating what they uniquely mean by words such as “good” and how that could differ over space and use, offering a richer introspection and clearer application. Co-designing mapping exercises would give moderators windows into the participant’s worlds that are otherwise not captured, such as preferred routes, interests, and what they notice (and miss) in their daily affective environments. All of the aforementioned considerations would be considered, especially implementing a daily period of at least thirty minutes to experiment with a diverse array of materials and record the reasons for selections of each. Designed this way, fatigue would be mitigated, and outcomes could be more certainly attributed to a specific co-designed element or an outcome. The timing would have to be sometime during summer, or at another point in time when the weather is safe and participants are free to participate without feeling stressed or overwhelmed.

What would it mean for *maps to do good*? The cartographer’s great challenge is not to produce data, but rather to produce experiences (e.g., by sharing a map) and the possibility for experiences (e.g., by sharing how to map), and to provide platforms on which every voice can be expressed or heard if they want it to be, with the ultimate goal of making mapping one of the processes that individuals instinctively reach towards when wanting to explore or share something of themselves (a visual voice) and to fulfill emotional needs that may not be met elsewhere (a way to be vulnerable without having to be verbal). In this way, mapping is still productively considered an art therapy-like intervention with promise, given the overwhelmingly positive affective experience of participants with this Mapping Workshop. The largest insights derived from this research are what can be done better moving forward,

and how we might be able to better and more introspectively create useless (and therefore the most meaningful) maps for the self.

With all of this in mind, I end this work with a set of potential future research questions for the reader's consideration:

- Pedagogy – transforming research questions from researcher-centric to participant-centric is important. For example, what do teenagers and other participant populations *want* to learn about maps? How would they like to explore them or use them? What happens when teenagers (or others) are given full authority over their learning and creative process with maps? What might a modified progression model look like and what would happen if the teenagers interrogate and integrate their own intentions and motivations?
- Instructional Design: How might cartographers and researchers support the mapping process as play?
- Context and Environmental Design: What would this work look like in other contexts, especially contexts with potentially traumatic place-based experiences, such as juvenile halls? How do different settings impact the affective consequences of the mapping process?
- Emotion – What multi-media capture, such as video and voice recording, would be appropriate and enriching companions to our understandings of the emotional experience of the mapping process?

- Materials – How might experimentation with a large assortment of diverse materials during the process of mapping be best supported? What materials have the greatest affective consequences? How might this be best captured? How does this variable differ among different demographics, such as age?

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APPENDICES

Appendix A: IRB Approval

Education and Social/Behavioral Science IRB
11/9/2018

Submission ID number:	2017-1148-CP001
Title:	Considering Cartographic Ontogenetics, or the Potential Good of Maps as Process for Individuals and Community
Principal Investigator:	ROBERT E ROTH
Point-of-Contact:	ALICIA ADELLE IVERSON, ROBERT E ROTH
IRB Staff Reviewer:	OLYVIA KUCHTA

A designated ED/SBS IRB member conducted an expedited review of the above-referenced change of protocol application. The change of protocol application was approved by the IRB member. The change of protocol application qualified for expedited review pursuant to 45 CFR 46.110 and, if applicable, 21 CFR 56.110 and 38 CFR 16.110. You must log in to your ARROW account in order to view the specific changes approved by the IRB.

To access the materials approved by the IRB, including any stamped consent forms, recruitment materials and the approved protocol, if applicable, please log in to your ARROW account and view the documents tab in the submission's workspace.

If you requested a HIPAA waiver of authorization, altered authorization and/or partial authorization, please log in to your ARROW account and view the history tab in the submission's workspace for approval details.

Please review the Investigator Responsibilities guidance (https://kb.wisc.edu/images/group99/shared/BSIR) which includes a description of IRB requirements for submitting continuing review progress reports, changes of protocol and reportable events.

If you have general questions, please contact the Education and Social/Behavioral Science IRB at 608-263-2320. For questions related to this submission, contact the assigned staff reviewer.

Appendix B: BLW Center Letter of Support

BLW Center
1917 Lake Point Drive | Madison, WI 53713
608.441.6991 | general@blwcenter.org

October 16, 2018

To whom it may concern,

This letter is in regards to one of our great volunteers Alicia Iverson, giving her our approval and full support this fall/winter semester with her case study. She will be conducting a few mapping workshops with our teen participants at our Bridge Lake Point Waunona (BLW) Neighborhood Center as the case study of her Master's research. Please feel free to contact me if you have any further questions.

Appendix C: Recruitment Flyers

Appendix D: Workshop Emotion Surveys

PANAS Scale: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle or highlight the appropriate answer next to that word. Indicate to what extent **you feel this way right now, that is, at the present moment.**

Feeling or emotion	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
_____ interested	1	2	3	4	5
_____ distressed	1	2	3	4	5
_____ excited	1	2	3	4	5
_____ upset	1	2	3	4	5
_____ strong	1	2	3	4	5
_____ guilty	1	2	3	4	5
_____ scared	1	2	3	4	5
_____ hostile	1	2	3	4	5
_____ enthusiastic	1	2	3	4	5
_____ proud	1	2	3	4	5
_____ irritable	1	2	3	4	5
_____ alert	1	2	3	4	5
_____ ashamed	1	2	3	4	5
_____ inspired	1	2	3	4	5
_____ nervous	1	2	3	4	5
_____ determined	1	2	3	4	5
_____ attentive	1	2	3	4	5
_____ jittery	1	2	3	4	5
_____ active	1	2	3	4	5
_____ afraid	1	2	3	4	5

(Circle or highlight the appropriate number) Overall, my mood is:

Very Unpleasant — Very Pleasant

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

If you could choose 1 word to describe your current mood, what would it be? _____

What led you to feel this way?

Appendix E: Pre-Workshop Surveys

Affective Qualities of the Environment Survey

Day 1 Pre-Workshop Survey This survey will help me to understand how you feel when you're at BLW in general as a baseline to compare to how you feel when you are making maps. Your workshop Name: _____

Environment = the BLW Center and the particular room you are in

1. On a scale from 1 to 7, 1 being uncomfortable and 7 being perfectly comfortable, **how comfortable do you feel right now?** (circle)

Uncomfortable						Perfectly Comfortable
1	2	3	4	5	6	7

2. On a scale from 1 to 7, 1 being unattractive and 7 being appealing, **how attractive is this environment?** (circle)

Unattractive						Appealing
1	2	3	4	5	6	7

3. On a scale from 1 to 7, 1 being monotonous (or boring) and 7 being diverse (or stimulating), **how interesting is this environment?** (circle)

Monotonous/Boring						Diverse/Stimulating
1	2	3	4	5	6	7

4. On a scale from 1 to 7, 1 being hectic and 7 being perfectly calm, **how relaxed do you feel right now?** (circle)

Hectic						Perfectly Calm
1	2	3	4	5	6	7

Pre-Workshop Preferences and Map Experience Survey

Pre-Survey This survey will help me to plan activities in the workshop as well as give me some information about why you've chosen to participate. Please turn in with your other forms.

1. Do you prefer to write/speak in: Spanish ☐ English ☐

2. Do you like to participate in creative/art activities? Yes ☐ No ☐

3. What kinds?

- ☐ Drawing/Doodling/ Sketching
- ☐ Painting with brushes
- ☐ Finger-painting
- ☐ Coloring
- ☐ Collaging
- ☐ Sculpting/Playdoh
- ☐ Origami/Folding paper airplanes
- ☐ Programming/Using other languages
- ☐ Creating stories
- ☐ Drama/Acting
- ☐ Making stuff with Duct-Tape
- ☐ Board/Card/Paper games
- ☐ Puzzles
- ☐ Exercising/Working out
- ☐ Videogames
- ☐ Playing with chalk
- ☐ Journaling/ Scrapbooking
- ☐ Comic-making
- ☐ Lego building
- ☐ Science Experiments
- ☐ Dancing
- ☐ Sports
- ☐ Music
- ☐ Photography
- ☐ Make videos/vines
- ☐ Others? _____ _____ _____

4. Would you consider yourself an artist? Yes ☐ No ☐

5. Do you think your ideas, opinions, and perspective are important to others? Yes ☐ No ☐

5. Have you ever *made* a map before? Yes ☐ No ☐

6. How do you *feel* about maps?

7. Do you use maps often? If so, for what?

8. Would you choose to make a map at home or in your free time? Yes ☐ No ☐
9. If so, what would your map show? (What would you include on it?)

10. Why do you come to BLW?

11. Why did you choose to participate in Map Club?

Appendix F: Feedback Survey

Feedback I'm interested in how you felt about & experienced this workshop. Please be as honest as possible.

1. What do you remember most about maps?

2. What do you remember most about Map Club?

3. Do you like making maps? Yes ☐ No ☐

   How much? (circle on 1-7 scale) A little Kind of A lot

   1 2 3 4 5 6 7

   Why?

4. Did you enjoy this workshop? Yes ☐ No ☐

   How much? (circle on 1-7 scale) A little Kind of A lot

   1 2 3 4 5 6 7

   Why?

5. What were the **best** parts?

   -
   -
   -
   -

   Why?

6. What were the **worst** parts?

   -
   -
   -
   -

   Why?

7. If you were in charge of this workshop, how would you do it (better/differently)? (In other words, how would you fix the worst parts? Improve the best parts?)

   -
   -
   -

8. If we did Map Club again, what kind of mapping and exercises would you want to do?

On a scale from 1 to 7 (1 being horrible and 7 being awesome) **How did you feel about...**

1. ... the exercise where you drew your character and then drew it again on a tiny piece of paper?

Like my Hippy Hamster:

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

2. ... the exercise where you drew your character the same time over and over, 6 times (at 60 sec, then 45 sec, then 30 sec, then 10 and then 5 sec)?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

3. ... the exercise where you drew either a pirate on his birthday or a castle made of jello *with your eyes closed*?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

4. ... Turning a picture into a map?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

5. ... by the way, had you noticed the bird in the picture before? Yes ☐ No ☐

6. ... Mapping how you experience your day on your daily route?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

9. ... Mapping the Fortnite island by layering meaning onto the map?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

10. ... Having the power to recreate BLW through re-mapping the building?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

11. ... Having the power to recreate Madison through re-mapping the city?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

11. ... Learning about maps and the many different ways that maps can show us our world?

Horrible OK Awesome
1 2 3 4 5 6 7

Why?

12. If you didn't (or don't) play Fortnite would you still (or do you still) care about maps? Yes ☐ No ☐

13. Did you like the different materials? Yes ☐ No ☐

14. What were your favorite and why?

15. Why did you choose the materials you did? (Check as many as you want)

Familiar ☐ Fun ☐ New ☐ Good quality ☐ Easy ☐ Interesting ☐

Other?_____

Appendix G: Workshop Materials

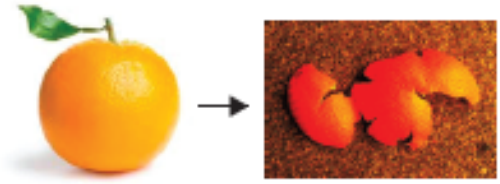
Workshop Material Selection

16-pack Papermate Flair Felt Tip pens, medium point, assorted colors
8-pack Papermate Flair Felt Tip pens, ultra-fine point, assorted colors
5-pack x 2, Uniball Vision Stick Roller Ball Pens, Fine Point, assorted inks, light-gray body
4-count Uniball Vision Stick Roller Ball Pens, Fine Point (0.7mm), black ink, light-gray body
6-pack Sakura Pigma Micron Pen Set, assorted colors
4-count Uniball Paint Markers, Fine Tip, White ink
12-count Markal Paintstik 3/4 x 11/16 B Marker, white
6-pack Crayola Glitter Markers, assorted colors
8-pack Crayola Poster Markers, assorted colors, chisel tip
200 3x5 index cards, lined on one side, blank on the other
200 4x6 index cards, lined on one side, blank on the other
24-pack Crayola Twistable crayons, assorted colors
50 sheets Staples Graph Pad, 11x17, Graph, White
12 sheets Pacon Art 1st Watercolor Paper Pad, 9x12
24-pack The Pencil Grip Tempera Paint Mess Free Set, assorted colors, neon, metallic
240-pack Binney & Smith Crayola Watercolor Pencils, 12 color class pack
24-set Staedtler Karat Watercolor Crayon
8-set x 4, Prang Washable Ready-to-Use Paint with Brush, assorted colors
50 sheets Pacon Art 1st Parchment Tracing Paper, 9x12", white
50 sheets Pacon Art 1st Parchment Tracing Paper, 14x17", white
Pencils, regular lead
Crayola colored pencils, regular quality and various colors
Assorted paper with various textures
Felt sheets, 5"x5"
Upcycled wood boards, 4x5
Canvases, small (2"x3") and large (5"x7")
Large and sturdy cardboard boards
Flimsy napkins
Brown U-Haul packaging wrapping paper
Regular lined paper
Average quality and weight 8.5x11 white printer paper
8.5"x11" assorted colored papers
Upcycled photo paper in various sizes
Card stock
Water paint white paper pad
Reminders that hands and fingers could be used as well

Appendix H: Day 1 Map Lesson Review Sheet for Day 2

Map Club Review Sheet

Map Projection: a transformation of the curved sufaces of the earth into a flat surface.



What happens when you flatten the orange?

What kinds of disortion happen when you flatten the globe into a map? What happens to Greenland?

Scale: the extent of the geography you want to map that effects the amount of detail you can fit in your map

Large scale (large detail)

Small scale (small details)

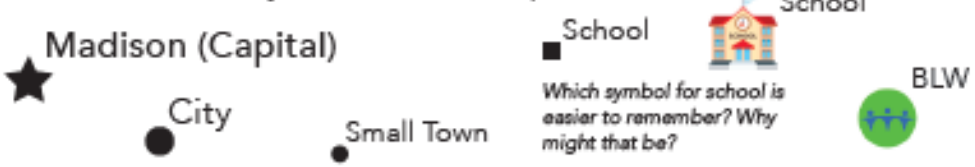
Generalization: what you choose to put on (or leave off your map) and the level of detail that you can include

What didn't you include in your small character sketch?

Why would you remove detail from a river like in the example above?

What symbols would you use for a map of Wisconsin? What symbols would you use in a map of Fortnite? Why are these symbols similar or different?

Symbolization: the representation of features with graphic symbols that may look like icons, emojis, or abstract shapes



Which symbol for school is easier to remember? Why might that be?